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E. BURGESS begs to offer the following:—Strong Standard and Pyramid PEARS, ROSES, Evergreen and Deciduous Flowering SHRUBS, English OAK, ELMS, and LIMES, up to 10 feet, LARCH, and Spruce FIRS. Prices on application.

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N. LAWRENCE has still to offer a very fine lot of Standard and Pyramid APPLE TREES, 7s. per 100, all Fruiting trees; also Standard PEARS, 8s. per 100. Black CURRANTS, very strong trees, 2-yr. and 3-yr. old, 12s. per 100, for cash with order.

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HOWCROFT AND WATKINS (late HOWCROFT AND SON), Seedsmen, Covent Garden, London, W.C. (Established more than half a century.)

CATALOGUES of DUTCH BULBS, &c., are now ready, and will be sent gratis and post-free on application.

Seeds carefully packed for exportation to all climates.

Prices upon application.

JOSEPH SMITH will make special offers for ASH (Mountain), CHESTNUT (Horse), ELM, SYCAMORE, and OAK, all sizes up to 10 feet; RHODODEN-DRONS, all sizes up to 5 feet; and a large stock of other TREES and SHRUBS, as the ground must be cleared this season. CATALOGUES of General Nursery Stock free on application.

Moor Edge Nurseries, Tansley, near Matlock, Derbyshire.

SEGERS BROTHERS, Nurserymen, Lisse, near Haarlem, Holland, have grown and have to offer a new and very striking TURBAN RANUNCULUS, named TURBAN VIRIDIFLORA, large, scarlet, with a small yellow band round a glossy green centre, at 3s. per 100, sent post-free, cheaper by the 1000 or 10,000. Foreign post-cards are sufficient to order.

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Notice. Great Reduction in the Prices of the QUEEN of FLOWERS.

ROSES.—20,000 Dwarf, on Manetti, the finest plants and finest sorts ever offered, at 40s. per 100, cheaper by the 1000; including the best new Roses of 1875, and of recent introduction. For cash with orders only. Special Trade prices on application.

RICHARD LOCKE, The Rose Farms, Redhill, Surrey.

R. TEMPLEMAN, Bowdon Nurseries, Bowdon, Cheshire.

APPLE, PEAR, PLUM, and CHERRY TREES, strong Pyramid, 9s. per dozen, 60s. per 100; strong Black and Red CURRANTS, 8s. per 100; GOOSE-BERRIES, choice HOUSE, 12s. per dozen; finest EVERGREENS, CONIFERÆ, FOREST TREES, &c., at low prices.

R. TEMPLEMAN, Bowdon Nurseries, Bowdon, Cheshire.

GARIBALDI STRAWBERRY (true).—Plants in pots, loaded with delicious fruit of this wonderful perpetual-fruiting variety, were exhibited before the Fruit Committee of the Royal Horticultural Society on December 6, 1876, and were awarded a First-class Certificate in consequence of its invaluable merit of producing fruit all through the winter.

H. CANNELL has great pleasure in announcing that he can now supply plants of the above, 4s. per dozen, 20s. per 100, package free.

Nurseries, Swanley, Kent.

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THE following SPECIMEN PLANTS, in fine health and condition, from the plant-houses of a Gentleman relinquishing their growth for the cultivation of Grapes, to Sell cheap. Height and widths given in feet, tr. for size of trellis:—

Anthurium Scherzerianum, strong, in bloom, 1 yr.	1 by 1	Livistona australis, 4½ by 5½	3 by 3
Bougainvillea speciosa, 2½ by 2 yr.	2½ by 2	Livistona chinensis, 2½ by 4	2½ by 2
Clerodendron Balfourianum speciosum, 2½ by 2	2½ by 2	Latania borbonica, 4 by 6	3 by 3
Chamærops excelsa, 2½ by 2½	2½ by 2	Pychospermæ Cunninghamii, 1½ foot stem, 3 — 3 feet fronds	3 by 3
Cissus amazonica, 2 by 1½	2 by 1½	Phœnix dactylifera, 3 feet	3 by 3
Cissus discolor, 2½ by 2	2½ by 2	Rondeletia speciosa major, stands 3 feet	3 by 3
Euphorbia splendens, 2½ by 2	2½ by 2	Stephanotis floribunda, 2½ by 1½, tr., all 2½ by 2 yr.	2½ by 2
Ficus Parcellii, 2 by 2	1½ tr.	Thunbergia laurifolia, 1½ by 1½ tr.	1½ by 1½
Hoya carnosa, 3 by 1½ tr.	3 by 3		
Jasminum Sambac, 2½ by 2	2½ by 2		

STEPHEN BROWN, Seed and Plant Establishment, Weston-super-Mare.

Surplus Stock.

SPECIAL OFFER
made of the following, prices on application :—
PINES, Austrian, 3, 4, and 5 feet.
FIRS, Spruce, 4, 5, 6, and 7 feet.
THUJA LOBBII, 6 to 10 feet.
CUPRESSUS LAWSONIANA, 5 to 8 feet.
YEWS, Irish, 5 to 10 feet.
FIRS, Balm of Gilead, 6 feet.
PINE, Weymouth, 3 to 6 feet.
YEWS, English, 3 to 5 feet.
THUJA AUREA, 3 feet.
HAZEL, fine, 5 feet.
ELCOMBE and SON, Nurserymen, Romsey, Hants.

To the Trade—Sandringham Early Kidney Potato.

H. AND F. SHARPE have secured a fine stock of the above excellent POTATO, which is pronounced to be not only the earliest, but the most prolific, and the finest quality in cultivation. Being very short in the haulm it is peculiarly adapted for forcing purposes. Price and further particulars may be had on application.
Seed Growing Establishment, Wisbech.

Roses—Pæonies—Gladiolus.

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CATALOGUES sent post-free on application to C. V., as above, or to
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A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands, has to offer the following :—
YUCCA ANGUSTIFOLIA, strong plants, 1 foot high, £2 per dozen, £12 10s. per 100. In my nursery this beautiful new Yucca withstood, without the slightest protection, the severe winter of 1875.
APPLES, strong 2-yr. Palmettes and Pyramids, 42s. per 100, £18 15s. per 500.
HARDY AQUATICS at the lowest prices.

Trees for Street and Roadside Planting.

FRANCIS & ARTHUR DICKSON & SONS can offer fine, clean-grown, well-rooted Trees of the Oriental and Occidental PLANES, similar to those planted on the Thames Embankment, with good heads and clear stems, from 5 to 6 feet up, and altogether from 8 to 10 feet in height, well adapted for the purpose stated above. Price per dozen and per 100 on application.
The "Upton" Nurseries, Chester.

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Plants of Recent Introduction.	Conifers.
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Ferns and Lycopods.	also in pots.
Hardy Trees and Shrubs.	Fruit Trees.
Transplanted Forest Trees.	Grape Vines.
Dutch Bulbs, Flower Roots, &c.	
Royal Nurseries, Ascot, Berks.	

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CHARLES SHARPE AND CO.'S WHOLESALE LIST of VEGETABLE and FARM SEEDS is now ready, and will be sent post-free on application.
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CHARLES SHARPE AND CO.'S carefully-selected Stocks of SWEDE and TURNIP SEEDS, the produce of their own Seed Farms in Lincolnshire, are offered in their Wholesale Seed List for 1877.

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EVERY DESCRIPTION OF HORTICULTURAL and AGRICULTURAL SEEDS. SEED POTATOES of best quality, both Home-grown and Imported.

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H. CANNELL begs to announce that he has a splendid stock of the following, established in 60's, just ready for planting :—
CALCEOLARIAS, 9s. 9d. per dozen.
PRIMULAS, 2s. 6d. per dozen.
CINERARIAS, 2s. 6d. per dozen.
Smaller, 1s. per dozen less, and post-free. Special prices per 100 or 1000. H. CANNELL, Swanley, Kent.

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At the Royal Nurseries, Merriott, Somerset, every description of Nursery Stock is grown largely, and at Scott's Royal Seed Stores, Merriott, choice Seeds, Bulbs, and every kind of Garden Requisite may be obtained.

Tree Ferns—Tree Ferns—Tree Ferns.

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For SPRING, 1877.

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Price 1s., Post-free.

Gratis to Customers or intending Purchasers.

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Contains 112 pages of beautifully illustrated Letterpress, with two superbly finished Coloured Plates, Original Articles on] the Rearing and Cultivation of various Garden Crops and Flowers, and complete Instructions for the successful Management of the Kitchen and Flower Gardens throughout the year, together with a Select List of choice Kitchen Garden and Flower Seeds, Seed Potatos, &c.

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The Royal Norfolk Seed Establishment,
NORWICH.

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R. DAVIS, having arranged to take the Business belonging to the late Mr. E. Pierce, begs to assure the Nobility, Gentry, Clergy, and the Public generally, that it will be his constant endeavour to merit a continuance of those favours bestowed for so many years upon the late proprietor. Prompt attention and every care will be given to all orders entrusted to him.
R. R. D. begs to offer a quantity of large ARBOR-VITÆ, 8 to 10 feet, CEDRUS DEODARA, WELLINGTONIA, THUJAS, LIMES, 8 to 12 feet, and a large assortment of TREES and EVERGREENS for Ornamental Planting; having been periodically transplanted will remove with perfect safety. MAGNOLIA GRANDIFLORA, Exmouth variety, extra fine, 3 to 4 feet. LAURELS, Standard Portugal, extra fine, at a very low price. Will remove well.
R. R. DAVIS (late E. Pierce), Yeovil Nursery and Seed Warehouse, Yeovil.

Australian Plants and Seeds.

EUCALYPTUS GLOBULUS, PALMS, CYCADS, FERNS, and all kinds of PLANTS and SEEDS indigenous to Australia, Fiji, &c., supplied on the most reasonable terms. Priced CATALOGUES and Special Quotations on application.
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WHOLESALE OFFER
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100,000 FIR, Larch, 4-yr., 9 to 12 feet, twice transplanted.
730,000 FIR, Larch, 3-yr., 1½ to 2 feet, and 1½ to 2½ feet.
20,000 SYCAMORE, 3 to 4 feet, fine.
30,000 BIRCH, fine, 2 to 2½ feet, and 2 to 3 feet.
20,000 LAUREL, common, 2 to 3 feet.
12,000 LAUREL, Portugal, 2 to 3 feet, extra fine.
2,000 PINUS AUSTRIACA, 3 to 4 feet, transplanted spring, 1875.
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SPECIAL OFFER.
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FRUIT TREES.	FOREST TREES.
Kentish Cob Nuts.	Elms, four kinds
,, Filberts.	Laburnums
Morello Cherries, std. trained	Limes, very stout
Damsons	Mountain Ash
Grape Vines for outdoors	Poplars, Silver
Mulberries	,, Lombardy
Pears, dwarf trained	,, Ontario
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2-yr.	Thorns, all sorts
Finely rooted and well-grown	CONIFER.F.
EVERGREENS.	Biota elegantissima
Aucubas, 2 to 6 feet	Juniperus sinensis
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hardy and cheap	,, sylvestris
Evergreen Oaks	Yuccas, sorts and sizes.

Also a splendid lot of Daphne indica rubra, set for bloom in most cases; Ceanothus azureus, and the fine new Cenothus Gloire de Versailles; home-grown Cucumbers and Melon Seeds.
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Containing only popular kinds of easy growth, which will make a pretty and effective show during the summer months. 5*s.*, 10*s.* 6*d.*, 21*s.*, 31*s.* 6*d.* and 42*s.* each.
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1877

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KING'S ACRE, near HEREFORD,
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The bulb may be potted in the same manner as a Hyacinth, or as any ordinary autumn bulb, started steadily into growth, they will produce a brilliant display in the conservatory. We believe the plant to be hardy, or nearly so, and when planted out it will flourish and bloom during the summer out-of-doors. To the great beauty of the flowers is added the attraction of a very fine and noble foliage. See also description in *Gardeners' Chronicle*, October 21, p. 530.
We have imported extraordinary large native bulbs of this magnificent novelty, which are in finest possible condition, and which will produce an abundance of flowers. Price, each or per dozen, will be given by every Seedsman and Nurseryman. Wholesale prices of Messrs. Hurst & Son, 5, Leadenhall Street, E.C.; and F. SANDER AND CO., SEED GROWERS, ST. ALBANS.

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PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 8 inches at 4 feet from the ground.
LIMES, 12 to 20 feet high, and girthing 6 to 10 inches at 4 feet from the ground.
POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 6 inches at 4 feet from the ground.
ANTHONY WATERER
Has to offer many thousands of the above. They may be seen growing at Knap Hill. They are straight, handsome, and well rooted, and altogether the finest Trees of the kind to be found in any nursery in Europe.
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BLOOMING RHODODENDRONS.
Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18*s.* to 30*s.* per dozen.
Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.
Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12*s.* and 18*s.* per doz., or £5 per 100.

HARDY AZALEAS.
The finest English and Ghent varieties, splendidly budded, £5 to £7 10*s.* per 100, or 18*s.* per dozen.
ANTHONY WATERER,
KNAP HILL NURSERY, WOKING, SURREY.

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ESTABLISHED 1810.
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PRICED AND DESCRIPTIVE CATALOGUES.
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Fruit Trees and Roses, selected.
DWARFS, DWARF-TRAINED &c
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FOR PEAT AND LOAMY SOILS.
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FIRST CLASS AND SPECIAL CERTIFICATES
THE CLEMATIS AS A GARDEN FLOWER
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SUITABLE FOR LAWNS
Rare and Hardy Conifers Special Size and Price List
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Trees and Shrubs Evergreen and Deciduous
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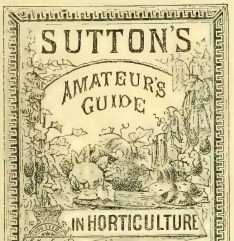
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SATURDAY, JANUARY 6, 1877.

TRAINING AND TYING PLANTS.

AS the season when the annual process of retying hard-wooded plants in particular has arrived, it may not be out of place to say a few words on the subject. The very different manner in which pot plants generally, and more especially those of a hard-wooded nature, are now grown from what they were before taken in hand by the exhibiting growers, has necessarily made this work considerably different from what it once was. There are many who will recollect that these subjects were usually seen cramped for years in undersized pots, spiring upwards, with a few gaunt branches and bare stems, with perhaps a single stick to support each starveling, which generally exhibited so little in common with its natural form and habit of growth as to be somewhat difficult of recognition. This, be it remembered, was the case with a class of plants which when in a state of Nature mostly assume a low-spreading, bushy habit. This form is so changed by the influence of under-glass cultivation in even the best constructed light-affording houses we can give them, that unless counterbalanced by timely stopping the leading shoots, so as to direct and distribute the sap into the lower lateral branches, a straggling, objectionable growth is the result. When, however, by judicious treatment, a plant is so grown as to consist of a large number of branches, generally of slender character, it naturally follows that these require some support, hence the necessity for sticks and ties; but in the use of these it should ever be borne in mind that they belong to the category of things that are generally designated as necessary evils.

Sticks should never be used in greater numbers than are absolutely necessary to keep the branches sufficiently open to admit the requisite light to the inner portion of the plant, to support it in the shape most conducive to maintain it in a healthy, well-clothed condition of foliage, and to display the flowers to the best advantage. There is one other and very important consideration, that must be taken into account in determining the more or less support that a plant requires; that is, the particular purposes it will be wanted for. Plants that are only intended for home decoration, and have not to be moved about further than from one house to another, need a comparatively small number of sticks, and still fewer ties, than such as, in addition to doing duty at home, have to be conveyed a considerable distance to exhibitions. Such plants as Azaleas, the branches of which are naturally stout enough to support themselves in the desired position, after they have been trained to the desired form and have acquired strength and substance, need very few sticks when only wanted for home use. Eriostemons, again, are comparatively stout-wooded plants, and do not need so much tying as many things; neither do Darwinias (Hedaromas), although each of the strongest shoots will want a stick: the smaller lateral growths do not require securing. Of Epacrises, also, the flowering wood looks better when not too stiffly tied; Acrophyllum venosum is another stout-wooded subject, that when not to be moved about much wants no more tying than may be sufficient to preserve the

outline reasonably; the same may be said of Adenandras, Cassia corymbosa, Correas, Croweas, Diosmas, Hoveas, Desfontainea spinosa, Dillwynias, Boronias, Daphne indica, Witsenia corymbosa, Statices, Pleroma elegans, Pimeleas, Phærocomas, Mitraria coccinea, and the strong-wooded Heaths, such as Cavendishii, depressa, and the vestitas, or any others of similar growth, which only need as many sticks and ties as will hold them in position, and keep them furnished with leaf-clad shoots down to the pot. Naturally weak-wooded plants, such as Dracophyllum gracile, Chorozemas, Aphelexis, Leschenaultias, Roella ciliata, Swainsonas, and Tetrathecas, must have more support, merely to keep them from hanging about in an untidy manner. There are also very many Heaths so weak-wooded that if a considerable number of sticks be not used they cannot be kept in shape at all, even if never moved off the stage of the house in which they are grown.

In the case of plants for exhibition we sometimes see the quantity of sticks used for training carried to such an excess beyond what is really necessary as to make the plants hideous to look upon; and to stamp those who thus torture them as totally devoid of the slightest notion of artistic taste, however capable they may be of so treating their plants as to preserve them in a healthy condition. This over-training is most objectionable when it extends so far as tying flat down the points of the flowering shoots in a horizontal position all over the surface of the plant. The operator may think he secures his aim in displaying the quantity of flower most conspicuously, but it simply makes what otherwise might be a meritorious specimen look wretchedly bad. But although tying should never be carried to such an extent as this, still with plants that have to be subjected to the shaking unavoidable in conveying them to an exhibition in the best constructed vehicle, it is absolutely necessary that as many sticks and ties should be used as will keep every shoot in its proper place, and the whole of the flowers from chafing. Otherwise, even plants with hard flowers, such, for instance, as the Cavendish Heath, will be so injured as to turn them black, and with the far greater number of things literally grind them away, and this when only a few miles have to be traversed. It will be needless to say that the evil is much aggravated when long distances have to be gone over. If any one who has not had experience in this matter has any doubts about it, and will just try the experiment of moving a loosely tied plant only a few miles, he will get enlightened on the subject.

Many a gardener has had his exhibiting career cut short through his plants coming home disfigured for want of being sufficiently tied. We have frequently known gentlemen anxious to support horticulture, and also encourage their gardeners, and equally desirous of giving the public an opportunity of seeing fine plants, yet they were so disgusted at the condition in which their plants returned from the shows that they put a stop to exhibiting altogether. The amount of tying indispensable to the safe carriage of flowering plants is much greater than those who have not tried it are aware of; the shoots must of necessity be secured in a way that deprives the plants to a considerable extent of the loose elegance that can be allowed them when they have not to be moved further than necessary for home use. This is what some of those who give us their views upon plant tying, and condemn the work of exhibitors, never appear to be able to comprehend. We are from time to time favoured with the ideas of those who generally indulge in a sweeping tirade against the bad taste displayed by exhibitors in the way they tie their plants. If these would-be critics do not succeed in convincing those they essay to enlighten and who have had ample opportunity of judging in the matter, they at all events manage not only to display a total absence of practical knowledge of the subject they treat upon, but also show their want of ordinary perception in not being able to discriminate betwixt the training necessary to give the plants required for home use, apart from such as have to go through the severe jolting unavoidable from their being moved even a moderate distance.

But, although this operation needs to be so far varied for the different purposes plants are required to fulfil, when they have arrived at a considerable size, yet in the early stages of their existence the training they need is identical. Unless the branches, especially the strongest, are well and regularly tied out in a horizontal position low down from a little above the collar, the foundation for the future specimen can never be satisfactory, inasmuch as the plant will, whilst in a comparatively young state, get bare at the base; but when from the commencement the branches are properly placed so as to distribute them equally in the desired positions, the after-treatment in tying is simple, and should be carried out just so far, and no farther, than the particular purpose the plants are wanted for demands. The support that pot plants in this way require is simply a necessity resulting from the highly artificial conditions we force them to endure; and the more we can conceal the hand of art thus inseparable from their existence, the greater measure of success we attain.

A SPRING TOUR IN ITALY.

THE summer and winter climate and vegetation of the plain of Lombardy present greater contrasts than do our English seasons. A descent from the Alps at midsummer brings you at once into the midst of tall Maize, fields of ripening Rice, and hedgeway rows of Mulberries in luxuriant leafage intertwined with Vines which have nearly completed their season's growth.

From the refrigerating influence in winter of the snow-covered Alps forming its northern boundary, little or no difference can be observed up to the middle of March between the spring vegetation of the northern Lombardy plain and that of England, and late frosts even in May occasionally do serious damage. On February 26 heaps of snow were lying in the garden of the grand Hôtel de Turin; the plain of Lombardy was seared and soddened by the winter scarcely over, and Galanthus nivalis in the hedgerows and Eranthis hyemalis in the fields were the only indications of coming spring.

A night journey from Venice brought me at daybreak on February 27 to the head of the Adriatic, with the calm land-locked Gulf of Monfalcone far below the level of the railway to the right, and to the left long parallel ridges of oolitic and cretaceous limestone full of little lakes and waterlogged hollows trend away to the south-east as an irregular stony tableland, the home of a rich and special flora.

This configuration holds good for nearly 300 miles down the east coast of the Adriatic, and has determined the outline of the archipelago of parallel islands off the Dalmatian coast. The isolated hollows or complete rock basins seen on the east side of the railway are not unfrequent in calcareous rocks, and are the result of the gradual dissolution of the limestone through swallow-holes or underground channels, of which the neighbouring cave of Adelsberg is a gigantic example. I am informed by Herr Max Leichtlin that it is in similar hollows that Lilium dalmaticum occurs in the neighbourhood of Cattaro, further south. Monfalcone is interesting to the botanist in being one of the most western habitats of the beautiful Crocus reticulatus.

From the flat alluvial plain at the head of the Adriatic the railway gradually ascends past Monfalcone to the Nabresina junction, where the line to Trieste branches off. The approach from this point to Trieste is most striking; the line winds down the western face of the escarpment, the vegetation of which is notably different from that of the barren summit. Salvia humilis is a most abundant indigenous plant, and several species of Euphorbia clothe the rocks. The steep bank between the railway and the edge of the gulf is densely clothed with plantations of Olive, of unusual vigour and size. Trieste, with its forest of masts, is seen for miles before we reach it, far below us. We pass above the marine villa of the unfortunate Emperor Maximilian, and look down hundreds of feet into the Adriatic waters, now quiet and smooth as glass, in the early morning dotted over with fishing boats, and fringed with spiral sardine nets spread out from the shore, and nearly land-locked by the pretty outline of the Italian and Istrian coasts to the west and south. We quickly descend down the escarpment, through tunnels and across viaducts, into the busy port, full of life and dirt, the great maritime outlet of the Austrian empire, through which over twenty millions of imports and exports pass during the year.

TRIESTE.

The city stretches up from the water's edge to the foot of the great oolitic escarpment, here about 1000 feet high, flanked by neocomian beds, mostly consisting of dark grey marls, which lie at a high inclination against the upturned edge of the oolitic rocks, forming the limestone plateau known as the Carso.

Chevalier Tommasini, the Governor of Trieste, has formed an interesting little botanical garden on one of the hills overlooking the city. It contains representatives of the local flora and the plants of Istria and Dalmatia. Very few species were yet in flower, but patches of an elegant Galanthus, from the neighbourhood of Pirano, in Istria, formed striking features. The entire plant is quite twice the size of Galanthus nivalis, with long perianth segments, and may possibly prove to be distinct. There were also in the garden some of the local Croci, including some brightly coloured varieties of Crocus Weldeni just expanding.

On Monday, Feb. 28, M. Tommasini kindly accompanied me on a botanical excursion over the Carso plateau to the east of Trieste, rich in rare plants though few species were yet in flower. It consists for the most part of a great treeless wilderness of limestone, with escarpments facing west and dip slopes to the east. One of the highest points is known as Mont Spaccato, and on the eastern slopes there are here and there low woods, principally of Oak, the most extensive of which is the Lipizza Forest, but the greater part of the Carso is devoid of arboreal vegetation, except near the villages, where M. Tommasini has established plantations of Pinus austriaca, thriving well on the limestone, though not indigenous.

Amongst the plants of the Carso may be enumerated Pæonia peregrina, Lilium carniolicum, Helleborus viridis, Gagea pusilla, Potentilla subacaulis, and Fritillaria montana. The association of the two latter plants is interesting, as they occur in similar association on the Plateau des Rochers above Grasse, 400 miles to the west, though I believe neither species occurs within 300 miles in the intermediate district.

The Carso forms a western starting-point for many species which have a wide eastern distribution. It is the most western habitat of Crocus reticulatus (C. variegatus of Hoppe and Hornsch), which extends to Podolia, Asia Minor, and the Caucasus. It occurs in profusion in the Lipizza Forest, on Mount Spaccato, and near the villages of Opsina and Prosecco, varying with lilac and white flowers, externally striped. The corm-coats are densely enveloped with wire-like reticulated fibres. Dean Herbert erroneously associated it with the Crimean Cloth of Gold Crocus as varieties of the same species, but the two differ materially, not only in the colour of the flowers, but in the character of the corm-coats and the form of the limb, which is much narrower and more acute in reticulatus than susianus. Opsina is also the habitat of the beautiful diminutive Crocus albiflorus of Gay—a miniature form of Crocus vernus.

Prosecco, further to the north, is the most western habitat of Crocus Weldeni, which extends south-east for several hundred miles down the Dalmatian coast. It has been associated with C. biflorus as a variety, but as it resembles the typical form of biflorus only in its having annulate corm-coats, its title to specific rank seems to me very strong. The form of the limb is almost rhombic; the prevailing colour white, but examples occasionally occur beautifully flushed with brilliant lilac and purple. A small form of Galanthus nivalis occurs abundantly on the Carso, and Cyclamen europæum in the Lipizza Forest.

On Feb. 29 I made a short excursion by steamer

to Pirano and Stromana in Istria, passing large flocks of wild swans resting on the water. Sturgeon are here most abundant, and we had on board a large cargo of huge spider-like crabs, with legs spanning nearly a yard, which seem to be the prevailing crustaceans of the Adriatic. A walk from Pirano to Stromana afforded nothing of particular interest except the large form of Galanthus nivalis observed in M. Tommasini's garden, and Primula vulgaris with white flowers. On the evening of the same day

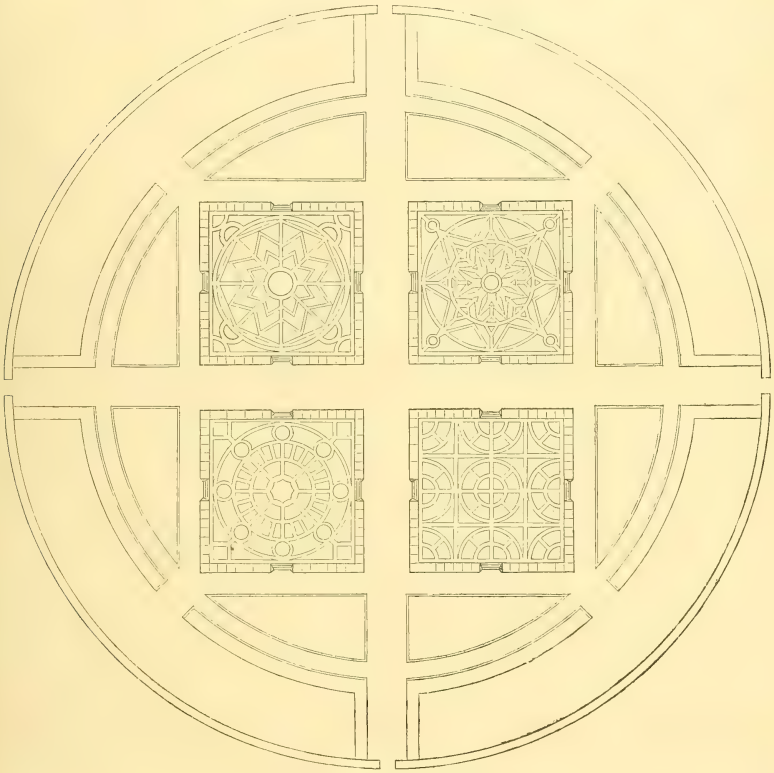


FIG. 1.—ORIGINAL PLAN OF THE BOTANIC GARDEN AT PADUA.

taken from an old drawing by Gerolamo Porro, made in 1591, and preserved in the lecture gallery at Padua—for a copy of which I am indebted to Professor Visiani—represents the original plan of the garden then limited to the circular space. The little geometrical compartments or flower-beds are fenced off by neat stone partitions environing spaces from 2 to 3 feet across, each apparently intended for a single species. The arrangement of the masonry has since been somewhat altered, and made more simple; a conservatory now

Göthe's reference to the plant is inscribed over the building:—

Giovanni Wolfango Goethe
Poeta e Naturalista
Di qui trasse nel MDCCLXXXVII.
Il concetto e le prove
Della sua Metamorfosi delle Piante.
Roberto de Visiani
Perche non mancasse a' posteri
La Palma che la ispirò
Ni ripiarava nel MDCCLXXIV.
La vetustà gloriosa.

Many other trees in the garden betray great age,

I left Trieste by steamer for Venice, arriving at Padua at 10.30 on the following morning.

PADUA.

A walk of about a mile from the station through the picturesque arcaded streets brings you to the great church of Sant' Antonio, towering over the portals of the little botanical garden (see previous illustration, p. 685, vol. vi.), so interesting to the horticulturist as being the oldest botanical garden in Europe, and as recording the mediæval sentiment of associating stone masonry and gardening, which are here mixed up in a charming manner. The accompanying engraving (fig. 1),

encircles the northern half of the old garden, and the extensions outside the original circle must, judging from the age of the trees, have been made within a few years of the founding of the garden, under the direction of Cisalpino, in 1500.

The garden contains several plants of historic interest—grand specimens of Bignonia radicans and Chamærops humilis, referred to by Göthe in the supplement to his essay on Metamorphoses, which indicates that he was less of a naturalist than a poet. The Palm is 8½ metres in height, branched into seventeen growing points, and is yet in full vigour, protected by a small conservatory. The following record of

amongst them a huge stump of Platanus orientalis, 24 feet in circumference, bearing a little leafage. The dying embers of a life of 180 years, a grand old specimen of Celtis australis, is in a similar condition; indeed, the whole place, so interesting in its antiquarian associations, is saddened by an aspect of decay aggravated by present neglect. The untutored tangled growth of a wild garden has its charms, but where the features of the garden are ordered by rigid architectural precision, the utmost neatness of detail is essential to a satisfactory result. Nothing can be more charming than the laying-out of the little circular "garden of simples" at Padua, each prettily formed

compartment intended for a special occupant, and the whole space grouped pleasantly to the eye, but its disorder as a garden, and the weedy paths and empty spaces, where symmetry and order are essential to the original scheme, is most depressing.

I was also disappointed with the culture in the glass-houses, and the same remark is applicable to every garden I visited in Italy; indeed, the Italians are far behind northern Europe in greenhouse gardening: this is partly due to the bad structure of the houses. Few of them have top lights, and many have glass but on one side; the occupants under such circumstances are invariably lanky and drawn up, and bear the aspect of having spent their lives in trying to look out of the front window. One notable exception is the magnificent specimen of Araucaria excelsa, which has a pagoda-like structure to itself. It was planted in 1840, and has attained a height of between 50 and 60 feet, symmetrically branched down to the very base. Out-of-doors, even in the south of Italy, the Norfolk Island Pine does not seem to thrive; none of the specimens I saw will compare with those in Portuguese gardens. Their growth is evidently slower than in Portugal, and when attaining any size they get a rigid unsymmetrical aspect. Araucaria imbricata does not seem to flourish, and good symmetrical specimens are seldom seen in Italian gardens.

Of the trees in the garden, Cupressus pyramidalis forms striking features within the original circular space, and there are also fine examples of Cupressus funebris, Abies cephalonica, A. excelsa, Pinus Laricio, P. Strobus, Taxodium distichum, Cedrus Deodara, with straight undrooping branches, resembling in habit the Cedar of Lebanon; also Magnolia grandiflora, Diospyros virginica, Juglans oliviæformis and J. niger, Crataegus glaber, Ligustrum japonicum, and Mahonia japonica, 16 feet high. Thuja orientalis is used for forming high fences for shade, and bears close training into wall-like masses. A singular result has been produced by grafting Tilia argentea on Tilia europæa at about 4 feet from the ground; the trunk of the graft, 2½ feet in diameter, having outgrown the stock of T. europæa, which is barely half a yard across, producing a most singular top-heavy appearance.

The little arboretum outside the circular garden contains for its size a good collection of trees, but many of them are long past their prime, and suffering prematurely from want of space; and the dense contiguity of the older trees would render renewal by planting almost impossible without first cutting down the greater part of the original collection. This is a point which seems to have been lost sight of in the planting of almost all the earlier botanical gardens.

From Padua I proceeded *viâ* Bologna and across the Apennines to Florence, which I reached the same evening, and in my next I purpose sending you a few notes on Florentine gardens. *George Maw, F.L.S.*

THE BULB SEASON OF 1876.

THE bulb season of 1876 can hardly be considered quite so satisfactory as several of its immediate predecessors. For several years past this branch of trade has been rapidly extending, and notwithstanding the large quantities annually sold to cheap buyers at the various auctions, legitimate traders have had no reason to complain. The choicest and most expensive varieties must always be procured from respectable dealers, while the auctions, by making these articles more widely known, increase the demand for the popular and cheaper sorts.

There are several reasons why there has been a somewhat diminished demand this season, but the principal reason will be found in the general stagnation of trade, and the disquieting war rumous which from time to time have filled the hearts of lucky (?) bondholders with gloomy apprehensions lest some very interesting coupons should be conspicuous by their absence, or at the best appear considerably reduced in value. This was especially the case during the months of August and September, when the first importations of bulbs usually arrive, and the trade is generally brisk. The regular orders made their usual appearance, but in a somewhat modified form, while the elasticity of trade has been altogether wanting.

Glancing briefly at the principal items, we begin as usual with the Hyacinths. The demand for the choicest varieties has been very limited indeed. The cheaper and better-known named sorts have had a fairly good sale, while the bedding kinds sold very slowly until the beginning of the present month, when a slight revival in trade became apparent, and most dealers have now cleared out.

Tulips, next in importance, have shared a somewhat similar fate. High-priced sorts have been almost ignored, but the cheaper kinds have sold fairly well. An exception to the general depression is to be found in the demand for the late border section of this handsome order of bulbous plants. For some years past these have been gradually increasing in popular favour, and this year is no exception to the rule.

It would be well if an effort were made to obtain a dwarfer habit in these magnificent flowers, seeing that the long fleshy stem on which the flower is borne is liable to be snapped by the first gust of wind, unless a covering (which is generally unsightly) has been provided. Mr. Grindon and his enthusiastic coadjutors in Lancashire might take this matter up, and by this means render a service to the whole of the horticul tural world, and enhance the interest in these beautiful flowers.

Narcissi have again become a drug. The somewhat unaccountable increase in the sale of these last year has been fully compensated for by the diminished sale this. The disease affecting them may have had something to do with it, as it is not very encouraging after paying a long price for a bulb to find it rotten when it should have been gay with bloom.

Crocuses generally have sold very well. It seemed at one time that they would be left on hand, but the contrary has been the case, and it is questionable if such a complete clearance has been effected during the past twenty years. The prices of Crocus have been very moderate, and this may be one reason why they have so readily been sold.

Snowdrops, having for several years steadily increased in price, have at last, like the camel's back, succumbed to the last straw, and the advertisement columns of the *Gardeners' Chronicle* best tells the tale of a large surplus as a necessary consequence. Reckless speculators are alone to blame for the mischief which, unfortunately, falls on other shoulders besides their own.

Anemones and Ranunculuses are steadily increasing in popular favour, and have sold very well. The new French varieties of the former are a vast improvement, both in colour and size of bloom, on the Dutch-grown roots hitherto offered.

Amongst miscellaneous flower roots those principally used for early forcing occupy a prominent place. The leading articles are Roman Hyacinths, Narcissus totus albus, Hoteia japonica, and Lily of the Valley. The demand for all these increases every year, and does not seem to be liable to the same fluctuations as other branches of the trade.

It is worthy of note that all these produce white flowers, and it is further noteworthy that the white varieties of Hyacinths, Tulips, &c., have been more in demand than any other colours. Why this has happened it is not very easy to define, but the fact doubtless has some significance.

The quality of the bulbs has been generally very sound and good. The hot, dry weather in June and July thoroughly ripened them, and, as far as this is a reliable guide, the results cannot fail to be of a very satisfactory character.

On the whole things might have been worse. A little rest is needful for all things; the check in trade is only of a temporary nature, and should the difficulties which now bar the expansion of civilising and elevating commerce be removed, the love of the truly beautiful, which is fast permeating society in all its classes, will manifest itself with redoubled vigour, and claim larger supplies of these by no means insignificant adjuncts to its full development. *S. B. D.*

WHICH ARE THE BEST LATE GRAPES?

As you invite the opinions of correspondents on the above question I have sent you a few examples of the varieties I consider the best as grown here. The bunches I intend sending you of them are only small, as economise space, but you will be able to judge of the flavour of the berries all the same.

As to the different varieties of the Muscat of Alexandria, there is no doubt but that they are the best-flavoured white Grapes grown; but they can hardly be termed very late Grapes, for it is only in exceptional cases that they keep till the end of January without shrivelling too much.

To commence with the very late Grapes: Lady Downe's, of the black section, is the latest keeping sort grown, but its hard flesh is not relished by some, especially invalids. I have kept it, however, in some seasons, in bottles of water until the middle of June, and in good condition.

I send a bunch of a seedling black Grape raised from a cross between Lady Downe's and West's St. Peter's, and which has the quality of keeping till April in good condition. It is distinct from any other variety which I know, by the purplish colour of the young wood and midribs of the foliage, and bears bunches something like those of Lady Downe's in having a shoulder nearly as large as the bunch itself. In flavour it resembles West's St. Peter's, but its berries are larger and oval-shaped; they are not however now so well coloured as last year.

West's St. Peter's is still one of the very best late Grapes grown for its delicious vinous flavour, and although not a show Grape, no collection should be without it.

Burchardt's Prince is with me an excellent late keeping variety, and in flavour something like those of the St. Peter's section.

The Black Alicante, although one of the finest late show Grapes grown for its fine compact clusters, large berries, and fine jet colour, is yet, as grown by me, never of the flavour of the above-mentioned sorts. It likewise, when it begins to shrivel, seems to lose its sweetness, and gets watery and insipid.

Gros Guillaume, when well ripened, is an excellent keeping Grape, especially if the bunches are not too large, and it is not to be despised for its flavour when kept very late in a dry and equable temperature.

In addition to the late varieties of black Grapes I have sent a small bunch of the Mill Hill Hamburgh, a variety that keeps longer with me than any other of that section, being firmer in its flesh, but the Hamburghs in general are not very late keepers.

Of the section of the latest keeping white Grapes the Royal Vineyard with me keeps quite plump and good till the end of April. This variety has been discarded by many growers for its hard flesh and flavour, but when well ripened it will be found in March and April very useful both for flavour and variety in the dessert dishes.

Trebbiano is one of the best late-keeping white Grapes known, a very vigorous grower, and produces enormous bunches when grown well. I believe some forty years ago I first introduced this variety into general cultivation, having got it from the late Mr. Mearns when he left Welbeck. He grew it originally at Shobden Court, in Herefordshire, where, as I understood him, it was received from Italy. It requires the temperature of the Muscats to ripen it well, and to be kept dry, or its large bunches will get mouldy, and the berries spot and damp off.

The old Tokay is a late variety that keeps well with me till March. Its flesh is very firm, and the berries not very highly flavoured, but it is useful when white Grapes are wanted for variety.

Muscat of Alexandria, as above stated, is the best flavoured of all late white Grapes, but it is always shrivelled with me, and used before the others above described are commenced cutting. *William Tillery.*

[The Muscat of Alexandria certainly stands at the head of the list of white Grapes. Then comes Royal Vineyard, according to our estimate of the samples sent; and finally, but considerably behind, Trebbiano and Tokay. The black sorts are not so easily placed. Gros Guillaume and the Mill Hill Hamburgh have a certain resemblance in flavour, and will best please those who like sweet Grapes. The seedling named above, with West's St. Peter's, and Burchardt's Prince, are more acid, and will suit some palates better than the other sorts. Lady Downe's was not sent, and Alicante was decidedly inferior. Mr. Tillery's seedling is a fine-looking Grape, one of the best of the above as to preservation, and scarcely, if at all, inferior to West's St. Peter's in flavour. EDS.]

——Mr. Grieve's experience with late Grapes, as recorded at p. 836, vol. vi., is nearly identical with my own. I have at this time, December 29, two large vineries full of late Grapes: I have this day tasted and noticed them all. I find Lady Downe's No. 1 both for plumpness and appearance. Black Alicante is firm in berry and bunch, but has just begun to shoot. Mrs. Pince's Black Muscat for flavour beats them all, but that objectionable foxy colour gives one clear and important point to the Alicante. The very look of a bad coloured Grape is hateful, and on this score I put Alicante before Mrs. Pince's. To please the palate of your employer is no doubt an important item, but to please his eyes is, to my way of thinking, quite preferable. Barbarossa is plump and good, but it is not an accommodating Grape, wanting too much room. In white Grapes we have nothing here like Trebbiano. *R. Gilbert, Burghley.*

BOTTOM-HEAT: ITS USE AND ABUSE.

THAT bottom-heat is one of the most powerful and essential aids to growth, few will deny—that it is capable of being used in excess, and applied at the wrong time, must also be admitted; but there does seem a danger of making the abuse of this potent cultural force the occasion of a series of onslaughts on its legitimate use. The several cases recorded by Messrs. Baines, Wildsmith, and, if I remember rightly also a year or two ago by Mr. Tillery, are no doubt vivid illustrations of the evil effects of an excess of bottom-heat applied at the wrong time. In each of them there was a twofold cause of failure—the amount of heat was in excess, as well as the heat itself out of season. The excess is proved by the fact of the stronger state or healthier condition of the Vines at the ends of the houses. Supposing, then, that no part of the borders had been made hotter than these two extremities, there is no proof that the bottom-heat would have proved injurious. Without greater precision as to absolute temperature, it is quite a logical and legitimate inference to assume that the fermenting dung and leaves were heated to excess, to the inevitable injury and enfeeblement of the Vines. We all know how exceedingly capricious and even violent the most staid-looking fermenting materials often become within the shortest period of time, and at the most unexpected seasons and places. The term bottom-heat itself needs definition, and the amount of it employed recording, before such failures as those referred to, can assume much scientific importance or practical value. By bottom-heat let us understand, once for all, a temperature equal to that of the air, or 5° Fahr., or at the most 10°, in advance of the atmosphere in which the Vine or other plant was or is resting or growing. Are your able correspondents able to affirm that this difference was not exceeded? If so, then we must either admit the cogency of their reasoning, or find some other and better explanation of their facts. But if not, then it is but reasonable to assume that the evils recited were caused by an excess of bottom-heat, and cannot be accepted as any reasonable argument against its legitimate use.

My friend Mr. Baines will, I am sure, excuse me for finding proof in his article that by bottom-heat he means a good deal of it, for in the two last paragraphs of his lucid paper he writes quite seriously about growing and flowering stove plants better without bottom-heat than with it. From this it is obvious that the "champion cultivator" does not consider an equality of terrestrial and atmospheric heat bottom-heat. Possibly he would say all excess of terrestrial over atmospheric heat was bottom-heat. If so, then almost everything turns on the answer to the questions, How much in excess should the bottom-heat be over the top to prove useful? and at what point in advance of it does it cease to be useful and become injurious? And, further, What was the amount of difference between the temperature of the tops of the plants and the roots in the cases referred to? It may be too much to expect exact data, but without some approximate estimate of the difference, the experiments recorded prove nothing whatever but the injurious effects of an excess of bottom-heat. It is no extravagant supposition to assume that the layer of fermenting materials was as much as 90°, while the heads of the Vines were in a temperature of 45° at starting; and, if so, the results would of necessity be as described by your correspondents.

It may be added that most of the zealous advocates of bottom-heat for Vines are quite content with a measure of it, which somehow our friend writes down as none at all. That is the having the roots in the same temperature as the tops, which of course is the happy condition of all stove plants.

But another cause of failure is the employment of the bottom-heat at the wrong time. Though it is difficult to point to any season when the roots are at rest, and it would be easy to prove that they are abnormally active at the descent of the sap, yet the natural activity and extension under the influence of descending fluids is a widely different thing from an abnormal activity of root-action set up and sustained by the warmth and the moisture of artificial heat from fermenting materials, two months or so before the tops were ready to start. The difference between the character and unction of these two sets of roots, the natural and unnatural, is as wide as the Poles asunder; the natural roots are vicarious chiefly, the unnatural are selfish wholly; the first serve the Vine, the second feed themselves, the first strengthen, the second weaken. The mission of the first roots is to fill the Vine with strength and all good things; the second empty it and rob it at all points; for it must never be forgotten that natural currents, as well as natural functions, may readily be reversed in such plants as the Grape Vine under unnatural conditions. For instance, it is the legitimate function of roots to collect and convey food to and for all parts of the Vine, but develope an abnormal activity in the roots out of season, and they then drain the stems and branches of vital force and available food—for currents are reversible in vegetable tissues without inconvenience, and fluids have the power of flowing in any direction where there is an active outlet. Hence roots started out of season, or so long in advance of the top, finding no demand in a natural direction, set up the business of accretion and extension on their own account—supplies are drawn by the roots downwards, instead of through the tops outwards. The buds and stems are impoverished before starting, and when they do start they have to reverse an established order of policy and practice, arrest a downward current leading to destruction, and establish an upward or constructive growth. To take a favourite illustration in morals—correct enough for our purpose—to train a virtuous child is like starting to develope a character on a clean sheet of paper. To educate a vicious lad there is much of the past to be erased before a start can be made in the right course. It is almost precisely so with the Vine. Start top and bottom almost abreast, and all is smooth sailing. Start the roots long in advance of the top, and all the established currents of life have to be stemmed and turned by the ascending fluids. Nor is it any wonder that the plant should be worsted and weakened in such a struggle. But my point here and now is, that the struggle, and its legitimate results of weakness prove nothing against bottom-heat, only that it was out of season.

The cases as recorded do not even show that bottom-heat may not be applied slightly in advance of top-heat, only that in these cases there was too wide an interval between the two. The whole question, in fact, under this head turns on time, as under the first it resolved itself into one of quantity. It might, for instance, be wise and helpful to apply bottom-heat to the roots of Vines a week or ten days before the tops were started, but it by no means follows that, therefore, it would be wise to subject them to a vapour-bath of steaming fermenting materials one or two months before the command was given to the top to loose it from the restraining fetters of dry and cold air, and let it go into the warmth of a genial and growing atmosphere.

No, your useful hints upon the nature of evidence, and even the meaning and weight of facts, would teach us better logic than to come to the conclusion that bottom-heat itself was evil, on the slender and even irrelevant basis that it led to failure when used at the wrong time, and to excess. To counsel that outside Vine borders should have no covering at any season, but merely enough to exclude frost and shoot off the rain, is going a long way on the other side of bottom-heat, and virtually recommending that the Vine roots be in a much colder medium than their heads.

In fact, this, as I understand it, is the inference drawn by Mr. Baines from Nature. Nature is many-sided, and has many voices; hence, I assume, my different reading of her teachings in this matter. Nature uses bottom-heat abundantly, and so determined was she to have the roots made comfortably warm, that she took special pains not to sensibly warm the air by the passage of the sun's rays through it, but first of all to warm the surface of the earth, and then make that, root-filled as it is, her great warming-pan for the heating of the air. In full view of the fact that heat travels slowly downwards, —which, however, tells both ways in this argument—it is impossible not to see in this simple arrangement that Nature took the most forcible means in her power to keep the roots of plants warm, and experience and experiment alike show that she has provided abundance of bottom-heat.

It is needful, however, to bear in mind that these views must not be interpreted as advocating an excess of bottom-heat. It will be found in practice that, as near as may be, an equality of terrestrial and celestial heat results in the strongest growth and the finest produce and if there is to be a difference in degrees of temperature the roots may safely have it within the moderate limits already stated. The chief danger, under our highly artificial modes of treatment—with the heads of our Vines in the tropics, and the roots too often wandering in a half-numbed state in search of the North Pole—arises, not from heat, but from cold. Hence the present vindication of a wise and prudent use of bottom-heat for Vines. It is found remarkably useful for Vines in pots, and one might have thought that, on the sound principle that what is sauce for the goose is sauce for the gander (how savoury of Christmas the proverb seems), what was so good for Vines in pots would be equally good for Vines out of pots. But it would almost appear as if this were no longer to be accepted as true, and, more, that Nature has herself made a fundamental mistake in providing more bottom-heat for Grape Vines and other plants than was necessary. I trust ever to stand shoulder to shoulder with Nature in declaring that bottom-heat is a right good thing—a strong, useful, healthful, cultural force—though too much of it at the wrong season may prove a very bad thing indeed; and in this determination and these conclusions I hope to have with me all the able cultivators concerned in getting up those cases that seem to point to other conclusions. *D. T. Fish.*

PLANT PORTRAITS.

MESSRS. A. C. VAN EEDEN & Co., of Haarlem, have favoured us with the two parts for 1876 of the *Album van Eeden*, which contains faithfully executed chromo-lithographed plates.

TULIPS VAN DER NEER and WOUVERMAN, two early flowering sorts, both large-flowered varieties, the former of a dark rich hue of crimson, and the latter dark violet in colour. Both varieties are described as having "firm, upright stems, and their habit of growth all that can be desired."

LILIUM LONGIFLORUM, a well-known favourite, which the editor alludes to as being admirably adapted for forcing into flower in April and May.

LILIUM CHALCEDONICUM, the two forms found in the trade, one red and partly spotted with black, the other wanting in the latter particular. L. chalcedonicum is reported to be not very abundant in Holland, owing to the constant demands from abroad.

IRIS SUSIANA, sometimes called the "Mourning Widow of Susa," is beautifully pourtrayed. "According to Clusius, it was imported from the East to Vienna about three centuries ago, and thence soon found its way to the Netherlands, where even at that time people made a great point of collecting plants of foreign origin."

IXIA HYBRIDS, a plate containing several varieties of English origin, varying in colour from white to orange, buff, and dark crimson.

DOUBLE TULIPS MURILLO, COURONNE DES ROSES, AND LA CANDEUR.—The latter is the best known of this trio. Its colour is white, its habit neat and dwarf. Couronne des Roses is mentioned as being a good early variety, and is of a bright rosy shaded pink colour. Murillo is a fine soft rose, darker rose-coloured flowers appearing with age.

TIGRIDIA PAVONIA, which "deserves unquestionably the place of honour among the Tigridias as well for the size of the flowers as for its brilliant colours."

HYACINTHS MARIE AND ALBA MAXIMA, the former single blue, the latter single white. "Alba maxima has bulbs of the first order; and those of Marie are so beautiful, so splendidly formed and large, that it would undoubtedly be readily bought, . . . for the public generally entertain the erroneous idea that the largest bulbs produce the largest flowers, and, as a rule, they are not inclined to believe that a variety, which has always a small bulb, sometimes far outstrips a sort which makes large bulbs."

FRITILLARIA MELEAGRIS, a very pretty and handsomely marked species, for culture in either pots or borders. It is said to be suitable for forcing, and will flourish freely in a rich garden soil with plenty of sand.

POLYANTHUS NARCISSUS.—This plate contains three varieties, white, sulphur, and primrose, of this well-known plant.

LILIUM SPECIOSUM ALBUM, a fine white variety, which "will be always worthy of its place, whether grown in pots or planted in the open ground."

CAMASSIA ESCULENTA, a beautiful old, hardy, blue-flowered, bulbous plant, that has not met with such an extended culture as it deserves. It was introduced more than forty years ago by Douglas, who sent it from North-Western America to the Horticultural Society's garden at Chiswick.

—— The *Gardeners' Monthly* for December has a coloured illustration of the Californian Palm, PRITCHARDIA FILIFERA.

—— The January number of the *Revue de l'Horticulture Belge* has a coloured plate of two varieties of GHENT AZALEAS, elsewhere referred to.

—— The *Floral Magazine* for December last contains coloured illustrations of

LILIUM NEILGHERRENSE, the beautiful new Indian species figured in our columns last autumn, p. 332.

AURICULA TOPSY (Kay), a self-coloured variety, "and one of the darkest flowers in existence, the paste being of the purest white, the tube of the right size and golden." It was raised in Scotland by the late Mr. Kay.

BOMAREA CARDERI, a valuable new Amaryllidaceous plant, of scandent habit, introduced by Mr. Ball from New Grenada, and figured in our columns at p. 793, vol. vi. Its portrait, on a reduced scale, will also be found on the Almanac issued to our subscribers to-day.

PENTSTEMONS MRS. A. F. BARRON AND OCTOROON, both hybrids raised by Messrs. Downie & Laird, of Edinburgh. The former is a very graceful flower, possessing all the perfect qualities of the improved Pentstemon. The flowers are of a soft rosy pink colour, with a broad well-defined white tube. Octoroon is not so smooth a flower, but by reason of its grand spike and rich dark colour, is a valuable addition to our store of these grand autumn border flowers.

—— The current number of the *Florist and Pomologist* contains coloured plates of Rhododendron Princess of Wales and Willison's Queen Victoria Pear.

RHODODENDRON PRINCESS OF WALES is one of a second race of hybrids bred from R. jasminiflorum by Messrs. Veitch & Sons, and one of the most beautiful of them all. The colour is a soft but brilliant tint of rose-pink, with a pure white throat and tube. As a decorative plant this is a decided acquisition, since in the genial atmosphere of a warm greenhouse, it may be expected to go on growing and flowering indefinitely.

WILLISON'S QUEEN VICTORIA PEAR is an excellent autumn variety, raised about twenty years ago by the late Mr. W. Willison, of Whitby, a well-known florist and Rose grower. The fruit is of about medium size, and of a greenish or pale brownish tinted yellow-green colour, with a thin coating of pale but bright russet-brown on the exposed side. The flesh is juicy and sugary, having a strong Pear flavour, blended with a smack of that of Noyeau.

BLUNDERS.

THERE is among the various educational seminaries the school of suffering, where lessons are given to those who will not learn in any other academy. Beginners frequently find out near cuts to knowledge, without taking all the usual steps; and, but for one spoke wanting in the wheel of fortune, all would have gone well, though for want of that little spoke the wheel would not turn to profit. How often do we see that the chalking of the wheels and bands of the spinning-jenny is necessary before it will turn aright. To be sure the machine wanted very little, yet all the rest was useless until that little was got. There may possibly be a royal road to knowledge, especially to horticultural knowledge, "but this the gods in later times perform." A little sulphur and a little heat did good service in Z.'s vinery against red-spider, but when neighbour X. copied this recipe, he over-heated the pipes, and the crop of Grapes was ruined; and when the blunder became evident, X. cried for very sorrow—

"But woe awaits a vinery when
It sees the tears of bearded men;"

and from that day forward, X. would as soon seek the aid of Satan as that of sulphur.

B. was a clever youth, but went astray on the soap question. Like

"Donald Caird, with meikle study.
He caught the gift of making soap;"

got the hot tallow in the wash-house copper, and the hot ley in an iron pot, regardless of the heat of either; and as the fatty acid did not rise in vapour, or give sign or warning as long as it was under 600°, there was a good margin for blundering. But as soon as the ley was put to the tallow it rose in a jet of froth like flame, and first it filled the copper, then the wash-house, and threatened to fill the yard, when B. left, and no doubt "a wiser and a better man he rose the morrow morn."

In the earlier days of horticulture, before hot-water pipes were in vogue, there was in most gardens, from royalty downwards, a good deal of rough firing to be done, and it was nobody's business to direct the drudge that was told off for the stokehole. Indeed, it is likely enough that lecturing an aspiring youth on the science of combustion would not have been taken in good part, so every one fired after his own fashion, and I generally found the fire the wrong end out, well prepared to burn the furnace door off its hinges, but black enough towards the flue to be heated. It is rather late in the day now to speak of fire-flues, and late hours for young gardeners with the fire-shovel and lantern; but I have more than once seen the furnace bars melted by blundering.

In the culture of Mushrooms it is a good plan to have the command of steam free in the Mushroom-house, and in good hands all goes well; but it is a hackneyed saying that even the course of true love itself does not always run smooth, neither does the culture of the common Mushroom. I had attached to the Mushroom-house a nice little copper, for the supply of steam; it had a wooden lid, and a zinc spout to carry the steam, the whole being very much like that well-known article called in the North a "sma' still." My fireman had put more fuel on than was needed, and when I walked my rounds I found the wooden lid charred, and in the bottom of the pot, along with the remains of my zinc spout. Fortunately the Mushrooms had not appeared, and no harm was done; but later on, some six or seven years, I had a splendid house of Mushrooms scalded to death by the same blunder, namely, steam in excess.

There are few homely subjects so little understood as combustion; everybody makes fires, or, at least, mends them, but each has a way of his or her own, and a large commercial business is done with "fire-lighters" whose composition is a profound secret. If you go into some of the restaurants in Liverpool a little before dinner-time, the cloth is laid, and so is the fuel in the grate, but it is all black and cold, when a dapper little maid comes in with a vial of petroleum, and with a quill or small brush sprinkles the lumps of coal, and, striking a match—

"Quick as the spark from smitten steel
From nitrous grain the blaze,"

—the whole becomes a cheerful blazing fire with no coals used until the business of the house required their services. Powdered resin in good hands is less dangerous than petroleum, in kindling a fire or refreshing one that has gone down—

"Ay, me! what perils do environ
The man that meddles with cold iron."

"Or he that doth our minds unsettle
By burning stones to boil the kettle." *

It is related in the jest and tale books of birds who had built their nests too early in the season, that their callow young were killed by frosts; hence the moral—

"Not only choose a proper mate,
But proper time to marry."

The "times and seasons" are the very vitals of horticulture in the northern counties. You cannot trust greenhouse plants out-of-doors before the first week in June, although in the southern counties they risk their bedding-stuff soon after the middle of May; and should severe frost occur, the gardener cannot be blamed, since the practice is general. Now K. was a handy labourer, and so he got employed in a single-handed place; and in his anxiety to do right he laboured early and late, and as far as besoms could go, he kept the place clean. He got rather late with his Onions, Leeks, and Carrots, but would not, as he said, be cast with other things, so he sowed, or rather planted his French Beans in good time; they came up well and quickly, but only to be frosted, and their case was worse by half than frost-nipped Potatos, for they never sprouted the second time. Next year he marked the almanac with two crosses, one the date when the cow should calve, and the other, May 15, the time to plant French Beans—not to blunder a second time.

A West-countryman of my acquaintance got recommended to a head gardener's place, and as the gentleman was showing his new servant the place he asked him what religion he professed, at the same time stating that his religious views would not alter the good opinion he had of him; to which question the gardener replied "that he was not particular." This was a serious blunder, and was taken to mean a total absence of all religious training, and he was paid a month's wages the next morning, and left the place; proving, what I have stated above, that the school of suffering and dearly-bought experience can teach important lessons, long after our school days are gone by, for besides the three "R's" at our Board Schools, and, on the authority of the Archbishop of York, of the Latin and Greek of our Colleges, they do not exhibit models for imitation, however grand their utterances are. In practice, the high moral training is as needful to the gardener as his skill in gardening. The late Dr. Lindley, who knew the state of the English market for gardeners as well, if not better, than any other man, told me that although he was pestered with applications from gardeners for situations, when he wanted a man that could be trusted to manage an important place—fit to be trusted with money and means, and capable of managing himself with credit—he scarcely knew where to find one. Now this is what comes of blunders! *David Sangster.*

* Hudibras.

New Garden Plants.

ADIANTUM NEOGUINEENSE, *sp. n.**

This plant belongs to the same group of species as A. æthiopicum, though differing from it in many important respects, obviously in the sori, which are rounded and entirely sunk in the sinus, the two outer edges of which meet so as to close the aperture. It is a larger plant of fuller development, the fronds, independent of the stipes, being already, though but recently imported, about 15 inches long, and fully as much in width across the base. The stipes is castaneous, 6 to 8 inches long, and before handling covered with a glaucous bloom on the polished surface. The lower pinnæ are themselves three times divided, the rachises of the secondary pinnæ and pinnules being remarkably slender and hair-like. The pinnules which terminate both pinnæ and pinnules are wedge-shaped at the base, irregular in the outline of the outer margin, being boldly crenate-lobate, the lobes large and entire except when sorriferous. This lobing is a conspicuous feature, and is more or less observable over the whole frond. The lower pinnules are smaller than the terminal ones, and are of a trapezoid form, but showing more or less of the lobing already referred to. In the fertile parts of the frond these broad rounded lobes are split inwards in three or four places, forming deep sinuses, in each of which a small sorus is so deeply sunk that the margin of the pinnule is continued around and beyond it. The texture of the frond is pellucid membranaceous, and the colour is a dark green, with a glaucous tinge—not distinctly glaucous—on both surfaces, when mature, but in the young and partially developed state the fronds are of a very pale green.

This will no doubt prove a free-growing and also an elegant addition to our stove Ferns. It has been recently obtained from New Guinea by Mr. Goldie, when collecting for Mr. B. S. Williams, of Holloway; and it is from plants now growing in Mr. Williams collection that we have derived the foregoing particulars of the plant. *T. Moore.*

MASDEVALLIA MACRURA, *Rchb. fil., supra*, 1874, 40.

My prediction that this curious species would soon appear in gardens is fulfilled very speedily. There it is in England—at Chelsea. It has unusually large leaves for a Masdevallia. From the articulation of their petiolate base to their top they are a span high, and they attain a breadth of 2 to 3 inches, so that they

* *Adiantum neoguineense*, sp. n.—Fronds spreading, glabrous, deltoid, tri-quadripinnate, pellucid membranaceous, dark olive-green, with a glaucous tinge on both surfaces; pinnæ ovate; ultimate pinnules on very fine hair-like stalks, the terminal one cuneate, the lateral ones trapezoid, averaging about ½ inch long, crenately lobed, the lobes rather large entire; sori small, distinct, about 6–8 to a pinnule, orbicular, entirely sunk in closed sinuses of the marginal lobes, the indusium smooth; veins flabellate, about four running into each sinus; stipes castaneous, smooth, glaucous; secondary and tertiary rachides very slender, hair-like.—Hab. New Guinea.

make a very stately impression. Their substance is very stout, and the surface is shining. As to this, they may be compared to the beautiful leaves of Masdevallia tovarensis, though they are far superior. The flower-stalks are equal to the leaves, perhaps a little shorter sometimes. The cuculiate bract stands just at the back of the perigonial tube. It is inclined apparently to show some variation as to the length. The wide tube itself is very short, of firm texture, and slit into an upper and an inferior lip. The upper lip forms a short triangle, extending in a long, strong tail; the inferior lip is longer and broader, dividing in two long, strong, spreading tails. Those tails are light yellow, the bodies themselves of the sepals light brownish, with dark purplish brown streaks. There appears to be much variation in the varieties as to the length of the tails. I can affirm this to be so from eighteen specimens at hand—from 6 to little over 4 inches in length. The petals, column, and lip, form, as usual, a small body, yellowish, with purplish dots, the middle lobe of lip being orange-yellow; the petals are rhomboid, blunt, and very thick, now emarginate at apex. Lip three-lobed in the middle, the side lobes blunt, the anterior lobe blunt, recurved, covered with short acute warts; there are two lamellæ between the basilar lobes. The column is acute at its top. The greatest curiosity of the flower is kept inside. The chief nerves of the sepals are prominent internally, and covered with numerous blunt warts. Though they are far more conspicuous in the dry specimens, yet they may easily be seen in the fresh flower, when many are rather dark. This species would appear to be rather rare. It is New Grenadian, and appears to have escaped one of the best Masdevallia hunters, Mr. Wallis. The discovery is due once more to M. B. Roezl. Then a short-tailed variety was gathered by M. Patin, the young Belgian. Afterwards Mr. Shuttleworth met with it during his first journey, and from his plants Mr. Bull sent me lately. *H. G. Rchb. f.*

ONCIDIUM ELEGANTISSIMUM, *n. sp.**

I saw this really elegant plant at Messrs. Veitch's in October last. A glaucous, short, broad, ribbed, two-leaved pseudobulb throws a splendid panicle of flowers, very similar to those of Oncidium curtum, Lindl., but with far more shining colours, and the lip much shorter in consequence of the unguis being very short, as in Oncidium Gardneri, Lindl. Colours are unusually pretty. The sepals are brown, banded with narrow yellow bands. Broad petals, with a few yellow spots. The lip of the brightest yellow of the glorious Oncidium varicosum and O. Rogersii; the calli of the base with black purplish borders. The anterior limb of lip is beautifully marbled and dotted with light brown, which feature renders it so very pretty, for there is a quiet charm in seeing all those brown dots washed away like clouds to pass into yellow.

This is near another most elegant and nearly unknown plant, Dr. Lindley's Oncidium Gardneri—one of the most beautiful of Brazilian Orchids. It is easily understood by its very short claw to the lip, as in this, by the calli being entirely of a purplish black, the two long anterior ones totally covered with small warts, not only with a few marginal ones, as in O. elegantissi-



FIG. 2.—MASDEVALLIA MACRURA.

* *Oncidium elegantissimum*, n. sp. (affine O. Gardneri, Lindl.)—Sepalo dorsali apiculato oblongo; sepalis lateralibus basi connatis unguiculatis, dein alte bifidis oblongis acutis; tepalis cuneato obovatis extus bilobo emarginatis; labelli auriculis minutis, isthmo brevi; lacinia antica dilatata subreniformi biloba; callo baseos triangulo; carina anteposita, area limbo incrassata sul circulari utrinque in bosa; callis anticis lateralibus disco lævibus, limbo papulosis parvis; columnæ alis angustis subquadratis. Sepala brunneo flavo fasciatæ. Tepala brunnea maculis paucis flavis. Labellum pulchre xanthinum circa limbum laciniæ mediæ pulchre brunneo guttato fasciatum. *H. G. Rchb. f.*

mum, where those bodies are much smaller. I have just now, after having for nearly two days studied the whole group, finally made out that Oncidium flabelliferum, Pinel (see *Paxton's Magazine*, xvi., p. 65, 1849), is nothing but Oncidium Gardneri. Both Dr. Lindley and myself never had much trouble with this plant. Dr. Lindley's materials of Oncidium Gardneri were not good, so that he named for me a variety of Oncidium crispum, Lodd., his Gardneri, which troubled me a long while. Only by seeing other specimens of Gardner's No. 442, I understood the plant. I, indeed, had rightly named Oncidium flabelliferum for Mr. Linden, 1858 (see C. Koch, *Berliner Allgemein Gartenzeitung*, p. 379), but from three flowers I had obtained, two were monsters, with two lips, so that I had no well-marked impressions.

Another species, proposed by myself, may be com-

pared to these two species as to colours, Oncidium pretextum. It has a much longer nail (unguis, as thin as the narrow part between the basilar auriculæ, and the anterior dilated part), totally different calli, and a column with a far more protruded tabula infrastigmatica, which is so very inconspicuous in both Oncidium Gardneri and O. elegantissimum, which, too, have very short columns. *H. G. Reh.b., f.*

MUSTARD AND CRESS.

FEW people who see and purchase the punnets of small salading, looking so neat and nice in the greengrocers' windows, have a thought of how it is produced further than they suppose it grew somewhere; or have a notion of the magnitude and imporiance of this branch of market gardening, or the number of people it directly or indirectly gives employment to. It is a branch of gardening which is carried on to a certain extent all the year, but the time of its greatest activity commences with the arrival of the French Lettuces in our markets, and continues through the spring and summer months. Shortly after Christmas, therefore, in the places where it is grown, the floors of the early vineries and other suitable warm houses are prepared for the crop. The seed is frequently wetted and placed in hot situations, to swell and even start before sowing, though this I believe is more with a view of shortening the time the crop occupies the ground, and as a rule one crop a week is taken.

One great labour connected with growing Mustard and Cress is the necessity of having fresh soil for every crop. Each time a crop is cut the whole of the soil used is removed and fresh soil spread for the reception of the seed. It certainly does not require much depth of soil, but still the labour is considerable. The seed having been sown, the whole is covered with mats, shutters or some such contrivance, for to suit the market the stems must be white, and the tops a bright light green; a purple shade in either stem or leaf spoils its sale. When the crop has reached the proper height it is cut with a very sharp, peculiarly-shaped knife, one round or swarth of which is considered a punnet. Some skill is required to gather the salading together in an upright position, to place it in the punnets, and the punnets require to be of an equal size, that they may be comfortably full, not loose or crowded, to fetch the best price in the market. This process is repeated till the season advances and cold frames can be used, and after the cold frames, out-of-doors crops are grown, still taking the same precautions to blanch the stems, and keep the tops light green.

A skilful hand will cut from 1000 to 1200 punnets per day. It is highly important that the seed used shall be of the very finest quality, or the crop will either be too thin, or, what is almost worse, irregular in its growth, some ready to cut, and some just up, in which case the appearance is not only bad, but it starts to rot in the punnets much sooner than if the whole is regular. Three parts of the so-called Mustard is Rape, which is of milder flavour, and is, moreover, smooth and white in the stem, whilst Mustard is hairy, and does not keep so well when cut. One grower of my acquaintance pays £3 per week on an average for punnets alone, and uses from 600 bushels to 700 bushels of seed per year. *J. B.*

Natural History.

THE GOATSUCKER.—Your natural history correspondent, in your issue of the 30th ult., gives some very interesting details of an old favourite of mine, the Goatsucker; but as my observations have led me to different conclusions in several items I am led to write in hopes of further information or correction. The "burring sound" always seemed to me to come from a bird at rest, not when flying, as your correspondent states, or at least if flying it must have been in a very limited area. Also that the "crackling sound" was made by a bird at rest, probably by beating its wings against the branch on which it was sitting; or, what is more probable, by a magnetic state of the pinion feathers in an excited, nervous quiver of the wings. And this not as a "serenade" by the male, but by the female bird with a leap-year privilege inviting her mate to come and woo.

Your correspondents' views are that it is a timid, easily scared bird. This I have never found to be the case, but on the contrary, daring—not the courage of bravado but a simple trust, a fear no evil feeling. In twilight or moonlight it will settle on the road or park drive—a favourite spot with it—and allow one to approach within a few yards, and then, with its peculiar, graceful motion, flit on and resettle, again to flit on your approach; and thus on for a long distance, as if wooing you on to follow and fear not. And also in its more aerial flights when food-hunting, it seems not to heed your presence; rather follows than flees.

And again, your correspondent gives as its favourite haunts "heaths, moors, and commons;" not so my experience, for though not seeking the vicinity of noise and bustle, it seemed to love the tree-studded meadow or park around some mansion. Really I differ on so many points with your correspondent that since beginning to write this a doubt floats across my mind. Can I be mistaken in the bird? But no. However, if I get corrected I shall not have written in vain. *W. Wilson, West Hill, Shanklin.*

Apiary.

DO BEES MASSACRE THE DRONES?—Until I observed Mr. Murray's paper, at p. 714, vol. vi., on the age and death of drone bees, I knew nothing of the doubts of their slaughter by the common bees. However, without going into what writers have said, or the popular belief of such, I merely say if he has wood or glass hives, and peeps into them shortly after the usual swarming time, he may see the bees attacking the drones with fury, especially in half-filled glasses on the tops of the hives. I have doubts if they use their stings in the frays, they seem only to throttle them with their strong mandibles, in the most vital part, just under the wings, which is the same kind of warfare as among themselves.

However, in mild autumns, at times fresh broods of drones appear. Those have been mistaken for drones which escaped the general slaughter. I have frequently found drone-cells filled with honey, while the adjoining cells of the same combs contained late brood of drones. Indeed that led to my belief, if we had no winters honey-bees would repeat swarming during the year, or at all seasons. In other words, the instinct or habits of bees are not suitable for our fickle climate. That accounts for bees laying up both honey and pollen more for the present use of the colonies than any foresight of winter. *J. Wighton, Cossey Park.*

Florists' Flowers.

THE NEW FLOWERS OF 1876.—What shall be said generally of the new florists' flowers of the past year? This much can be stated with considerable show of truth, that though the circle of possible attainment lying beyond the present sum of achievement narrows as the ideal of perfection is reached, there is yet so much of unrealised conception that we cannot, and dare not rear up any imagined barrier beyond the line of which it is impossible to proceed. It is well that it is so, for as Margaret Fuller somewhat quaintly put it, "Man is a plant of slow growth, and great heat is required to bring out his leaves. He must be promised a boundless futurity to induce him to use aright the present hour. In youth fixing his eyes on those distant worlds of light, he promises himself to attain them, and there find the answer to all his wishes. His eye grows keener as he gazes, a voice from the earth calls it downward, and he finds all at his feet." It is as true in the vegetable world as in that of morals; and the true florist does wisely when he puts no limit to possible attainments.

The delicate and beautiful Auricula appropriately heads the list of the distinguished floral products of the year in Kay's Alexander Meiklejohn, a grey-edged flower of great refinement, nearly perfect in all its parts; Mrs. Purvis (Turner), grey-edged; and Gertrude Knight (Turner), green-edged, may be seen to better advantage—there is the promise of good flowers in them, though as shown they were marked by defects which detracted from their first-class character. In the alpine section the finest flower of the year is Gorton's Mauve Queen, because so perfect as an edged variety; colour deep mauve, shaded off to a pale margin, and white centre. Turner's Bessie Ray is remarkable for its brilliancy of colour, shaded crimson, margined with a brighter hue. Turner's Slough Rival is another edged flower, shaded purple, edged with violet; Charles Lidgard and William Bragg, from the same raiser, are large bold self alpines, particularly striking, but regarded as "nondescripts" by the Northern Auricula growers.

New Azaleas of a distinct character increase less slowly than they did a few years ago; there was then a wonderful leap forward, which, as is usually the case, has been followed by a corresponding pause. In point of novelty the new double-flowered variety named imbricata, figured at p. 817, vol. v., 1876, tops the newer single varieties of the year. The flowers are as full as those of a Camellia, the white ground tinted with green, and lit up with flakes of carmine. Jean Vervaene is one of the pretty edged flowers, the colour reddish salmon, edged with white: a pretty decorative variety. Flambeau is remarkable for its brilliant hue of bright crimson; it is most striking in colour, but wanting in the form and substance to which so much value is generally attached. Apollo is a flower of enormous size, dashed with flakes of scarlet on a white ground: a fine conservatory plant.

The tuberous rooted Begonias promise to become as numerous as bedding Pelargoniums, a most formidable list can now be compiled. Vicomtesse Donnelle (Veitch & Sons), rich dark scarlet; Excellent (Perkins), bright crimson; and Majestica (Perkins), vermilion-rose, have all been certificated; the flowers are large, with broad petals. Several others have been produced, some with delicate colours; in fact, production goes on with rapid strides. These useful decorative Begonias are finding a place in schedules of prizes, and they are charming objects on the exhibition table but some of them carry badly. They are also being employed for bedding purposes. The ornamental leaved stove type, of which B. Rex is an illustration, have been reinforced in Miranda and Otto Foster, raised by Messrs. Frœbel & Co., both having handsomely marked leaves.

New Carnations and Picotees are confined to the North. They have not been seen southwards, but those who saw them at the exhibition of the National Carnation and Picotee Society held at Manchester in August last speak of them in unqualified praise. I have seen some of them growing in the garden of the raiser, Mr. B. Simonite, at Sheffield, and also in the vicarage garden at Kirkby Malzeard, and am bound to bear testimony to their grandly rounded petals, massive substance, the purity of the ground, and the fine marking. Deserving to be mentioned in this record there are:—Carnations, crimson bizarre, Frank Simonite, Samuel Barlow, and John Simonite; scarlet bizarre, Othello, purple-flake, James Douglas, scarlet-flake, Rev. F. D. Horner; Picotees, Mrs. Simonite, Mrs. Gorton, and Mrs. F.D. Horner (named in memory of her at rest in the churchyard of Kirkby Malzeard), all three light red-edged flowers; Mrs. Douglas and Silvia, purple-edged. Other new varieties are Picotee rose-edged Miss Horner, and rose-flake Carnation Mrs. Dodwell, raised by Mr. R. Lord, Todmorden; and rose-flake Carnation Mr. C. S. Dodwell, raised by Mr. Thomas Bower, Bradford. All the foregoing were awarded First-class Certificates at Manchester.

During the last two or three years Cinerarias have been named and certificated, but we do not appear to hear of them again. Two double varieties, viz., King Alfonso, rosy red, and Prince Imperial, dark violet-purple, were shown by Messrs. E. G. Henderson & Son, and awarded certificates. But it is very doubtful indeed if the double varieties will ever make much headway; for decorative purposes they cannot come near the single flowers—their value will lie in their suitability for cutting from.

The past year left us a rich legacy of new Clematises, and indeed so rapidly have they increased during the past ten years that it is now a little embarrassing to make a selection of a dozen choice varieties. Messrs. Jackman & Son give us some fine additions to the double varieties in Countess of Lovelace, deep violet, very large, bold and striking; Duke of Connaught, lilac, very free, and well adapted for planting out against conservatory pillars; and Duchess of Edinburgh, pure white, deep and fine. The double varieties do well planted out against sunny south walls, with a little protection in winter. Mr. Noble's Proteus is also double, the flower rosy purple in colour and of great size; a distinct and fine variety. Messrs. Cripps & Son give us two new double varieties in Enchantress, white flushed with pale rose on some of the petals; and Venus Victrix, delicate lilac in colour, semi-double, striking in appearance. All the foregoing belong to the patens and lanuginosa sections. Mr. Henry Little, who has done so much in originating high-coloured Cyclamens, has produced a rich flower in Purple Gem, the colour crimson heavily shaded with purple. The difficulty of propagating Cyclamens by division of the bulbs interferes with the distribution of a fine variety like this, but Mr. Little's

experience and that of other growers goes to show that rich-coloured flowers almost, if not quite, reproduce themselves from seed. *R. D.*

(To be continued.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—With the present saturated state of the atmosphere it will be necessary to attend particularly to removing any dead leaves, as if not got away they become mouldy very quickly, and will even destroy whole branches. This applies particularly to such things as Roella ciliata, Leschenaultia biloba, &c. It is a good plan to lay the plants down on their sides to get these decayed leaves away. Less water will be required now than at any other season in the year, but care must be exercised that the plants do not get too dry, or serious harm may be done. Camellias.—Plants of late sorts, the bloom-buds of which have not yet begun to swell, if at all infested with scale should now be cleaned. It is a good plan to put a portion of these late-flowering varieties in the warm house, so as to still further retard them; by this means Camellia flowers may be had till April or May. With plants that are not so forward as may be desired, and to which a little fire-heat is used, it is necessary to be very careful that the atmosphere does not get too dry, or the buds will fall off instead of opening, neither must they be over-dry at the roots, or a like result will follow. Azaleas.—If any of the earliest forced Azaleas have done blooming, they should at once have a good washing with tobacco-water, to each gallon of which has been added 1 ounce of Gishurst; by this means if any thrips exist they will be destroyed. After the washing, the plants should be immediately replaced in a temperature such as they have been in, and be encouraged to make growth early; in this way they will be prepared for blooming early another season. Azaleas that it is deemed desirable to retard, whether for home decoration or for exhibition purposes, should now be put in the north house, where they can be kept cool, as it is in their early stages that retarding can be the most satisfactorily carried out. It will be well at the present time to go over the stock of Azaleas and wash them now

HORTICULTURAL EXHIBITIONS, 1877.

JANUARY.

17.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.

FEBRUARY.

14.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.

MARCH.

3.—Crystal Palace. Exhibition of Artificial Flowers and Fruit.
7.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
21.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
21.—Royal Botanic Society, Regent's Park. Spring Show.
23.—Newcastle-on-Tyne Horticultural Exhibition.

APRIL.

2 and 3.—Leeds Spring Flower Show.
4.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
18.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
18.—Royal Botanic Society. Second Spring Show.
24.—Crystal Palace. National Auricula Society's Show.
26.—Royal Horticultural Society of Ireland. Spring Show.

MAY.

2.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
16.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
16.—Royal Botanic Society. Summer Exhibition.
18.—Royal Manchester Botanical and Horticultural Society's Show.
24.—Royal Horticultural Society of Ireland. Second Spring Show.

JUNE.

6.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
13.—Royal Botanic Society. Summer Show.
20.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
20.—Blackheath Horticultural Society's Exhibition.

THE

Gardeners' Chronicle.

SATURDAY, JANUARY 6, 1877.

THE institution of a physiological laboratory at Kew, by the munificence of T. P. JODRELL, Esq., affords a fitting occasion for laying before our readers a portrait of one of the founders of vegetable physiology—one who was the direct precursor of BONNET, of DUHAMEL, of DE SAUSSURE—one whose experiments and inferences are still current in the text-books; one, in fact, of whom, together with NEHEMIAH GREW, British science has just reason to be proud. In subsequent issues we purpose giving similar portraits of THOMAS ANDREW KNIGHT, and of other physiologists, to whose labours the gardening world is indebted for a knowledge of the basis on which the intelligent cultivation of plants depends. From the time of KNIGHT down to comparatively recent years, if we except the carefully-devised and laborious experiments of LAWES and GILBERT, comparatively little has been done in vegetable physiology proper by British observers, or at least in that department of it which embraces the study of the mode of working of the plant and its parts, looked at as machines. Botany, or the description and discrimination of one plant from another, including the study of outward conformation and minute anatomical structure, has been studied with zeal and success in this country, but in the particular department we have alluded to we have allowed the Germans, the French, and other nationalities to surpass us. There are many indications that this state of things is likely to undergo a change, and it is one which, in the interests of horticulture, is greatly to be desired.

Two hundred years ago, that is to say in September, 1677, was born in the pleasant village of Bekesbourne, near Canterbury, STEPHEN HALES, a younger son of a very old Kentish family originally settled at Halden, and a man to be held in honour wherever the life-workings, whether of animals or of plants, are deemed worthy of study. In due time he proceeded to Cambridge, where we are told botany and anatomy together with chemistry formed his "studies of relaxation." We read of him collecting plants on the Gog-magog Hills, with the aid of RAY'S *Catalogue*, accumulating fossils and butterflies, and studying the stars. Entering the Church he became perpetual curate of Teddington, Middlesex, and although he held other preferments he seems to have resided chiefly at the last named village, under whose church tower, built by himself, he was buried in 1761, at the ripe age of 84. Westminster Abbey contains a monument erected to his memory by the Princess Dowager of WALES, in whose establishment he had acted as clerk of the closet. The monument is in the tasteless style of the period, with a Latin inscription, which serves to testify the esteem in which he was held by the "mother of the best of kings," but which is silent as to his services to science. An amiable and benevolent man, he lived, says one of his biographers, not only "a blameless but in a high degree an exemplary life." Withal his career, apart from science, was uneventful and demands no further comment on our parts. What he did in science may be gleaned from a brief enumeration of some only of his principal papers, chiefly communicated to the Royal Society, of which he became a Fellow in 1717. The practical bent of his mind and the scope of his researches will be made so manifest from this enumeration that any lengthened comment will be unnecessary. His first paper contained an account of some experiments on the sun's heat in raising the sap in trees, a paper received with such favour by his contemporaries that, says PETER COLLINSON, to whose account in the *Annual Register for* 1765 we are indebted for some of these details, the request was "like the charge given by PHARAOH'S daughter to the mother of MOSES to take care of her son. The result was the publication of STATICAL ESSAYS—*Vegetable Staticks*, in 1727, concerning which we shall have more to say in the sequel.

Although he thought it quite consistent with his sacred office to perform experiments on animals which would now-a-days suffice to brand him in the eyes of some people as a vivisector, he was yet humane and careful of the material as of the spiritual welfare of his fellows. "His philosophy was not," says Sir JAS. ED. SMITH, "a barren accumulation for the ignorant to wonder at, for its professor to repose on in sottish self-sufficiency and uselessness, but an inexhaustible bank on which his piety and his benevolence were continually drawing." In accordance with this, we find him addressing a "friendly admonition to the drinkers of brandy and other spirituous liquors," making experiments with a view to find a solvent for stone in the bladder, and for preserving meat in long voyages, for checking fires, for ensuring the due ventilation of ships, mines, prisons, &c. In this latter matter he was so successful that the mortality in the Savoy and Newgate prisons was reduced from fifty or even a hundred in the year to four. He investigated the cause of earthquakes, invented a "seagage to measure unfathomable depths." He devised methods for keeping water and fish sweet with lime-water, also a "cheap and easy way to preserve corn sweet in sacks and heaps, and to sweeten it when musty, and a mode of distilling fresh-water from salt. In 1757 he published in the *Gentleman's Magazine* an easy method of purifying the air, and regulating its heat in Melon frames and hot greenhouses." This was done by inserting a bent pipe into the dung-bed, one orifice of which communicated with the outer air, the other opened in the frame, at the upper end of which were holes to carry off the impure air.

From this mere enumeration we glean a good idea of what manner of man he was. It is satisfactory to find that his merit was recognised. He refused higher preferment in the Church, but he accepted the honour which the Royal Society conferred on him of a Copley Medal, and English science was honoured in his person in 1753, when HALES was elected one of the eight foreign members of the French Academy of Sciences on the decease of Sir HANS SLOANE.

So much we have gleaned from various sources. The best account of HALES' life and career that we have seen is that by PETER COLLINSON above referred to, and for indicating which we owe our thanks to the Rev. W. W. NEWBOULD.

It behoves us now to allude at somewhat fuller length to the book by which HALES will be longest remembered, and by which his position as a physiologist will be most securely upheld. Almost any text-book will furnish the leading details of HALES' *Statics*. Till a quite recent period HALES' experiments on certain subjects, as here recorded, formed the one source from which later writers took their inspiration. HALES' experiments were repeated and performed in a more or less modified form, and his general results were confirmed. Whether it was the amount of moisture evaporated from a leaf, the amount and force of the current of ascending sap, as measured on the cut surface of a Vine stump, it was—nay is—HALES' experiments which were and are quoted and relied on, and, as we have said, till quite recently but little has been added to what he did nearly two centuries ago. HALES' *magnum opus* is thus entitled:—"The Vegetable Statics; or, an Account of some Statical Experiments on the Sap in Vegetables, being an Essay towards a Natural History of Vegetation; also a Specimen of an Attempt to Analyse the Air by a Great Variety of Chemico-Statical Experiments, which were read at several meetings of the Royal Society." We have spoken of it as a *magnum opus*, and so in some sense it is, though in mere dimensions a small 8vo of a few pages. It appeared in 1726, ISAAC NEWTON being then President of the Royal Society, and it was dedicated to H.R.H. GEORGE Prince of WALES. It passed through several editions, and was translated into the principal European languages. The headings to the chapters, which we transcribe in an abbreviated form, will show in what manner HALES may be said to have laid the foundation of vegetable physiology.

First of all, then, we come to a chapter showing the "quantities of moisture imbibed and perspired by plants and trees."

"2. Experiments whereby to find out the force with which trees imbibe moisture.

"3. Experiments showing the force of the sap in the bleeding season.

"4. Experiments showing the ready lateral motion of the sap, and consequently the lateral communication of the sap vessels. The free passage of it from the small branches towards the stem, as well as from the stem to the branches, with an account of some experiments relating to the circulation or non-circulation of the sap.

"5. Experiments whereby to prove that a considerable quantity of air is inspired by plants.

"6. A specimen of an attempt to analyse the air by chemico-statical experiments, which show in how great a proportion air is brought into the composition of animal, vegetable, and mineral substances, and withal how readily it resumes its elastic state when in the dissolution of those substances it is disengaged from them."

In this last series of reseaches HALES unwittingly confirmed the researches of BOERHAAVE, made about the same time.

This is not the place to enter into any critical analysis of what HALES did. The above enumeration will suffice, particularly as his experiments and inferences are inwoven into all the more important text-books, and are, even

now, not displaced by more modern research. Our portrait is copied from a fine mezzotint, after a painting by HUDSON.

—— WITH our present issue we present our subscribers with a sheet ALMANAC for the present year, designed and engraved by Mr. WORTHINGTON SMITH. As on former occasions, the leading idea with the artist has been to reflect in the Almanac a few of the more prominent horticultural novelties, or salient points of interest during the year, and which have been chronicled in our pages. The Kew Supplement,

which is in so far a concession to Mr. WILSON'S scheme. It seems a pity, however, that the Council should have adopted this in so half-hearted a manner. Either let the scheme be adopted in full or let alone. We are well aware of the enormous incubus under which the Council now lies—we are well aware, too, of the labour that the Council has without fee or reward undergone—we recognise that the Council is the most popular of any that we have had for several years, but we must beg them not to succumb to the numbing paralysing influence which the action of the debenture-holders and the Commissioners seem to have induced. The horticultural spirit of the

a bush 10 to 12 feet high, "disregarding both frost and snow, being often covered with flowers from top to bottom, and forming a most beautiful object." At various times during the winter we have been favoured with specimens from Mr. BOSCAWEN, but a few days since, in order to corroborate his opinions still more forcibly, he sent us a large hamperful of the blooms of this delicious Heath. As this was the product of a small garden, it may be judged what would be its profusion in a large establishment. Both Maresfield and Lamorran are comparatively warm localities, though by no means exempt from severe frost and snow. We should be glad to know, from



STEPHEN HALES.

The Founder, in England, of Vegetable Physiology.

and that devoted to the King of the Belgians' conservatory are thus recalled to memory, together with several of the best new plants of the year. The germination and fructification of the Potato fungus, and of allied forms, are appropriately introduced, together with various garden-visitors, of some of whom it may be said in the garden that their room would be preferable to their company. The dates for flower-shows and meetings are as complete as we can make them at so early a period of the year. The mean temperatures are those recorded at Chiswick, on an average of forty years, as revised by Mr. GLAISHER.

—— It will be observed that in the circular issued by the Council of the Royal Horticultural Society mention is made at the end of guinea Fellowships,

country is not dead, and it only awaits the earnest well-directed efforts of the Council to lend its aid in the reorganisation of the Society. At the annual meeting, which takes place in a few weeks, we shall hope to hear that the Council has roused itself to a more active policy than has been possible of late.

—— We desire to call the attention of our readers to the beauty of ERICA CODONODES, by no means a new plant, but one not sufficiently known. The plant has something of the habit and appearance of E. arborea, but the flowers are larger and more bell-shaped. It was figured in 1835 in the *Botanical Register*, tab. 1698, from specimens supplied to Dr. LINDLEY by Messrs. WOOD, of Maresfield, Sussex, in whose nursery the plant was quite hardy, forming

other correspondents, how the plant fares with them. Where it thrives it is evidently one of the very best hardy winter-flowering shrubs.

—— The POST OFFICE authorities too often act as if they considered the people of this country made for the Post Office, and seem, in particular, to look on the Press of the country with aversion—as their greatest source of annoyance. The officials seem to forget that they are the servants of the public, and that the vexatious and often absurd regulations they make tend to restrict the revenue of the country, to say nothing of the injury done to the Press and to the public in general. Constantly some petty quibble is raised by the obstructiveness of some official whose desire seems to be "how not to do it." The *Printing Times* has

a long article on the subject, most of which we can endorse from our own experience. We trust that the truly childish regulations which are ignored one day, insisted on the next, interpreted to-day this way, to-morrow another way, will be swept away and replaced by a uniform and readily intelligible system. It is not only the annoyance to ourselves and our brethren of the Press which would be thus spared—that is a minor matter—but the labour and cost of the Post Office itself would be reduced, and the revenue at the same time increased. Surely the higher officials might be expected to know and put into practice some of the laws of political economy and business management.

—— The origin of the GHENT AZALEAS is given in the last number of the *Revue de l'Horticulture Belge*, by M. VAN HULLE, from which it appears that towards 1825 M. MORTIER, a nurseryman, of Ghent, conceived the idea of retarding the flowering of the early flowering varieties which were likely to be injured by early frost, by fecundating them with the pollen of later flowering varieties. The experiment succeeded. Not only were flowers of later flowering tendency secured, but flowers of better form and more varied colour and more agreeable fragrance. This variety soon became known as Azalea Mortierana, the varieties so called having been raised from various crosses between Azalea viscosa, nudiflora, pontica, and calendulacea. Ghent Azaleas are now propagated from seed, the one-year-old seedlings being grafted and treated as Camellias are. They are planted out in leaf-mould, and after two years are in a fit state for sale.

—— The *Bulletin of the Belgian Federation of Horticultural Societies* for 1875 contains, in addition to the usual official matter, various articles on physiological subjects, to which we have already called attention. At p. 30 we observe an amusing mistake, which our Belgian friends would do well to correct. The President of the Royal Horticultural Society is stated to be — AYRTON, Esq. ! We trace this to a "squib" which was published some time since, but which we hardly expected to see taken *au grand serieux*. No wonder the poor Royal Horticultural Society is "*agonisante*."

—— We have received from Mr. SINCLAIR, gardener to Sir H. D. INGILBY, Bart., Ripley Castle, Leeds, a copy of his GARDEN DIARY, or, rather, GARDEN ACCOUNT-BOOK. It contains a page for every day in the year, on which is printed the name of each kind of fruit, vegetable, salad, and herb, that is usually grown, with an £ *s. d.* column to show the money value of the quantity sent into the house each day. Cut flowers and plants are treated in the same way, and provision is made for recording the temperature three times a-day, and for other observations on the weather, as well as for a few general remarks. Such a book as this should be kept by every gardener, who would find it an excellent check on extravagance either in the kitchen or still-room. The one before us, however, would have been better had the space allowed for the various entries been on a more liberal scale. We may note, too, that through the transposition of a letter the word Borecole is misspelt on every page.

—— As originator of the ROYAL AGRICULTURAL BENEVOLENT INSTITUTION, Mr. MECHI suggests, in the *Agricultural Gazette*, that at all public agricultural dinners it should be one of the toasts. A good and worthy farmer, the late Mr. CONGREVE, has left to it £1000. We are informed that the late Mr. GEORGE MOORE has also bequeathed to it £1000. Mr. MECHI adds that he fears this very disastrous farmer's year will greatly add to the number of applicants for relief.

—— The *Ceylon Times* states that a letter in its issue for December 7 bears testimony to all that has been written of the rapidity of growth of the PRICKLY COMFREY, showing clearly enough that it is a plant specially adapted to the soil and climate of Ceylon. "There should be no reason," says the journal in question, "why it might not be grown successfully on most of the poor waste lands of the low country. Messrs. THOMAS CHRISTY & CO.'s circular, forwarded to us with the letter, says, 'The Comfrey, being a deeply-rooted plant, is independent of weather and climate, for in the driest and hottest seasons it will afford several heavy cuttings when all other vegetation is either burnt up or at a standstill.' With this plant at their disposal the natives of the poorer districts of the maritime provinces might turn to good account many an unproductive field, many a barren waste. We commend the idea to the Government, which has resolved on establishing an experimental garden at Meeriagama, for the special development of products suitable to native industry. A better plant could not be grown for general distribution than the Prickly Comfrey, which might be gradually distributed amongst all villagers applying for cuttings of it."

—— The EXPORT OF ROSES TO PORTUGAL AND ASSAM last year by one of the leading nursery firms in the North of Ireland, is an interesting item in the events of the year. The taste for Rose growing and Rose showing which has sprung up in Portugal lately is, the *Irish Farmers' Gazette* has reason to believe, to be largely attributed to a member of the Crawford-burn family, who is an enthusiastic rosarian, and is now settled on his property in one of the richest wine-producing districts of Portugal. It is to be hoped the cultivation of Roses in Assam will be as successful as has been the cultivation of the Chinese Tea plant in that country.

—— Dr. E. GOEZE, as we learn from the *Hamburger Gartenzeitung*, has left Lisbon, and taken the post of Inspector of the Botanic Garden at Greifswald.

—— Signor ALBERTIS, writing from NEW GUINEA, as quoted in a recent number of *Nature*, says:—"I expect to have about 500 species of dried plants, and between twenty and thirty of living plants, collected far in the interior, many of which I did not get afterwards. I hope Mr. C. MOORE will be satisfied, as I have some fine Crotons and Palms among them, also some Ferns with variegated leaves, Orchids, and several other plants with variegated or spotted foliage, &c., from the very centre of New Guinea." *Apropos* of this matter, we may mention that we recently had the opportunity of inspecting some valuable importations from New Guinea at the nursery of Mr. B. S. WILLIAMS, and of which we hope to be able to say more on another occasion.

—— We understand that two of Mr. Wm. BULL'S collectors—Messrs. CARDER and SHUTTLEWORTH—have just returned from New Grenada, barely escaping with their lives. The revolution has extended throughout the United States of Colombia to such an extent that the utmost lawlessness now prevails. Mr. CARDER was unfortunately robbed, not only of his money and valuables, but also of his revolver. To escape, we understand, the collectors were obliged to go down the river Magdalena in a small open barge, and the river being unusually swollen, that was a highly dangerous alternative. Holders of the beautiful plants that come from that country, and who have secured good stocks, may be congratulated, as from the nature of the revolution it can scarcely be expected that any plants will be received from that country for some time to come. Many of the most handsome of the cool and comparatively cool Orchids now so high in popular estimation are indigenous to the United States of Colombia, such as was Masdevallia Harryana, the always beautiful Odontoglots crispum (Alexandræ), Pescatorei and Roezlii, Cattleya Mendelii, and the exceedingly handsome Odontoglossum vexillarium.

—— The Golden Thuja occidentalis, named Vervaeneana, is generally represented as having foliage of a bronzy-yellow colour. There can now be seen at the Royal Nurseries, Ascot, some specimens in which the foliage is of a bright golden colour, and most effective. Perhaps the moist sandy bog of the Ascot Nurseries has something to do with the production of the striking glow of colour. The larger the plants the better character did they appear to possess.

—— There seems to be considerable doubt as to whether the EMBIA, the supposed NEW DANGER FOR ORCHID-GROWERS, mentioned in our last issue, has anything to do with the destruction of Orchid roots or with the spinning of webs. We were assured that no such insects had been found in the Orchid-house from which the plant was originally derived, and that the web was in all probability spun by a species of spider common in Orchid-houses. The subjoined letter from Mr. M'LACHLAN will be read with interest, as having been written by one who has made a special study of the group of insects in question. We shall be obliged if any of our readers will forward us specimens of the insect, should they unfortunately discover it in their houses:—

"The notes and figures that appeared in your last number have much interested me, as Embia has long been one of my pet groups. Like Professor WESTWOOD I have never seen any but fully winged and absolutely wingless forms; yet from analogy the 'nymph' ought to have rudimentary wings, but not (as regards the meso-thoracic wings) like the figure. I share his (implied) doubts as to whether the Embiæ are the real depredators in this case. Professor WESTWOOD has overlooked an important notice on the habits of Embia. M. LUCAS, in the *Exploration Scientifique de l'Algérie* (insects), pp. 123—124, says concerning his Embia mauritanica that he found the perfect insect in the environs of Algiers in June, living in families in sandy places, and running about rapidly on the stems of large herbaceous plants, not using the wings when about to be captured. Of the larvæ he says they are found under damp stones, and inhabit little silken tunnels, into which they retire when an attempt is made to seize them. They are very active, carnivorous, and not rare in winter. In March he placed several larvæ in boxes with insects to feed them. He was not able to watch the transformation, but in one of the boxes he found, many months afterwards, a winged insect fully developed. A larva is noticed by HAGEN as having been found at Athens in November under a stone. I possess a larva of Embia Solieri, given to me by Mr. PASCOE, found by him at Hyères, under a stone. I think these notes are sufficient to warrant doubts as to the supposed Orchid-destroying propensities of the creatures, even supposing that the carnivorous habits attributed to them by M. LUCAS be not strictly correct. Analogy certainly suggests dry and dead vegetable matters as a more probable food, yet we have M. LUCAS' distinct assertion that they are carnivorous. *R. McLachlan*, 39, *Lewes Grove, Lewisham*."

—— Mr. JOHN LEE having retired from the firm of Messrs. JOHN & CHARLES LEE, the business so long carried on by them has passed into the hands of Messrs. CHARLES LEE & SON, who will in future carry on the general business of the nursery and seed trade, at the Royal Vineyard Nursery, Hammersmith; and at the branch establishments at Feltham, Ealing, and Isleworth. It is the intention of the new firm to rebuild the extensive ranges of glass in the Hammersmith nursery on a new site, a portion of the old nursery being taken up for building purposes.

—— A correspondent asks for a description of HANSTEIN'S METHOD OF RENDERING VEGETABLE TISSUES TRANSPARENT as described in his *Botanische Abhandlungen*, heft i., p. 5. It is very simple. He employed it especially in his investigations on the development of the embryo of phanerogamous plants. To release the embryo from the seed a dilute solution of caustic potash was used, and this rendered the embryo transparent. Very young embryos required only a few seconds' immersion in the solution, and afterwards placing in glycerin to make them transparent, and preserve them in that state. The glycerin was diluted with water and alcohol. Older embryos required longer treatment with the potash solution, and subsequent washing in acetic acid. Sometimes it happens that the preparation is too transparent, and the cell-walls are no longer distinguishable; but this is easily remedied by immersing it in a dilute solution of alum, when the walls become distinctly visible.

—— To all concerned in gardening operations, the long-continued RAINS AND STORMY WEATHER are becoming serious evils of more than ordinary moment. With the soil in its present waterlogged condition, all really useful and seasonable ground-work is out of the question; indeed, it is only with light, gravelly loams that digging or planting of any kind is possible. Over vast breadths of the country the water is found within some 12 inches to 18 inches of the surface, but on close clay loams the water lies on the surface in puddles, the heavy rainfall having closed up the pores of the soil by constant friction. To attempt the cultivation of soil so affected would be folly, as the moving would simply result in the conversion of it into lumps of clay, to be baked into the consistence of bricks under the possible March winds. Patience under existing circumstances is an undoubted virtue,

and one that all having to cultivate land will do well for the present to practise. To those engaged in the cultivation of tender plants under glass, the too common flooded stokeholes are grave calamities. It is scarcely probable that whilst the water lies so high in the soil we shall have severe frost, but with so much moisture in the atmosphere fire-heat is as essential for the reduction of damp as it is to maintain a high temperature. The expectation that we shall have a soft, moist winter, seems even more likely to be verified.

—— In one of Messrs. VEITCH's Orchid-houses is now flowering a charming plant of MASDEVALLIA TOVARENSIS. From a compact tuft of broadly oblong strap-shaped leaves rise no less than twenty-nine flower-spikes, bearing some three, others four, pure white flowers. It is a veritable gem.

THE FRUITS AND VEGETABLES OF 1876.

THE year 1876 stands almost pre-eminent for the great paucity of its Fruit crop in general, and of new or notable varieties in particular, so that our task of reviewing the acquisitions during the past year is an exceedingly light one. This great scarcity in the case of the outdoor fruits, such as Apples and Pears, is chiefly attributable to the action of the late spring frosts, which were last season of unusually long duration. Notwithstanding this general scarcity, we have the pleasure to record the introduction of a few sterling representative fruits.

Grapes naturally claim our first attention, their cultivation and improvement being specially the property of the British gardener. Here we have in Clive House Seedling a very decided acquisition in the class of late black Grapes. This is a seedling variety raised by a gentleman amateur, D. P. Bell, Esq., of Clive House, Alnwick, and which is stated to be a cross between the Black Morocco and another black variety from Wortley. The bunches are large and well shouldered, of much the same appearance as the Alicante; the berries large, ovate in shape, with a dense black bloom. In flavour it has the rich sparkling character of the Morocco, and is very pleasant, so that if it is free from the bad setting qualities of that variety, and of good constitution, this will prove to be one of the best late black Grapes, and we congratulate Mr. Bell on his success. We may note also, *en passant*, how well Mr. Pearson's last introduction, "Mrs. Pearson," is proving. It is one of the best white Grapes in cultivation.

Pine-apples merit this season a share of our attention. Seedling Pine-apples are of rare occurrence, and their production is evidence of considerable skill and perseverance. We therefore compliment Mr. Hunter, the very able gardener at Lambton Castle, for his success so far. His new seedling, "Lady Beatrice Lambton," is a large and very handsome fruit, not unlike a good Cayenne. Some fruits exhibited before the Fruit Committee were of fine appearance, but of inferior quality; we have, however, tasted some fruits which were excellent, so that we look forward to its taking a front place, independently of its great size and beauty, which will always recommend it.

Apples furnish us with no novelties of particular note this season, and Pears are nearly equally wanting; yet here we must mention one or two excellent additions, as Amiral Cecile and Willison's Queen Victoria—the former one of the richest-flavoured January Pears, the latter a good early autumn sort. Both are of medium size, and well worthy of cultivation.

Of Peaches and Nectarines there is little of novelty to record, but attention may be called to some of the older but too little known sorts, such as Goshawk, which is one of Mr. Rivers' best seedlings, and is a fine large and excellent sort. Let us mention also Desse tardive as one of the handsomest and best late Peaches, far too little known.

Strawberries are not so prolific of novelty either this season, as usual, the excessive drought having materially interfered with their progress. A great many new Strawberries are annually introduced to us from the Continental raisers, the majority of which are worthless. Of the newer English sorts we would especially recommend Enchantress, Excelsior, Countess, &c., all seedlings of Dr. Roden — free and abundant bearers, of excellent quality, and most distinct.

Melons appeared in plentiful array, as usual, some promising scarlet-fleshed varieties coming from Kashgar, of which more may be said anon. Mr. Frisby's Alexandra Palace proved to be a first-class, high-flavoured green-flesh.

In the VEGETABLE DEPARTMENT the number of new names annually introduced to notice by our enterprising seedsmen is most confusing. We fail to see the necessity or the policy of this continual application of new and special names to well-known varieties. A new name cannot improve the quality of the article, neither do we believe it can tend to the reputation of its introducer in the long run. A spade is still a spade, and we should prefer to call it so, and the Ne Plus Ultra Pea bears a more honourable character by that name than any of its new-fangled *aliases* will ever attain. Improved selections of vegetables are most meritorious and require distinctive appellations, and it is mainly by careful selection that the high standard of excellence is maintained, so it has apparently become the fashion now to bestow a special name on all carefully saved seeds, whilst the original names are lost sight of. This is a tendency greatly to be deplored and discountenanced.

Amongst Peas, which of late years have been replete with novelty, thanks to the great skill of our hybridists, we have again a few very promising varieties to notice. Criterion, of Messrs. Veitch, is a seedling of the late Mr. Standish's, and is an early Ne Plus Ultra, than which it wants no better character. Sutton's Giant Emerald Marrow is a novel and very distinct sort, a tall, strong-growing variety, with large pods, and of good quality. It has the peculiar glassy green of the old Danecroft Rival. Carter's Commander-in-Chief is a large and very fine showy semi-wrinkled green Marrow in appearance like Supreme. Allen's Champion is a good selection of Dickson's Favourite, and Taber's Market Favourite is a good selection of the Essex Rival, but distinct.

In Onions we call special attention to the Trebons, which, although not a new variety, was proved last season to be so exceptionally good for autumn sowing that it deserves all the notice we can give it. We would also note the Rocca as being the best form of the large Tripoli section.

Of Kidney Beans we make note of the Early White Etampes, as being a very early sort; Nain Blanc Quarantin, is an excellent second early; Rachel, Yellow Champion, and Zebra are all excellent sorts, if so many varieties are really required.

In Cauliflowers there is nothing specially new. In the Chiswick trials the Lenormand was specially distinct, as was the Extra Earliest Paris, which is used for forcing purposes, and little known in this country. The Erfurt variety seemed to engulf many of the so-called new varieties of former years. Of Cabbages, Carter's Heartwell is a good variety of the Nonpareil.

Amongst Salads we must not omit to mention the Whitloof, or Brussels Chicory. This is not a new vegetable, but although extremely common in many parts of the Continent, it was scarcely known or cultivated in this country until the past season. It is of the easiest cultivation, and when blanched like Seakale it is excellent as a salad or cooked. Speaking of Seakale, we are reminded of a distinct sort cultivated by Messrs. Stuart & Mein, the leaves of which are green, with no purplish colouring, consequently when blanched they are pure white, and although exposed, never assume that purplish tint of the common form. On this account it may prove valuable as a market variety.

Potatos come last, but are far from being the least of the gardener's charges, or the least deserving of notice. Of late years it is pleasant to note the increasing popularity of this vegetable. Immense interest is now being taken, not only in improved cultivation, but also in the production of improved varieties, both in this country and in America, and the improvement is manifest. From America we have received quite a distinct class, remarkable for their great cropping qualities, and for possessing a peculiar whiteness of flesh. In some seasons and in some situations they are wonderfully good, but in others they lack the finer qualities of our best English varieties. To overcome this—to blend the good properties of both in one, many of our enterprising men have been endeavouring to cross them, and in this Mr. Bennett, of Enville, has succeeded by producing the Schoolmaster, now offered by Mr. Turner. This is a splendid victory, and a splendid Potato in every sense. It is of the Regent appearance — a most extraordinary cropper, and of first-class quality. Criterion is very similar to this. Wyville Seedling is a fine handsome Potato. It is a seedling raised at the village of Wyville some years ago, and, strangely enough, is scarcely distinguishable from the American Beese's Prolific. Of other sorts we mention Prince Arthur, pertaining to the Lapstone section; Lye's Favourite, a very handsome coloured sort, fine for exhibition purposes; Brownell's Superior, of American origin; Garibaldi, International, Worthington G. Smith, &c., and many more of the many excellent sorts of our great Potato authority, Mr. Robert Fenn.

Home Correspondence.

Holly Berries.—Several of your correspondents have noticed the scarcity of Holly-berries in different parts of the country, and the same thing may be observed to a remarkable extent in this neighbourhood. Your correspondents account for the fact by spring frosts, but it must be remembered how hardy a plant the Holly is, being found in Norway as far north as the 62d degree of north latitude (Lecoq *Géographie Botanique*, vii., p. 370), another explanation seems to me more probable. Bees of all kinds were in this neighbourhood extraordinarily rare during the spring. I can state this positively, as I wished to observe a particular point in their behaviour in sucking the common red Clover; and, therefore, often visited the fields where this plant was growing; but I could see very few bees. I was so much struck by this fact that I examined several meadows abounding with flowers of all kinds, but bees were everywhere rare. Reflecting, in the course of the summer, on this extraordinary scarcity, it occurred to me that this part of England would be temporarily in the same predicament as New Zealand before the introduction of hive bees, when the Clovers (which, as I know by trial, require the aid of bees for perfect fertilisation) would not set seed. By an odd chance I received the very next morning a letter from a stranger in Kent, asking me if I could assign any reason for the seed-crop of Clover having largely failed in his neighbourhood, though the plants looked vigorous and healthy. Now the Holly is a dioscious plant, and during the last forty years I have looked at many flowers in different districts, and have never found an hermaphrodite. Bees are the chief importers of pollen from the male to the female tree, and the latter will produce but few berries if bees are scarce. In my *Origin of Species* I state that, having found a female tree exactly 60 yards from a male tree, I put the stigmas of twenty flowers, taken from different branches, under the microscope, and on all, without exception, there were a few pollen-grains, and on some a profusion. As the wind had set for several days from the female to the male tree, the pollen could not thus have been carried. The weather had been cold and boisterous, and bees not favourable; nevertheless every female flower which I examined had been effectually fertilised by the bees, which I saw at work, and which had flown from tree to tree in search of nectar. Therefore, as I believe, we cannot decorate our Christmas hearths with the scarlet berries of the Holly, because bees were rare during the spring; but what caused their rarity I do not in the least know. *Charles Darwin, Down, Beckenham, Kent, Jan.* 3.

Premature Growth of Vine Roots, &c.—"We are so liable to shape our practice in accordance with preconceived notions, that have become deeply rooted through long usage, that we often adhere to the old treatment without having tried any other." This, the closing sentence of Mr. Baines' article on this subject (on pp. 775 and 776 in your last volume), has struck the right key, not only with regard to the subject in hand, but to many other practices connected with horticulture, and until each one for himself has sufficient manliness to have an opinion of his own, and moral courage enough to express it, despite the taunts and sneers that he is sure to meet, can the old ruts, that we are liable to run in because our forefathers did, be filled up. As horticulturists, there is a clannish feeling amongst us, and most of the brotherhood are at all times most willing to assist each other with ideas or more substantial aid. The moment, however, such aid tends—as in some instances it does—to discourage thinking on the part of the recipient, and makes him, as it were, a mere machine, dependent on, and working out the ideas of others, wondering what treatment Messrs. Thomson, Fowler, Coleman, Johnston, Hunter, and other noted Grape-growers give their Vines to obtain such marvellous results—causing him, instead of putting his own brains in motion, or tucking up his own sleeves, to wait anxiously to hear or read what these gentlemen have to say — then it is that such

assistance cannot be too highly deprecated. I am free to confess that I am not altogether clear in this matter myself, being far too prone to "follow the leader" rather than take a new course; but, having a desire to be free, I have occasionally worked out a theory of my own, and this one of Vine roots is by no means the least interesting. I lay no claim to originality of discovery that Vines do not make new feeding roots till the buds are expanded, for I doubt not but that scores have known this for years; still the general opinion is that root-growth does and must precede leaf development; but to my own satisfaction I have proved that they do not—more, that though they may be made to produce roots in advance of top-growth by the application of heat to the border, yet that such a practice is injurious to the general welfare of the Vines: both of which propositions coincide in a remarkable manner with Mr. Baines' experience, and I doubt not but that many of your readers could give similar testimony. Still the great majority of gardeners believe in the doctrine of root precedence: hence all the labour and anxiety to keep up a given temperature in early Vine borders. Like Mr. Baines, I had strongly imbibed the doctrine, and from those whom I believed best calculated to teach it; and it was only after the demonstrative experiment recorded at p. 716, vol. vi., that my faith gave way; and as showing how tenaciously I held the doctrine, though this occurred some six years ago, I have hardly yet been able to give up the practice of covering early Vine borders, to induce root formation by the heat so generated. However, for the last two or three years I have merely covered the borders to keep out the cold, doing it as early in the autumn as opportunity offered, with a view of retaining part of the as yet unexhausted summer-heat; and my conviction is, that if outside borders were covered with 18 inches thickness of dry leaves, Bracken, or straw, no other covering would ever be requisite, though forcing began ever so early. But the question here arises, Why have outside early Vine borders at all? Given a plentiful supply of water, and an easy mode of applying the same, then inside borders are for several reasons preferable:—1st, they are independent of weather, no covering from cold or protection from wet being required. Liquid and other forms of manure can be more freely applied. The roots are always in a more equable temperature as compared with the heads of the Vines than can possibly be the case with outside borders; and I am convinced that at least one spoke in the wheel of successful culture is equability of temperature, both as to root and top growth. I am an advocate for late vinery borders being shallow, for the same reasons as those just mentioned. Further, I contend that the orthodox style of Vine borders is founded on a wrong principle—half the border inside, and the other half out—one half protected from all weathers, and when the Grapes are ripe, dry as dust, the other half exposed to all the rain that falls, and sometimes perhaps bound with frost. Put an advocate of such borders in a similar predicament on a cold frosty night, *i.e.*, with one foot outside the blanket and the other safely ensconced in it, and one can fancy how he would plead to have both inside. I know I am treading on tender ground in this matter, and shall probably be met with the reply that perhaps the best Grapes that have ever been grown were from such borders. Granted that they may have been: it does not follow that they would not have been better if grown on what I term a more natural principle—that is, with the roots entirely in, or entirely outside. Again, it is always more pleasant to record successes, than failures, hence the few records of the latter that appear in print; but all will admit that, as regards Vine failures, a little only are ever made known, and though I do not wish to infer it, there is just a possibility that "half-and-half" borders may have been accessional to such failures. Certainly as regards myself, if obliged to give a decisive answer, I should without hesitation, and with strong conviction that I was right, answer in the affirmative. The subject is to me of such deep interest that I am selfish enough to hope that many others will have a say in the matter. *W. Wildsmith, Heckfield.* [Will some of our correspondents tell us what is the condition of the roots in outside and inside borders respectively at the same time? EDS.]

Fruiting of the White Jasmine.—Observing in your last number a notice of the extreme rarity of the fruiting of the white Jasmine, I beg to enclose you a specimen which I found this morning in my garden. Never having seen this occurrence before in this neighbourhood, I have made the unusual event the excuse for troubling you. *G. Fuller Guy, The Grange, Bury St. Edmunds, Dec.* 31, 1876.

Late Roses.—Passing to-day (December 31) the residence of Mrs. Jones, widow of the late proprietor of the White Hart Hotel, situated on Milford Hill, Salisbury (rather an exposed situation), I observed some eight or ten well-opened blooms of Céline Forestier and Climbing Devoniensis; also on a standard fastened to the wall a bloom, finely developed, of what in colour pretty nearly resembled Madame Rothschild. I was not near enough, however, to speak positively as to the variety. The trees, which face almost due west, are well sheltered from north winds, and effectively protected from wet by widely projecting eaves. To "seek Roses in December, ice in June," seems now-a-days a less ridiculous thing than it was supposed to be in the "degenerate days" of Byron. *C. H.*

Epiphyllum truncatum.—It gave me much pleasure to see the features of an old favourite of mine again appearing in the pages of the *Gardeners' Chronicle*: I mean your reprint of engrafted Cactus (fig. 148, p. 808). It is somewhere about thirty years ago since the sketch was taken by the late H. Bellenden Ker, Esq., of Chesthunt, when on a visit to Mrs. Huskisson, at Eartham, Sussex, from a plant grown by me and in the conservatory at the time. I have a lively recollection of seeing him sketching and of my placing the plant in better position for the purpose. I had four of these large plants at the time, the two tallest being on stems about 4 feet in height, the heads fully 6 feet in diameter. Two of them had single heads with the Cereus growing under. The other two were of the double section, and had the Cereus mixed, as shown in your illustration. These plants after flowering were allowed to remain in the warm end of the same structure through the winter, and were kept dry during that time. In the spring they were moved to the back of a lean-to Orchid-house, and encouraged into growth. The soil they were grown in was similar to that recommended by Mr. Bester at p. 808. A little before the time of their commencing to show for flowering they were turned over to the depth of 1½ inch with fowl-dung fresh out of the fowl-house. In the course of a few weeks the roots were seen to draw up over the surface until the mass became white. The following season the exhausted surfacing was removed, picking it up with a potsticK, and a similar mulching put on. This method served for years without shifting the plants into larger sized pots. Sometimes as many as three or four flowers would grow out together at the ends of the strongest shoots, and the mass of bloom they produced was sometimes marvellous. The Pereskia is a strong free-rooting plant and does not require tampering with by starving cultivation. It was either Mr. Ker or some friend of mine who told me that Dr. Lindley had taken the figure of my plant for the frontispiece of his *Theory of Horticulture*, where I think it will be seen to correspond with the figure in the *Gardeners' Chronicle*. [Not in the second edition]. *J. Webster, Gordon Castle.*

Fungoid Christmas and New Year's Cards.—Messrs. De la Rue & Co. have this Christmas, amongst their other admirable productions in colour, issued a set of six fungoid Christmas or New Year's cards: No. 31. Each card shows a group of fungi, over and about which fairies, elves, little goblins, and witches are diverting themselves. The species of Agarics and Boleti are copied from the originals made by myself and my friend Mr. W. Wilson Saunders, many fungological friends may reasonably imagine that we have been improperly reducing the higher fungi to this lower (?) level. But this is not so; and I for one do not complain. The first I knew of the cards was from seeing them in a shop-window, just as the first I recently knew of a new edition of my *Mushrooms and Toadstools*, with new key plates, &c., was from seeing a criticism of it in a newspaper. This new edition I have not even yet seen, but no doubt my publishers have arranged for all details to be right. The first of Messrs. De la Rue's fungoid cards reproduces on its left my figure (now in the British Museum) of Cantharellus carbonarius. The natural habitat of this fungus is wood-ashes; on the card it is made to grow in a nice grassy place amongst which and on one pileus is a Dryad with a red feather in her cap. On the right of this card is my Boletus parasiticus, Bull (also in the British Museum). On the pileus of one of the group three gnomes are introduced, and Titania is in the foreground. The fungus upon which the Boletus is parasitic is omitted (Scleroderma verrucosum on account of its strong resemblance in my drawing (to the non-fungoid mind) to a lump of horse-dung. My originals are well reproduced. Card No. 2 reproduces Mr. Wilson Saunders' group of Cortinarius cœrulescens, Fr. (*Mycological Illustrations*, plate 22), but Messrs. De la Rue's artist, not having funguses in his heart, has omitted the cortina (or veil) from the Cortinarius; the latter is clearly shown in Mr. Saunders' original. Nine amusing sprites are playing in the foreground. Card No. 3 is a plant I first published as British, viz., Cortinarius dibaphus, Fr. My original, now in the British Museum, or the plate in *Mycological Illustrations*, is well reproduced, but the cortina is again omitted from both specimens. Queen Mab is introduced in the foreground directing the cutting down of one of the two fungi by two infant axe-bearing gnomes. Card No. 4, possibly original, is certainly a fungological nondescript. Four elves are dancing on the pileus of Agaricus muscarius (judging from its red colour and its white warts), but the stem of the Christmas-card fungus is ringless, and clearly pertains to a Mushroom belonging to a different section. In the foreground are three small beings belonging to the world of dreams, and a small original fungus with no characters in particular. Card No. 5 reproduces on its left Mr. Wilson Saunders' illustration of Coprinus lagopus, Fr.; a wood nymph and five evil genii of the masculine gender are engaged in overturning one specimen. On the right of this picture is a possible Tricholoma, whether original or copied I cannot say. Card No. 6: a similar fungus with this last occurs on the right of this card, in which five little dream-folk and two witches figure. The witches with their cauldron are concocting Machethian broth, whilst on the left are three Coprini, and a reproduction of Mr. Saunders' Agaricus lacrymabundus, Fr. The characteristic veil is again omitted, which shows that the copyist who has honoured us by reproducing our drawings has not a fungus eye. *W. G. Smith.*

Horse Radish Culture.—An essay on the culture of this root was read at the West Derby Gardeners' Mutual Improvement Society on December 18 by Mr. C. C. Gorst, and a few remarks respecting its culture may be of service to some of the readers of the *Gardeners' Chronicle*. The whole should be lifted in November, and have the long roots cut off, the remainder being laid in in some convenient part of the garden for use. The straightest pieces should be selected for planting, and cut to the length of 9 or 10 inches. All the fibres should be cut off to within half an inch of the bottom (the back of an old knife being a good thing for this purpose), then rubbed with a cloth, so that no fibres remain for branching, except at the bottom. The pieces selected should be tied in bundles, and plunged in ashes with their crowns exposed till March, when they should be planted in ground that has been well manured, and deeply dug or trenched to the depth of 18 inches. In planting the rows should be 18 inches apart, and the same distance from root to root straight on the line used to dibble them in. The holes are lightly filled up, and the crowns covered to the depth of 2 inches. Here they should remain till the time mentioned for taking them up, the rootlets being cut off and prepared as above described for next season's planting. An average sized stick was produced for the inspection of the members, and it measured 6 inches in circumference, and about 10 inches in length. It was very crisp and tender. I have obtained a sample from Mr. Gore, and have sent it for your inspection. *Wm. Gardiner, West Derby, Liverpool.* [A very fine sample: straight, stout, and succulent. EDS.]

Poinsettias.—I can well imagine what a glorious sight your correspondent (see p. 772) must have had at Acton. I believe, as a rule, Poinsettias are grown in too much heat. I have some plants from 1 to 2 feet high, grown in 48 and 32 pots. They were put in as cuttings in the last week in July, and when fairly struck, they were taken into the intermediate-house, where they still remain, and will for decoration. I have measured one head to-day which is 17 inches in diameter, with thirty-four scarlet bracteal leaves; height 1 foot 6 inches from the pot. Such plants are a welcome addition on the Christmas table. If wanted for decorating rooms, &c., they will last double the time of cut flowers in a vase, and the colour is much brighter. *T. Foster, Glenhurst, Esher.*

—— A good example of what Poinsettias ought to be for decorative purposes may now be seen in the stove at Croxteth Hall, the Earl of Sefton's. The plants were from cuttings, struck last June in the spring, in heat, and grown in cold frames during the summer, in 5, 6, and 8-inch pots, and vary in height from 2 to 3 feet. The floral leaves or bracts are brilliant in colour, the heads measuring from 12 to 16 inches over. They reflect great credit on the cultivator. *William Bardney, West Derby, Liverpool.*

Rainfall in 1876 at Wallington, Northumberland.—The following is a copy of the monthly register of rainfall kept here during the past year:—January, 1.7; February, 3.77; March, .2.77; April, 4.42; May, 1.37; June, 1.86; July, 1.35; August, 1.51; September, 3.82; October, 2.22; November, 3.87; December, 9.92; total, 37.95. The rain gauge stands 12 inches above the ground, and 398 feet 6 inches above sea level. The rainfall is recorded every day at 9 a.m. *W. McCombie, Gr. to Sir W. C. Trevelyan, Bart., Wallington Hall.*

Lardizabala biternata.—In the last number of the *Gardeners' Chronicle* you ask for information respecting the hardiness of Lardizabala biternata. It has now been growing in my garden on a south wall for five years, without the slightest protection. It is doing thoroughly well, and this year it fruited—two small bunches of Grape-like fruit. I consider it quite hardy, but, as I stated in February last, let no one plant it in preference to Stauntonia latifolia, which I am glad to say has this year again fruited on a west

wall. I again repeat that this is, without any exception, the very best hardy evergreen creeper now cultivated in England. *K. K., Taddyforde, Exeter, Dec.* 30.

Hints to Young Gardeners.—Young gardeners are very frequently alluded to in uncomplimentary terms by the older members of the craft, and many unwarrantable faults laid to their charge. How is this? That there are faults on both sides I know, but I fear the fault-finding will fail to improve the position or proficiency of either. What is wanting is the establishment of a better feeling and a little more regard for each other's interests. If head gardeners would treat their young men as they would like to be treated themselves, and let their own conduct be an example, it would save them many of the annoyances they complain of, for those who cannot be managed by good words and feelings can rarely be managed at all. It would be well too for young gardeners to remember that there is no occupation that requires more careful energy and forethought than gardening, and that success depends more or less upon the energy and ability of every separate individual employed in the garden, and any extra exertion adds as much to their own reputation as to their employer's satisfaction. I have always made this my rule of conduct, in spite of many discouragements, and I have succeeded beyond my expectation. I have had experience in nurseries, public and private gardens in many counties, and have had to deal with many dispositions, but have never met with such dunces and black sheep as are too often represented. *J. H. Goodacre, Elvaston.*

Dwarf Chrysanthemums.—In answer to an enquiry by one of your correspondents, as to whether the dwarf Chrysanthemums exhibited by me at the Liverpool show were from layers or struck from cuttings, I beg to say that they were struck from cuttings taken off in August and struck in the same pot they were bloomed in, they having only one stem each, with one bloom to each plant. *W. Tugwood, The Gardens, Allerton Priory.*

Strawberry Growing.—Whilst admitting the importance of soil, climate, and a good variety in the successful growing of Strawberries, I am yet inclined to believe that, with careful cultivation, very fine fruit may be grown in all good garden soils. The great mistake made by many is planting too thickly at the first, and allowing the plants to remain from year to year on the same bed. Thus we often find the plants growing together in a tangled mass, and the result is when a pinch of dry weather comes in June or July, they receive a serious check, the quality of the fruit is depreciated, and the constitution of the plant weakened, possibly so much so that the plants are unable to mature their fruiting crowns for the following season. Thus the plants go on from bad to worse. Such a "lazy bed" system will fully account for some "varieties growing and cropping well for a few years, and then becoming almost barren and the fruit nearly flavourless." As a grower of from forty to fifty distinct varieties on light soil, in a backward situation, I have adopted the following system of cultivation, and have found little difficulty in growing abundant crops of excellent fruit from most of the varieties I have tried. In fact, judging by the quality of the fruit grown on one-year-old plants, you might be led to suppose that nearly all varieties were equally good, and it is only after a second or third crop of fruit that you are able to distinguish the better qualities of the favourite sorts. A well-grown one-year-old plant will bear abundance of fruit, and the quality and size all that can be desired. My plan is to give the land deep and thorough cultivation in winter previous to planting, to plant the bed in July on land that has grown a crop of early Potatos, in rows 30 inches apart, and 15 inches between each plant, with strong, healthy, well-rooted runners taken from one-year-old fruit-bearing plants only; to let the plants stand to bear two, or at the most, three crops of fruit; as soon as the first crop of fruit is gathered to remove every other plant, thus leaving them at a distance of 30 inches apart each way; to keep the hoe constantly at work during the summer and autumn months after planting; and to remove all runners as fast as they make their appearance; in early spring to mulch the land with fresh stable manure at the rate of a good barrowful to every twenty plants, and when the plants are in bloom to finish off with a second mulching of clean straw. Thus treated, Strawberries may be grown in almost any situation, and at least a score good varieties may be selected from, any one of which may be cultivated with satisfactory results. *W. Lovel, Weaverthorpe, York.*

Encephalartos villosus.—We have so recently figured this handsome Cycad that we need add but little to what we have already said on the subject. We avail ourselves, however, of the opportunity presented to us by Mr. Bull of figuring the male spike. The illustration (fig. 4) is two-thirds the size of Nature, and the colour a beautiful grass-green, frosted over with a silvery bloom like that of a Plum. The



FIG. 4.—MALE SPIKE AND FLORAL DETAILS OF ENCEPHALARTOS VILLOSUS.

details show side and front views of the anther-scale, together with a section of the same of natural size. Magnified representations are given of the anther invested with hairs at the base, and of the pollen cells magnified 150 diameters, the latter on the authority of Mr. Worthington Smith. EDS.]

The True Service Tree.—It may interest some of your readers to know that the old tree that Professor Buckman speaks of is still alive, and bears from 6 to 8 bushels of fruit annually. It must be of great age, as I see very little difference the last eighteen years. We have both forms here, but the Apple-shaped is a much smaller tree, and a shy bearer. *T. Foster, Glenhurst, Esher.*

The Garibaldi Strawberry.—My attention has been called to the remarks that have appeared for some weeks in your "Home Correspondence" as to this Strawberry. The Garibaldi raised by me about twenty years ago was the only one selected from several hundreds of seedlings, the seed of which was saved principally from Elton and Keens' Seedling, and was sent out by me in the year 1864. Two or three years previous to that date I foolishly let a gentleman's gardener have some of the plants to test, and, contrary to promise, he distributed them amongst a number of his friends, which consequently disheartened me from bringing it prominently before the public until 1866. I enclose a copy of a circular issued by me at that time, from which you will be able to gather a description of my Garibaldi. *Thos. Armstrong, Nurseryman—formerly of Beulah Gardens, now of Moorville, Carlisle.* [From the circular sent to us by Mr. Armstrong we gather that the variety raised by him is "one of the healthiest, hardiest, and earliest grown; it resembles the Elton Pine in colour and size; is hardier, earlier, and fruits longer than the Keens' Seedling, and is of a superior flavour; it is an immense cropper, and grows well on exposed situations, and on land where the Keens' Seedling does not grow well." EDS.]

—As our name has been introduced in connection with the Garibaldi Strawberry controversy, we may state that we got our stock of it from Mr. Thomas Armstrong, Beulah Gardens, near Carlisle, in the autumn of 1865. We ordered it after seeing the fruit, under the impression that it was a new variety raised by Mr. Armstrong, who stated that it was earlier, a much greater bearer, and would give a longer season of fruit than Keens' Seedling. We had no knowledge of the previous existence of any variety under the name of Garibaldi. Vicomtesse Héricart de Thury we got for the first time from Mr. Chas. Turner, Slough, in February, 1871, expecting to find it distinct from any we had, but we have no doubt now that it is synonymous with Garibaldi, which we have found to be the most prolific and generally useful Strawberry in our collection. *Dickson & Co., Waterloo Place, Edinburgh.* [Will some of our French friends give us the origin of the Vicomtesse Héricart de Thury? EDS.]

Late Grapes: Mrs Pince's Vagaries.—Mr. Grieve has (see p. 836) undoubtedly made an excellent selection of late Grapes; he has noted also two Vines of Mrs. Pince's Black Muscat growing "in the same house under the same conditions," one of which has produced black and the other red Grapes. Seeing that this Grape is prone to produce red fruit, which so greatly impairs its value for dessert purposes, it becomes important to ascertain, if possible, the cause of its non-colouring. I should like Mr. Grieve to examine minutely the two Vines to which he has referred. Are they of the same age, similarly cropped, both having the same relative proportion of foliage and fruit, and especially are they from the same source? There must be a cause for one Vine producing black Grapes, and a different cause for the other yielding red fruit. Can Mr. Grieve tell us wherein is this difference, and what is its nature? If he can do so, he will command the thanks of many gardeners who have long been puzzled to account for the caprices of this fine Grape, in refusing to appear in "black dress." If he cannot satisfactorily account for the difference in colouring alluded to, would he raise a young Vine from each of his stocks, and tell us, in due time, if the deficiency of colour so common with Mrs. Pince is constitutional and hereditary? Mr. Grieve appears to have an excellent opportunity of settling that important point which, as yet, is a matter of controversy. Some specimens of Mrs. Pince invariably produce Grapes as "black as sweeps," while others as constantly yield fruit as "brown as badgers," and no one has yet told us the "reason why." *Enquirer.*

The Royal Horticultural Society.—In common with other Fellows of the Royal Horticultural Society, I have received a copy of the circular spoken of in your last edition. Permit me to make one or two observations respecting it, and to begin we will take the last paragraph. We are here distinctly told that the Society has no debt, and that the debentures with their interest are merely a charge on the surplus revenues [We believe this to be true, according to the printed terms of the agreement, before us as we write. EDS.], so that we may delete £50,000 from our capital account. This is joyful news for the Fellows, only one can scarcely believe that the debenture-

holders have been so generous; but, at least, it is a grand way of settling the difficulty. Is the Council in earnest, or is it a joke? Read one of the earlier paragraphs:—"That this meeting (*i. e.* of debenture-holders held on November 23, 1876) declines to authorise the surrender of the lease of the gardens to the Commissioners on the terms mentioned in the letter of the Society of November 2, 1876, and the meeting will not authorise a surrender of the lease unless provision be made for the payment of the debenture debt in full, by reasonable instalments, with the interest in the meantime, and that a copy of this resolution be forwarded to the Society." The Council then goes on to say:—"In these circumstances no course appears open to the Council but to continue their tenancy of the South Kensington Gardens." Pray what would our Council make or wish us to believe in these statements? Here they acknowledge beyond all possibility of a doubt that the debenture-holders have some charge on the Society beyond the doubtful payment of some chance sum out of our surplus income, for there would be no difficulty in proving that, were this said income double its present amount, there could easily be found a proper way of specifying it within the wording and meaning of our charter, and that the debenture-holders might have been left, not to the justice, but the generosity of the Council. In lieu of not being in debt, it rather looks as though we had in part mortgaged our lease in some way to the debenture-holders. It appears to me that it would be much more satisfactory if the Council were to place before the Fellows a succinct statement of affairs at the annual meeting, or before, if possible, in such a way as to be intelligible to brains of such mean capacity as mine, rather than incur the expense of printing and posting statements that are irreconcilable; and if they would favour us with some particulars of our worthy co-partners the Commissioners, and the footing on which we now stand with them; I think it would be of interest to many, who believe we still linger in the Vale of Tears, for so far as one can judge of that state of body, and their actions for some considerable time, they have been marching to the tune of—

"O wha dare meddle wi' me,
And wha dare meddle wi' me!
My name it is little Jock Elliott,
And wha dare meddle wi' me!"

The proposition of the Council to make the two-guinea tickets transferable is most decidedly good; what a pity concessions of this kind were not made sooner, though I feel sure that this and the proposed guinea Fellowships will not cause any large influx into our ranks, nor can it be for one moment expected till such time as the whole *rationale* of the affair is changed. As they say in the North, "every herring must hang by his own head." Our good fish does not seem to have done so, and we seem to be waiting with bated breath for Blucher's last words—

"Nostitz, sie haben vieles von mir gelernt, lernen,
Sie auch von mir ruhig sterben!"

Robert Prince Glendinning.

—— Will you favour me with space for a few remarks on the last clause of the notice to Fellows lately circulated by the Council of the Royal Horticultural Society wherein Guinea Fellowships but without the right of voting are proposed. Judging from the tone of very many letters which I have received country Fellows will not be satisfied with semi-Fellowship, those who live at a distance, who will give a guinea to support a society they believe to be useful, though they get little direct good from its shows and meetings, have a right to expect the honour of full Fellowship, and will assuredly after a little longer waiting get it. The first bid for their support was a guinea Associateship, a guinea part Fellowship is now offered, a full Fellowship is not far off. The Council have a hard task before them: there was great difficulty in keeping all Fellows and in bringing in new ones, even when the South Kensington Garden was well kept up; in its present state of *dishabille* the difficulty is greatly increased. Let us hope the neighbourhood will generally subscribe, otherwise it is not a pleasant reflection that, however economical the expenditure on the garden may be, as long as it is kept open there will be a charge of some £600 a year for rates and taxes, a severe tax—for this land of now little use—if paid out of horticultural money. I hope that those who believe in guinea Fellowships, and who are canvassing their friends through the country, will not relax their exertions. A year ago I should have tried to commence this canvass, but was led to believe that the Council were likely to undertake it. Judging from the great number of first-class names collected in two months, a year's work would have given us enough Fellows to make us independent of South Kensington. By this time next year we ought to have completed the necessary number. Strong societies have grown up starting with supporters less in influence and number than we already have. It is now almost necessary to justify the independent course I am taking, though let me say that it is no longer I who am advocating guinea Fellowships as the one means of making the Society what it should be—I am merely the mouthpiece of very many of the best and most experienced horticulturists of the country, of all ranks, who urge me not to let the matter rest till the guinea Fellowships are accomplished. On a former occasion I had to take independent action, having means of knowing more of the circumstances of the time than some of my friends had. I was so certain that it was for the interests of the Society that the Council of 1873 should be continued in office, that on my own responsibility, and at my own expense, I circularised the lady Fellows, asking for their proxies to support the Council. One hundred and fifty ladies trusted me with their proxies; twenty more proxies would have carried the vote of confidence, and kept the Council in office; and this means that the arrangement with the Commissioners on the eve of settlement would have been accomplished, with the result that the Society would now have been free from its debenture debt, free from rent, and with a conditional accession of income, then estimated to amount to £1000, but which last I doubt would have been continued. Therefore, having been proved right once, I claim the inference. I hope that nothing more will be said about turning out the present Council. On more than one occasion there has been great difficulty in finding suitable men who would undertake the office. The present work is both unpleasant and thankless. When we get a really good Society with only horticultural work there will be plenty of first-class men only too glad to serve. *George F. Wilson, Heatherbank, Weybridge.*

Veitch's Self-Protecting Autumn Broccoli.—I can fully endorse all that Mr. W. Johnstone stated in your last issue respecting this Broccoli. He has truly called it a gem of the first water, and I am sure when it becomes known it will be in great request. I have been cutting this variety for the last six weeks, and have this day (January 2) cut six as beautiful heads as any one could wish, from 4 inches to 6 inches in diameter, as close and white as a curd. In future I intend growing this kind to follow the Autumn Giant. *J. Little, Cheltenham.*

The Potato and its Difficulties.—The Potato question is the "Eastern Question" of cultivators; it may seem easy, but is full of difficulties. How many earthed their growing crops last season, giving a check to the plant from which it could not recover, and finding a crop in digging time, one half in size and quantity. Then there is the disease, which Mr. Worthington Smith, with consummate skill, has traced out for us in one of its branches, "the resting-spore," by following whose advice, and getting rid of the haulm, we may avoid one source of danger. But how about the other spores—the more insidious enemy—which are produced in infinite numbers on the summits of the perfectly developed mould? What becomes of them? Have they been produced to no purpose? These very minute, smooth, spherical spores fill the oval conidia or vesicles on the tips of the mould, from which they are shaken away by the wind. They may be easily shown under the microscope by crushing the vesicles on the glass stage, and may be kept there, in a moist state, for hours together without undergoing change. Being of exquisite fineness and invisible to the naked eye, they float away upon the wind and join the great army of spores which pervade the air, and are borne across land and sea into every corner. These sporules of the Peronospora infestans, we may suppose, are most of them washed down by rains into the soil, and infect all quarters. What is their history may be no one knows, but there are facts which go to prove that they run a course not unlike that of the "bunt" (Tilletia caries). First, the growth of the Potato fungus is internal, as Mr. Worthington Smith has demonstrated. Then again, how often it has been observed that the disease begins at the root; how many gardeners have supposed their crop free from it, because there has been no spot on the leaves, until digging time proved that the fungus thread had been at work. For it is fast proved that the extreme extension of the fungus growth, which penetrates the cells of the tuber and makes it rot. How then is this subtle enemy to be met? The farmer destroys the bunt spores which adhere to the grain, by steeping the seed in some poison and then drying it with lime; and but for this well known prevention our Wheat crops might be in as precarious a condition as the Potato now is. But the spores of the Potato fungus are in the ground (probably or possibly), and a remedy seems almost hopeless. The late Dr. Lindley, in his *Introduction to the Natural System of Botany*, p. 338, throws out an observation which might perhaps be turned to account. He observes "It is a remarkable circumstance, and one which deserves particular inquiry, that the growth of the minute fungi, which constitute what is called mouldiness, is effectually prevented by any kind of perfume. It is known that books will not become mouldy in the neighbourhood of Russia leather, nor any substance, if placed within the influence of some essential oil." Mr. Worthington Smith's promised manure, if we may judge from the hints he has given us, will be of an odorous nature, and perhaps is intended to act on this principle as a disinfectant. A little crude petroleum oil would make it still more fragrant. It will no doubt command a trial. *S. S., Sevenoaks.*

The Villa Garden.

THE VILLA GARDEN GREENHOUSE.—This heading is selected not so much to serve the purpose of setting forth a few remarks as to its management at this season of the year—for we have but recently dealt with that part of the subject—as for the purpose of pointing out errors that sometimes creep into their construction and position.

The modern builder of Villa residences must have but a limited range of ideas as to the principles required in constructing a house suited to the growth of plants; in fact a house suited to the cultivation of plants appears to be the very thing that he least considers. If the builder sets up a plant structure it is for the purpose of suiting the house, and the position is north, east, south, or west, as the fancy suits him. A glass structure is deemed to enhance the appearance of a house, while it certainly increases the assessment or rateable value of a dwelling; therefore, it is deemed politic to erect one. In the case of an ordinary detached Villa residence it generally comes in at the back of the house, and the back entrance leads through it into the garden, and as such houses generally have a basement floor the house is level with the ground floor, and built up over a coal-hole or cellar, or merely on brick pillars.

And the modern builder goes in for decorative effect, and therefore employs architectural ornamentation, and sometimes there is a heavy wooden roof with elaborate carving, or a roof partly wood and partly glass, but so much of the former, and so little of the latter that it might just as well have been wholly of wood. He has the impression that plants will grow anywhere, and under any circumstances, light or dark; and if such is not the case he cares but little. He has built the greenhouse, and the plants must take care of themselves.

Then, too, he must have some colour about it, and so he employs plenty of green and red glass, and we invariably find that the green is of the greenest, and the red of the reddest; for do not these impart a picturesque appearance to the house whereon the rays of the declining sun fall, and light up with crimson glow and purple radiance the house of glass? But about the plants? we ask, and the reply comes back—"A conservatory is a conservatory, and plants are quite another thing;" and with that one must be satisfied.

A neighbour of ours—a lady, fond of flowers, as most ladies are—some time since took a Villa residence in our neighbourhood, and was much attracted towards the house by one of these variegated conservatories. A friend of hers shortly after gave her a plant of Kennedya monophylla, raised from seed sent home from New Holland by a relative of the lady's, and she naturally attached much importance to the plant. It was placed in the conservatory, which was in a north aspect, and had but little sun, save and except about midsummer, when a little shone upon it in the evenings; and it is not to be wondered at that some little time after the plant was sent to us, with a request that we would explain the reason of its having become denuded of leaves. The reason was too evident—the dark, cold, sunless quarters it occupied were as detrimental to its well-being as could well be imagined; but a temporary sojourn in a greenhouse soon brought it round again, only to be returned to its inhospitable home, to again decline. That great essential to the well-being of plants, light, is sacrificed at the shrine of appearance. One builder's conception of what is requisite for plants recalls to mind a circumstance that occurred a few years ago when taking a journey through Ireland. It was within a few days of a horticultural exhibition in the south of the Kingdom, and a gardener accustomed to exhibit Fuchsias had some plants that were quite sufficiently advanced in bloom a few days before the date of exhibition, and he hit upon an expedient for prolonging their flower by placing the plants in a dark cellar. I was asked to inspect them after they had been there three or four days, and sorry subjects they presented, for nearly all the leaves had

turned yellow and fallen; and the Hibernian horticulturist was sorely perplexed at the result—one that he had never calculated upon. It was a sad ending to so much pains; the absence of light had upset all his calculations—

> "Since light so necessary is to life,
> And almost life itself,"

it is obvious that to unnecessarily exclude it is wrong in practice. It can be easily subdued by artificial means; but by no means can you add one iota to the daylight of the dullest day.

When larger and more roomy conservatories are set up, they are invariably as lean-to's, so that they give exit from a dining and drawing-room. They are much better adapted for the growth of plants, but in building them eventualities are not considered. They are sometimes raised 5 or 6 feet above the ground level, but quite open beneath; the result is that frost attacks from below as well as at the sides and top. If they could be closed up so as to prevent the admission of cold air on the east, north, or west sides, they would be rendered warmer; as it is, such houses are horribly cold in times of sharp weather. But covering in on any one of the open sides is sometimes difficult, because light would thereby be excluded from reaching the windows of the domestic offices on the basement floor and under the conservatory.

And what occurred in many places on Sunday, December 24, and also as a result of the heavy snowstorm of last winter, should be borne in mind by those whose business it is to construct plant-houses. These lean-to houses are placed immediately beneath the sloping roof of a two and three-storeyed house, and when a thaw comes, and the snow is dislodged, it sweeps avalanche-like down on to the ill-fated glass roof below, with what result may be well imagined. As long as plant houses with glass roof are placed in such a position this is likely to happens perhaps two or three times during winter. The glass with which these structures are glazed is nearly always of the cheapest.

The proper kind of house, and certainly the most satisfactory in all respects, is that set forth by Mr. William Paul in his *Handybook of Villa Gardening*. He says, "Waiving the question of mere outward show, I will venture to describe a house capable of producing and preserving plants, and suited to the requirements of a Villa Garden. First it should be span-roofed, the ends placed north and south, divided in the middle to form two compartments, one of which may be kept warmer than the other and used as a propagating and forcing house in winter and spring. A walk, 2 or 3 feet wide, running down the centre, with raised benches on either side, and 4 feet in width, on which to stage plants, is a very convenient and economical arrangement. The stages should be of slate, because cooler, cleaner, and more durable than wood. The paths may be paved with York stone or bricks. A slate cistern, fixed at one end, or beneath the stage inside, to receive the rain from the roof of the house, will save much labour, and place ready to your hand water of a suitable temperature, and of the best quality. This is the sort of house for real utility, adapted for rearing and forcing a number of plants at a small cost."

For any purpose, even if wanted for hardy plants only, this is the best kind of house. It need not be far away from the dwelling, and an asphalte, brick, stone, or well-kept gravelled path will enable the house to be reached in all weathers without inconvenience. It is sure to be in the line of sight of the sun, and away from the chance of harm from the snow-fall from the roof.

Notices of Books.

MESSRS. HARDWICKE & BOGUE have issued a third edition of Mr. Worthington Smith's useful little book on *Mushrooms and Toadstools*—how to distinguish easily the differences between edible and poisonous fungi, with figures of twenty-nine edible and thirty-one poisonous species. When any one (especially if he be, as the author of this little book is, zealous) has attained considerable knowledge and experience of any subject, he is rather apt to ignore the deficient attention and defective apprehension of those who have paid no heed to the subject, and seriously to underrate the amount of nescience of the public in general. We allude to this matter for the reason that the present little volume contains two uncoloured lithographs of edible and poisonous fungi respectively. Now when deprived of its natural colour, as on fig. 1, on the plate of edible Mushrooms, Agaricus rubescens resembles very closely fig. 13 on the plate of poisonous Mushrooms (Agaricus Muscarius). Indeed the ordinarily brown warty cap of the former may frequently be replaced by one of a red hue. Compare also fig. 2, Boletus edulis, with fig. 27 on the poisonous sheet, B. satanas. Of course the mycophagous artist will say, and say truly, that people should read his book as well as look at his pictures; but then, as he himself admits, and also very truly, people are so stupid. Be this as it may, we are satisfied that danger often arises from the would-be fungus eater not having at hand the means of comparison. He gathers one fungus, which from his imperfect knowledge he infers to be such and such a species, because it presents some more or less near similitude to it; but if he could have placed before him the real thing, with the counterfeit, he would be able to detect the difference instantly. Uncoloured plates, such as those in the book before us, do not convey to the uninitiated sufficient marks of distinction. We would, therefore, strongly recommend the beginner not to trust to the uncoloured representations in this book (in so doing we are far from imputing aught against the artist's designs), but to procure the coloured figures by the same artist, and issued by the same publisher. Again may we suggest to Mr. Smith (always in the interest of the stupid people, who cause some inconvenience to others when they happen to poison themselves!) the expediency of depicting the edible species side by side on the same plate with dangerous species, for which they might possibly be mistaken. The comparatively frequent occurrence of disasters from mistaking Aconite for Horse Radish, however, leads us to fear that, until people are trained to observe for themselves, no assistance that can be rendered by others will be of much service unless it be in administering antidotes.

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Nutting, W. J., Jun., 60, Barbican, E.C.
Paul, William, Waltham Cross, N.
Perkins, Thomas, Warren House Gardens, Stanmore, N.W.
Record, Thomas, Vintner's Park Gardens, Maidstone.
Sage, George, The Gardens, Ashridge Park, Berkhampstead.
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Smith, R., Barbourne House, Worcester.
Weir, Harrison, Weirleigh, Brenchley, Staplehurst.
West, James Firth, Lynmouth Lodge, Reigate.
Wildsmith, W., The Gardens, Heckfield Place, Winchfield.
Woodbridge, John, Syon House Gardens, Brentford, W.

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Noble, Charles, Bagshot, Surrey.
Parker, Robert, Exotic Nursery, Tooting, S.W.
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Quennell, John C., Brentwood, Essex.
Roger, Alexander, Era House, Surrey Lane, Battersea, S.W.
Rollisson, G. T., The Nurseries, Tooting.
Smith, G., New Villa, Hedge Lane, Edmonton.
Stevens, Zadock, The Gardens, Trentham Hall, Stoke-on-Trent.
Turner, Charles, Royal Nursery, Slough.
Veitch, Arthur, Koyal Exotic Nursery, King's Road, Chelsea.
Wills, John, Onslow Crescent, Onslow Square, S.W.
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Wills, John, Onslow Crescent, Onslow Square, S.W.
Young, Maurice, Milford Nursery, near Goldaming.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, JAN. 3, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading reduced to Sea-level.	BAROMETER. Departure from Average of 31 years.	TEMPERATURE OF THE AIR. Highest.	TEMPERATURE OF THE AIR. Lowest.	TEMPERATURE OF THE AIR. Range.	TEMPERATURE OF THE AIR. Mean for the Day.	TEMPERATURE OF THE AIR. Departure of Mean from Average of 31 years.	HYGROMETRICAL DEDUCTIONS FROM GLAISHER'S TABLES 5th EDITION. Dew Point.	HYGROMETRICAL DEDUCTIONS FROM GLAISHER'S TABLES 5th EDITION. Degree of Humidity. Sat. = 100.	WIND. Average Direction.	RAINFALL.
Dec. 28	In. 29.52	In. − 0.37	° 58.1	° 30.0	° 28.1	° 43.5	° − 5.6	° 16.0	50	S.W.; S.S.W.	In. 0.11
29	29.47	− 0.43	55.6	27.1	28.5	41.1	− 7.9	13.7	46	S.S.W.	0.18
30	29.28	− 0.62	57.1	26.4	30.7	42.8	− 6.2	12.8	47	S.S.E.	0.14
31	29.68	− 0.82	55.8	29.4	26.4	43.0	− 5.8	15.8	44	S.S.W.; S.	0.67
Jan. 1	28.81	− 1.01	56.1	26.0	30.1	42.0	− 6.8	12.8	44	S.S.W.	0.17
2	29.51	− 0.28	42.8	33.4	9.4	38.0	+ 1.1	34.5	87	N.; N.E.	0.09
3	29.24	− 0.55	52.1	36.0	16.1	44.4	+ 7.7	43.1	96	E.S.E.; S.S.E.	0.25
Mean	29.27	− 0.58	53.9	43.7	10.3	48.6	+ 11.4	44.6	86	S.	sum 1.21

Dec. 28.—Overcast, dull, wet, miserable day. Very mild. Strong wind.
— 29.—Overcast, dull, with occasional rain. Mild. Gale at night.
— 30.—Fine till 1 P.M., overcast, dull and wet till evening; then fine. Windy. Mild.
— 31.—Fine, bright, with strong gusts of wind. Very mild.
Jan. 1.—Cloudy and showery; fine at times. Gale of wind.
— 2.—Fine, bright, and pleasant till 7 P.M., then dull and wet. Colder.
— 3.—A dull, wet day. Fine from 1 to 2 P.M. Mild.

LONDON: *Barometer.*—During the week ending Saturday, December 30, in the vicinity of London, the reading of the barometer at the level of the sea increased from 29.39 inches at the beginning of the week to 30.19 inches by the morning of the 26th, decreased to 29.68 inches by the afternoon of the 28th, increased to 29.83 inches by the morning of the 29th, decreased to 29.44 inches by the evening of the same day, increased to 29.66 inches by the early morning of the 30th, decreased to 29.36 inches by the afternoon of the same day, and was 29.50 inches at the end of the week. The mean reading for the week at sea level was 29.72 inches, being 0.55 inch above that of the preceding week, and 0.35 inch below the average.

Temperature.—The highest temperatures of the air observed by day ranged from 58° on the 28th to 35½° on the 26th; the mean for the week was 47½°. The lowest temperatures of the air observed by night varied from 29½° on the 26th to 50° on the 28th; the mean value for the week was 38½°. The mean daily range of temperature in the week was 9½°; the greatest range in the day was 22½° on the 27th, and the least 3½° on the 24th.

The mean daily temperatures of the air, and the departures from their respective averages were as follows:—Dec. 24th, 34°.3, −3°.9; 25th, 34°.5, −3°.5; 26th, 32°.1, −5°.4; 27th, 49°.1, + 11°.4; 28th, 53°.5, + 16°; 29th, 51°.1, + 13°.7; 30th, 50°.1, + 12°.8. The mean temperature of the air for the week was 43°.6, being 5°.9 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 61° on the 30th, 58½° on the 28th, and 57° on the 29th; on the 24th the reading did not rise above 38½°. The lowest reading of a thermometer on grass, with its bulb exposed to the sky, were 30½° on the 26th, 31½° on the 24th, and 32° on the 25th; the mean value for the week was 36¼.

Wind.—The direction of the wind was from the S.W., and its strength strong. The weather during the week was very dull and wet, and the sky generally overcast; the first three days of the week were cold, but the last four very mild.

Rain.—Rain on every day in the week; the amount collected was 1.84 inch.

The Mean Reading of the Barometer for the Month of December was 29.309 inches, being 0.496 inch below the average of the preceding thirty-five years, and during this period of thirty-five years there has been no monthly reading in December so low as that of the present December; the nearest approach was 29.379 inches in December, 1868.

The Mean Temperature of the Air for December was 44°.3, and in the preceding 105 years there are only nine instances of a mean temperature equal to or exceeding 44½° in December.

The Total Fall of Rain during the Month of December was 5.92 inches, and there is no instance back to 1815 when the fall in December was so large as in the present month; the nearest approach was in the year 1868, when it was 5.4 inches. Rain fell on twenty-five days during the month, being thirteen days more than the average number for December.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 58° at Blackheath and 57° at Truro, Cambridge, Norwich, and Nottingham; at Sunderland 51° was the highest temperature. The mean value from all stations was 55½°. The lowest temperatures of the air observed by night was 24½° at both Bristol and Wolverhampton; at Truro and Brighton 32° was the lowest temperature. The general mean from all stations was 28½°. The range of temperature in the week was the greatest at Bristol, 31½, and the least at Brighton, 22°. The mean range from all stations was 27½°.

The mean of the seven high day temperatures was the highest at Truro, 53°, and the lowest at Bradford, 41½; the mean from all stations was 46½°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 31½, and the highest at Truro and Plymouth, both 41°; the mean value from all stations was 36½°. The mean daily range of temperature was the least at Bradford, 6½, and the greatest at Eccles, 13½; the mean daily range of temperature from all stations was 10°.

The mean temperature of the air for the week from all stations was 40½°, being 3° lower than the value for the corresponding week in 1875. The highest was 46½°, at Truro, and the lowest 37½, at Wolverhampton.

Rain.—Rain fell on five or six days in the week at most stations, and at no station was the fall less than 1 inch. The amounts, however, varied from 3⅞ inches at Truro, 2⅞ at Plymouth, 2½ at Bristol, to 1 inch at Wolverhampton, Nottingham, and Liverpool. The general average fall over the country was 1⅞ inch nearly.

The weather during the week was dull and wet, and the sky generally overcast. The weather was cold on the first three days, and very mild on the last four days.

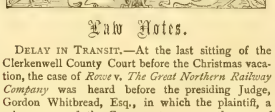
Gales and floods have again been experienced all over the country, resulting in great loss, and many wrecks have occurred.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 48½° at Leith to 43° at Dundee; the mean value from all stations was 45½°. The lowest temperatures of the air ranged from 26° at Perth to 31½° at Aberdeen; the general mean from all stations was 28½°. The mean range of temperature from all stations in the week was 17°.

The mean temperature of the air for the week from all stations was 36½°, being 4½° below that of England, and 8° below the value for the corresponding week in 1875. The highest occurred at Aberdeen and Leith—both 37½°—and the lowest at Paisley and Perth—both 35½°.

Rain and Snow.—The fall of snow and rain was large everywhere, the greatest fall in the week was rather more than 3 inches at Perth, and the least fall about 1½ inch at both Edinburgh and Leith; the average fall over the country was 2¼ inches.

DUBLIN.—The highest temperature of the air was 56°, the lowest 34½°, the range 21½, the mean 44½, and the rainfall 1½ inch.



Law Notes.

DELAY IN TRANSIT.—At the last sitting of the Clerkenwell County Court before the Christmas vacation, the case of *Rowe* v. *The Great Northern Railway Company* was heard before the presiding Judge, Gordon Whitbread, Esq., in which the plaintiff, a salesman, sued the Company to recover the sum of £5, for the loss he had sustained in consequence of the want of prompt delivery of three tons of Kent Regent Potatos, which had been consigned to him from York, and which had not reached the terminus in London at King's Cross in time for a purchaser for whom he had ordered them. Mr. Williams, solicitor, appeared for the plaintiff, and Mr. Harrison as standing counsel for the Company. The plaintiff said he was a wholesale salesman at King's Cross, and ordered the goods in question to reach London on Friday, November 17, in order to meet the requirements of a customer on the following morning's (Saturday) market. They, however, did not reach King's Cross till late on Saturday, after his men had left work, and were not virtually in his possession till early on Monday morning, and his customer in the meantime got supplied elsewhere, whereby he had lost the sale of the goods, and estimated his loss at the price now sued for.

In reply to question put, the plaintiff said he considered the wholesale first price of the Potatos were from £5 to £6 a ton, and that £5 profit on the lot was a very reasonable one. Two of the plaintiff's servants were called, who proved leaving their work on the Saturday, at which time no delivery of the goods was made. This evidence completed the plaintiff's case, when the Counsel addressed the Court at some length, urging the non-liability of the Company on the following grounds.

In the first place, the Company did not hold themselves responsible by their bye-laws for reasonable delay, and he would be in a position to prove from witnesses he should call that the goods were not at the York goods station in time to be despatched with the goods train which would reach King's Cross Station in time on Friday evening, and would call the goods manager and checker from York for that purpose; but even should the question of damages arise, which he did not apprehend, they could be merely nominal, as the charge the plaintiff had made was a most excessive one.

The goods manager and checker attended from York, who both stated that the goods arrived two hours after the goods train, by which they would have reached King's Cross on Friday evening had left. This being the defendant's case, his Honor ruled in favour of the Company, who did not apply for costs.

LANDLORD AND TENANT.—A case, just decided by Mr. Justice Lindley, at Manchester, is of some public interest as defining the position of tenants holding non-repairing leases. The landlord, in this instance, had covenanted to keep the roof, windows, main timbers, and exterior of the house in an effectual state of repair. After a time, water frequently penetrated through the roof to such an extent that the tenant was obliged to remove his wife to the kitchen, while many of his goods were completely spoilt. On this being represented to the landlord's agent, he empowered the tenant to get some one to execute the repairs, previously forwarding an estimate of their cost. The tenant failed to find any person who could give such an estimate, and therefore had the repairs executed at once. When the rent-day arrived, he deducted the amount he had so spent, and tendered the balance. This was refused by the agent, who thereupon put in an execution, and sold off all the property on the premises under distraint. These proceedings resulted in an action before Justice Lindley, which terminated in favour of the tenant. The jury held that, while the landlord had a right to his rent, £30, he must pay to the tenant £7 2*s.* 6*d.* for repairs, £5 for damage done by rain-water, and £35 for illegal distraint, less £5 15*s.* 4*d.*, the amount realised by the sale. The important point in this decision is that it sanctions the execution of repairs by non-repairing tenants, at the cost of their landlords, when the latter either fail to perform the duty, or are guilty of unjustifiable delay. *Builder.*

Obituary.

THE death is recorded, on December 17th last, at his residence, Penrose Street, Walworth, of Mr. JAMES ANDREWS, the well known floral artist, aged 75 years.

Variorum.

THE ANNUAL MEETING OF THE BISHOP AUCKLAND FLORAL AND HORTICULTURAL SOCIETY was held a few days ago, and from the balance-sheet read at the meeting it appears that the society had to sustain a loss of just over £300 on the last year's show, the takings in the way of admission to the park having fallen considerably short of the usual sum. This deficiency is attributed to two causes over which the committee had no control—the great depression in trade in the North, and the somewhat unfavourable character of the weather. Notwithstanding this loss there is still a balance in hand of £922 7*s.* 7*d.* At this meeting it was resolved that a good portion of this sum should be invested for the benefit of the society, but in order to have a complete legal control over money so invested it was further resolved to take steps to have the society registered as an industrial society under the provisions of the Acts of Parliament relative to these societies. Registration can be completed at a small expense, and then the society will be

governed by a responsible body—trustees, directors, or committee, whatever they may be termed. It was agreed that the necessary revision of the rules should be made at once, so that the process of registration should be carried out without delay. The outgoing members of the committee were almost entirely re-elected, which proves that there is no lack of confidence in the present executive.

ABIES NOBILIS.—One of the most interesting examples of Abies nobilis to be found is that growing near to the late Mr. John Standish, of Standish, at the Royal Nurseries, Ascot, and in the possession of which he was very proud to the day of his death. The specimen is about 11 feet in height, of symmetrical shape, clothed to the very base with a thick healthy foliage, but of a remarkably dense and somewhat plumose character, It no doubt illustrates the variation obtained through seedlings, and all the pride of ownership felt by the late Mr. Standish is inherited by his whilom partner and successor, Mr. J. Ashby.

Enquiries.

He that questioneth much shall learn much.—BACON.

156. RED SPIDER. —Can any reader inform me if they have used a composition for red-spider on Cucumbers, &c., which is of the consistency and colour of Stockholm tar, with something of the same scent, and which, when diluted for use, turns white and milky. Where can it be obtained? *Market Gardener.*

157. THE FEMALE PLANT OF GARRYA ELLIPTICA. —Where can this be obtained? *X.* [We saw one bush, a few years since, in the garden of Sir William Miles, near Clifton. EDS.]

Answers to Correspondents.

AMARYLLIS: *Old Subscriber.* Start them as they are, and if repotting is required let it be done just as the flowers go off, as an encouragement to the better development of the leaves.

ASCHUS: *T. F. R.* In March or April, or any time during summer.

BOOKS: *J. W. V.* Published by Longmans. We do not know the price.

BOTANICAL MAGAZINE: *L. F. C.* Published monthly, by Reeve & Co., Henrietta Street, Covent Garden. The price is 3*s.* 6*d.*

DESCENDING SAP: *Higgledy-Piggledy.* It is not affirmed by any one that we know of that the elaborated sap does not descend. The modern notion is simply that it may, and does ascend—go horizontally, or in any other direction, as well as descend, according to time, circumstances and the need of the plant. Suppose, for instance, starch is to be stored in a Potato tuber, or wood to be formed in a Vine rod; the matter out of which that starch or that wood is formed must in great measure pass through the leaves, and therefore it must descend to reach its destination. But starch is likewise stored up in the grain of Wheat. In this case, then, it is obvious that the nutrient and store-containing or store-forming sap must ascend from the leaves to the same holds true of fruits and stones (seeds) placed above the leaves.

HAILSTORM RELIEF FUND: *Enquirer.* Apply to the secretary, Mr. R. Dean, Ranelagh Road, Ealing.

HEAT FOR A GREENHOUSE: *T. Walsh.* A paraffin lamp is often used for heating such a structure as yours, and as they are not kept in use for any length of time they do little or no harm.

HEATING: *A. Webb.* Quite sufficient, if the boiler works well.

ICELAND PLANTS: *J. M., Basford.* 1, Salix glauca apparently (bad specimen); 2, Erigeron alpinus; 3, Alchemilla alpina; 4, Silene acaulis; 5, Dryas 8-petala; 6, Lychnis alpina. If *J. M.* likes to collect good specimens of the plants that he finds in Iceland, adding their localities, I shall be glad to have a set of them, and will name them for him. In do not think that the Salix will form a tree there. *C. C. Babington, Professor of Botany, Cambridge.*

INSECTS: *Kerry.* We cannot determine the species of insects by their eggs; the white, feathery-looking insect found near the eggs on your Apple bark was most probably the American blight. *D. D. T.*

MARCHANTIA: *F. H.* Look for it at the base of any damp north wall, or in any damp place in old greenhouses.

NAMES OF PLANTS: *N. G.* 1, next week; 2, Selaginella Martensii; 3, Selaginella Wallichii; 4, Selaginella viticulosa; 5, Selaginella serpens; 6, Lastrea patens. —*C. Palmer.* Grevillea robusta.—*J. W. H.* Probably one of the dwarf Rhododendrons of the Early Gem type.—*L. E. C.* Habrothamnus elegans.—*Bishopstowe.* Ilex dipyrena.—*Pothos.* 5, Philodendron cras inervium.—*T. D.* Santolina incana.

SCHEDULE: *Enfield.* We can see nothing in the rules, or in the composition of the schedule, that does not seem perfectly fair and equitable; and certainly nothing that favours the larger growers at the expense of the smaller ones. The only classes in which we could suggest any alteration to meet the case of the smaller growers are 17, 18, and 20. In each of these cases the number asked for (twelve) is too many, and should be reduced to six. This done, the smallest grower would have no just cause of complaint.

SEEDLING APPLE: *W. B. Rowe.* Your seedling Apple, stated to be a cross from the Blenheim Orange and a Pearmain, is a very good fruit. It is of the true Pearmain, or conical shape, of medium size, the skin pale yellow. The flesh is firm, somewhat in texture like the Blenheim Orange, of sweet and pleasant quality, but not equal as a dessert fruit to Scarlet Nonpareil, Cockle Pippin, or some others of the same season.

VINE BORDERS AND GRAPE SHANKING: *S. H.* It is nearly impossible to advise you as to your system of treatment without seeing the Vines and the condition of the border, and even then it would be mere conjecture. Shanking" is so very subtle, and is produced, or is the result of such a variety of causes. If your borders are sour, or wet and soddened, then the only remedy is to have them renewed. Very rich borders will also produce shanking, and it just occurs to us that you may be assisting in this by your repeated coatings of manure, at all events that will not cure the evil. Encourage the roots to the surface by adding fresh soil, &c., and withdrawing the old, with a light mulching of strawy manure during the summer. Do not overcrop but maintain a full supply of thoroughly healthy, well-developed leaves. Shanking as often proceeds from defective action as from too much action. It is the result of some sudden check or overstrain on the energies of the plant, which we think may be overcome by judicious management.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders, payable at the post-office, King Street, Covent Garden, London, are requested to be good enough to write to the Publisher, at the office of this paper, 41, Wellington Street, Covent Garden, at the same time, to inform him of the fact.

CATALOGUES RECEIVED:—Messrs. Downie & Laird (17, South Frederick Street, Edinburgh), Descriptive Catalogue of Potatoes, Roots, Agricultural Seeds, Implements, &c.—Messrs. Little & Ballantyne (Knowefield Nurseries, Carlisle), Select List of Roses, Rhododendrons, Stove and Greenhouse Plants, &c.—Alfred Leggerton (5, Aldgate, London), Special Trade Catalogue of Garden, Agricultural, and Flower Seeds.—William Rumsey (Joyning's Nurseries, Waltham Cross, London), Catalogue of Garden, Flower, and Farm Seeds, Potatoes, &c.—J. W. Mackey (40, Westmoreland Street, Dublin), Annual Descriptive Seed Catalogue.

COMMUNICATIONS RECEIVED.—J. R.—J. M. J.—G. C.—F. C. (next week).—W. S.—H. E.—N. C.—T. B.—J. C.—G. T. M. —W. G.—J. D.—A. C.—J. B.—J. M., Basford (shortly).—O. & Co.—T. R.—J. H. C.

Markets.

COVENT GARDEN, January 4.

Our market is now very bare, and with the exception of a few imported Apples and late home fruit, there is nothing to mention. Good late Pears are getting short, and large quantities of St. Michael Pines are arriving, at low figures. Kent Cobs are in rather better demand. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d.	*s. d.*
Apples, per ½-sieve	1 0 - 6 0	Oranges, per 100 .. 8 0-12 0
Cobs, per lb.	1 0 - 1 6	Peaches, per doz. .. 0 0 - 0 0
Grapes, per lb.	2 0 - 8 0	Pears, per doz. .. 2 0-12 0
Lemons, per 100	8 0-14 0	Pine-apples, per lb.. 1 6- 4 0
Melons, each	1 6- 3 6	

VEGETABLES.

	s. d.	*s. d.*
Artichokes, per bush.	4 0- ..	Horse Radish, p. bun.	4 0- ..
— Eng. Globe, doz	4 0- 6 0	Leeks, per bunch ..	0 2- 0 4
Asparagus, p. bund.	2 0- 3 0	Lettuces, per score	1 0- 2 0
— English, p. bun.	12 0- ..	— French, per doz.	1 0- 2 0
— Sprue, per bun.	2 6- ..	Mint, green, bunch	0- ..
Beans, French (with pods) per 100 ..	3 6- ..	Mushrooms, per pott.	1 0- ..
Beet, per doz.	1 0- 2 0	Onions, per bush.	5 0- 8 0
Carrots, per bunch	0 6- ..	— young, per bun.	0 3- 0 4
Cauliflowers, per doz.	2 0- 4 0	Parsley, per bunch .	0 4- ..
Celery, per bundle	1 6- 2 0	Radishes, per bunch.	0 1- 0 3
Chilis, green, per doz.	1 0- ..	— Spanish, doz.	1 0- ..
Cucumbers, each	1 0- 2 6	— New Jersey, doz.	2 0- ..
Endive, per doz.	1 0- 2 0	Rhubarb, per bundle	1 0- ..
— Batavian, p. doz.	3 0- ..	Salsify, per bundle	1 0- ..
Garlic, per lb.	0 6- ..	Seakale, per punnet	1 0- 2 0
Herbs, per bunch	0 4- ..	Shallots, per lb.	0 6- ..
		Spinach, per bushel	1 6- 2 0
		Tomatas, per doz.	2 0- 3 0
		Turnips, per bundle	0 6- 0 8

Potatos.—Kent Regents, £5 to £6; Essex Regents, £4 10s. to £5; Kidneys, £8 per ton.

PLANTS IN POTS.

	s. d.	*s. d.*
Azaleas, per dozen	24 0-60 0	Heliotrope, per doz.	6 0-12 0
Begonias, per doz.	6 0-12 0	Hyacinth, Rom. doz.	9 0-18 0
Bouvardias, do.	12 0-24 0	Lily of Valley, each	3 0- 7 6
Cineraria, per doz.	9 0-18 0	Mignonette, do.	6 0- 9 0
Coleus, per dozen	3 0- 9 0	Myrtles, do.	3 0- 9 0
Cyclamen, per doz.	12 0-30 0	Palms in variety, each	5 0-21 0
Cyperus, do.	6 0-12 0	Pelargoniums, scarlet, per doz.	6 0-12 0
Dracæna terminalis	30 0-60 0	Poinsettia, per doz.	12 0-24 0
— viridis, per doz.	18 0-24 0	Primula sinensis, doz.	4 0- 9 0
Epiphyllum, per doz.	18 0-42 0	Solanums, per doz.	6 0-24 0
Erica caffra, p. doz.	6 0-18 0	Tulips, per dozen	9 0-12 0
Ferns, in var., p. doz.	6 0-30 0	Valotta purpur., doz.	12 0-18 0
Ficus elastica	2 6-15 0		
Heaths, variety, doz.	9 0-24 0		

CUT FLOWERS.

	s. d.	*s. d.*
Azaleas, 12 sprays	1 0- 4 0	Lily of Valley, 12 spr.	2 6-12 0
Bouvardias, per bun.	1 0- 4 0	Mignonette, 12 bun.	4 0- 9 0
Camellias, 12 blooms	4 0-12 0	Narcissus, 12 sprays	3 0- 6 0
Carnations, per doz.	2 6- 4 0	Pelargoniums, 12 spr.	2 0- 4 0
Chrysants., 12 bun.	4 0- 9 0	— zonal, 12 sprays	1 0- 4 0
Cyclamen, per doz.	3 0- 9 0	Poinsettia, 12 sprays	4 0-12 0
Epiphyllum, 12 blns.	1 0- 3 0	Primula, dbl., p. bun.	1 0- 2 0
Eucharis, per doz.	6 0-18 0	Roses, indoor, p. doz.	3 0-12 0
Euphorbia, 12 sprays	4 0- 9 0	— Christmas, bun.	6 0- 1 6
Gardenia, per doz.	9 0-18 0	Stephanotis, 12 spr.	9 0-15 0
Heliotropes, 12 spr.	6 0- 1 0	Tropæolum, 12 bun.	2 0- 6 0
Hyacth., Rom., 12 sp.	2 0- 6 0	Violets, 12 bun.	1 6- 4 0

SEEDS.

LONDON: *Jan.* 3.—With the departure of the holidays more inquiry, and especially from the country, is manifested for farm seeds. Of English red Clover there is an improved supply; but fewer offers are received from abroad. Advices to hand from Canada coincide with the reports from the United States as to the general shortness this season of the American crop. Mention is quoted rather easier, and for Trefoil also (owing to the state of neglect in which the article has for some few weeks past lain) slightly lower prices have occasionally been taken. White Clovers and perennial grasses are steady, and in fact the trade generally is pervaded by a strong, healthy feeling. In foreign Italian there has been a fair business doing in full rates. Long prices are asked for Lucerne, and Sainfoin is held for more money. More attention is now given to spring Tares. The Canary seed trade exhibits an improved tone, the tendency of values being upwards, as the inseed the demand is slow. Other articles unchanged. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London. E.C.*

CORN.

At Mark Lane on Monday the supply of English Wheat on sale was small, and its condition was much affected by the continued damp weather. A firm tone pervaded the trade for all good and fine dry parcels, and the quotations had an upward tendency; but damp qualities were difficult to sell. Barley was in but moderate request, but both malting and grinding descriptions were held at extreme prices. Malt was dealt in to a limited extent on former terms. The supply of Oats on offer was very moderate, and the tone was prevailed at full currencies. Beans were in moderate demand, and were quite as dear as on last market day. For Peas there was a fair inquiry at late prices. The flour trade was wanting in animation, and nominal quotations were well supported. The market for Indian Corn was quiet, but steady, and prices showed no materials alteration.—On Wednesday very little information was evinced to operate in Wheat or any other class of produce. Fine dry samples were scarce, and fully as dear, but there was a difficulty in maintaining the quotations for inferior and damp parcels. Holders, however, were not anxious sellers.—Average prices of corn for week ending Dec. 30:—Wheat, 50*s.* 6*d.*; Barley, 38*s.* 7*d.*; Oats, 24*s.* 9*d.* For the corresponding week last year:—Wheat, 45*s.* 3*d.*; Barley, 34*s.* 6*d.*; Oats, 24*s.* 4*d.*

CATTLE.

At the Metropolitan Market on Tuesday there was a fair supply of beasts, and choicest qualities met with purchasers at fully late rates. Of sheep choice kinds were scarce and made good prices. Calves were scarce and dear. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.* 2*d.*, and 5*s.* 8*d.* to 6*s.* 2*d.*; calves, 5*s.* 8*d.* to 7*s.*; sheep, 5*s.* 6*d.* to 6*s.*, and 6*s.* 8*d.* to 7*s.* 2*d.*; pigs, 4*s.* 6*d.* to 5*s.* 4*d.* For Thursday trade in beasts was by no means brisk, but Monday's prices were readily obtained for choice cattle. Good sheep met a ready sale at late rates, and calves continued dear.

HAY.

At Whitechapel there was a good trade on Tuesday, the supply of hay and straw being short, and prices ruled firm as follows:—Prime Clover, 100*s.* to 140*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 132*s.*; 70*s.* to 85*s.*; and straw, 40*s.* to 48*s.* per load. —Thursday's supplies moderate, and trade steady. Quotations: —Clover, best, 100*s.* to 140*s.*; inferior, 85*s.* to 95*s.*; hay, best, 100*s.* to 134*s.*; inferior, 65*s.* to 85*s.*; and straw, 42*s.* to 52*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 134*s.* to 140*s.*; inferior, 110*s.* to 126*s.*; superior Clover, 138*s.* to 147*s.*; inferior, 115*s.* to 126*s.*; and straw, 52*s.* to 60*s.* per load.

POTATOS.

At the Borough and Spitalfields markets sound Potatos remain scarce, and command extreme rates, but for inferior produce the trade is dull. Annexed are the quotations:—Kent Regents, 120*s.* to 140*s.* per ton; Essex do., 100*s.* to 130*s.*; Rocks, 60*s.* to 90*s.*; Flukes, 150*s.* to 180*s.*; Victorias, 120*s.* to 160*s.*; and Kidneys, 100*s.* to 120*s.*—The imports into London last week consisted of 3027 bags from Antwerp, 2438 from Ghent, 1029 bags 80 tons from Harlingen, 1598 bags from Bremen, 1354 from Brussels, 930 from Hamburg, and 921 from Rotterdam.

COALS.

At the market on Wednesday house coals were unaltered, but Hartleys declined 15*s.* per ton. Quotations:—Walls End—Haswell, 19*s.*; Lambton, 18*s.* 6*d.*; Original Hartlepool, 19*s.*; Hartlepool, 18*s.*; East Hartlepool, 18*s.* 9*d.*; South Hartlepool, 17*s.*

Pansies and Violas, Bedding.

THOMAS S. WARE'S AUTUMN CATALOGUE of the above, including Carnations, Picotees, Pinks, Pæonies, Piloxes, Delphiniums, Roses, and others, for Immediate Planting, is now ready, free upon application.

Hale Farm Nurseries, Tottenham, London.

LARGE TREE BOX and EVERGREEN HOLLY.—Handsome, bushy, and well-rooted, will transplant with good balls of earth, 5, 6, 7, and 8 feet high. Tree Box lives under trees better than any other Evergreen tree. An unique tree invited. Price on application to T. JACKSON AND SON, Nurseries, Kingston, Surrey.

To the Trade and Others.

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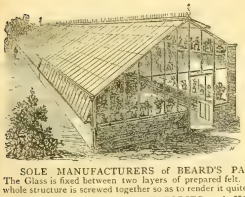
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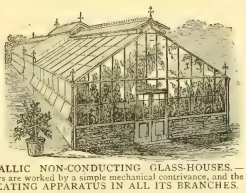
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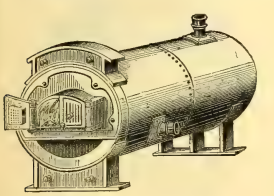
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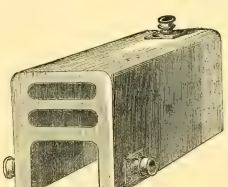
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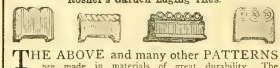
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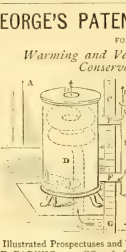
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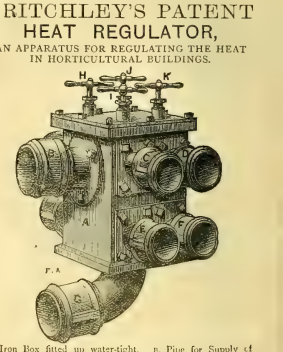
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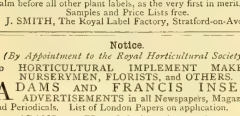
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GARDENER (SECOND), where three or four are kept.—Age 21; good knowledge of Stove and Greenhouse Plants, Vines, Flower and Kitchen Garden, &c. Good character.—J. S., The Lodge, Carshalton House, Carshalton, Surrey.

JOURNEYMAN, in the Houses.—Age 22; has had seven years' experience under Glass, Growing Plants and Fruit. Good references.—G. M., Post-office, Moulton, Northampton.

FOREMAN.—Good experience in Planting and Laying out Grounds, from Plans or otherwise, or Alterations.—A. B., Munn, Stationer, Elgin Road, Maida Vale, London, N.W.

FOREMAN.—Age 26; has had twelve years' practical experience, and is well up in the Growing of Stove and Greenhouse Plants, Vines, &c. Can be small place accepted. Good references.—Address, with full particulars, to Y. Z., Dudmaston Terrace, Chelsea, London, S.W.

FOREMAN, or SECOND, in a Nobleman's or Gentleman's Garden.—Age 23; good knowledge of Stove and Greenhouse Plants, Early and Late Forcing, &c. Good character.—Y. Z., J. Sargent's, Walmore Common, near Gloucester.

TO NURSERYMEN.—Age 20; wishes an engagement in a good Nursery. Has had six years' experience amongst Stove, Greenhouse, and Soft-wooded Plants. Good reference.—G. S, 84, Albion Street, Halton, Hasting, Sussex.

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To the Seed Trade.

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Mr. CANNON, Ealing Nursery,
Mr. WEBB, Arboretum,
Mr. MARSLEN, Wood Lane, } **Isleworth.**

Editorial Communications should be addressed to "The Editor:" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—SCIENTIFIC, FRUIT, and FLORAL COMMITTEES' MEETINGS, on WEDNESDAY NEXT, January 17, at 11 o'Clock. GENERAL MEETING at 3 o'Clock, for ELECTION of FELLOWS, &c.
Admission 1*s*.

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To the Trade.

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MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on MONDAY, January 22, at 21 for half past 12 o'Clock precisely.

On view the morning of Sale. Catalogues may be had at the Mart, and at the Auction and Estate Offices, 56, Gracechurch Street, E.C., and Leytonstone, Essex.

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Plants and Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, January 17, at half-past 12 o'Clock precisely, SHRUBS, RHODODENDRONS, Standard ROSES, Trained and Pyramid FRUIT TREES, Specimen CONIFERS, VINES, GOOSEBERRY and CURRANT TREES, &c., and a consignment of choice GLADIOLUS and LILIES for present planting.

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MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 18, at half-past 12 o'Clock precisely, several small collections of ESTABLISHED ORCHIDS in fine health, principally dibbs of LILIUM AURATUM, just arrived from Japan in the best possible condition, and a quantity of other choice LILIES, GLADIOLI, &c.; a collection of MAPLE TREES from Japan, and a variety of other Plants and Bulbs from various parts; the LILIUM SOUVITZIANUM, and CYCLAMENS from the Island of Zante, 50 Pots of CALANTHES in flower, &c.

On view the morning of Sale, and Catalogues had.

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MR. J. C. STEVENS will include in his Sale on THURSDAY, January 18, several varieties of beautiful flowering MAPLE TREES, just arrived from Japan in splendid condition, having been collected with great care. Drawings of the same will be exhibited during the time of Sale.

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A remarkably good cooking Potato.
An enormous cropper.
Almost entirely free from disease.
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"I bought of you in March, 1876, 1 lb. of Magnum Bonum Potatos, cut them into 50 sets, and planted them 3 feet apart. The haulm covered every foot of ground, and I am convinced that 3 feet square was not more room than was necessary, being a strong growing variety. I lifted the crop in October, and from two sets I dug 21 lb., and altogether 276 lb. of good sound Potatos."

Price 5s. per peck, 17s. 6d. per bushel.

SUTTON'S DESCRIPTIVE LIST of choice Seed Potatos gratis and post free.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

NOTICE IS HEREBY GIVEN that the ANNUAL GENERAL MEETING of the Members of this Institution will be held on TUESDAY, the 28th inst., at the Bedford Hotel, Covent Garden, W.C., for the purpose of receiving the Accounts of the Charity for the past year, and electing Officers for the present year, also for the purpose of Electing Three Pensioners on the Funds. The Chair will be taken at 6 O'Clock; the Ballot will close at 8 O'Clock precisely.

By order,
J. R. CUTLER, Sec.

14, Tavistock Row, W.C.—Jan. 3, 1877.

N.B.—The Voting Papers have all been delivered, any Member not having received one is requested to intimate the same to the Secretary.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

VOTES FOR THE ELECTION on the 18th in favour of ELIZABETH AYRES, the Widow of William Port Ayres, will be gratefully received by

The Rev. Canon HOLE, Caunton Manor, Notts;
JOHN WILLS, F.R.H.S., Onslow Crescent, Kensington;
W. NEWTON, Hillside, Newark, Notts.

To the Subscribers to THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

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RHUBARB, Albert and Victoria, 16s. per 100, fine for forcing, good for planting.
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LIMES, 10 to 12 feet, stout stems, clean grown and well-rooted.
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The Best Cucumber in Cultivation.

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—*From* Mr. Thomas Dobbie, *Gr. to the* Right Hon. Earl Vane, *July 29.*—"Your new frame Cucumber, Duke of Connaught, is the best kind I ever saw; suitable for exhibition."

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To the Trade.

OSBORN AND SONS can still supply dwarf maiden PLUMS, DAMSONS, GAGES, and APRICOTS of the leading kinds, and a few Standards. Also Dwarf and Standard APPLES, PEARS, PLUMS, and CHERRIES.
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To the Trade.

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PEACHES, CHERRIES, APPLES, and PEARS, splendid dwarf-trained; finer plants cannot be desired.
QUICKS, 500,000 fine, strong, transplanted.
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VEGETABLE AND FLOWER SEEDS, delivered carriage free. Priced and Illustrated Descriptive CATALOGUE free by post on application.
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To the Seed Trade.

OUR WHOLESALE CATALOGUE is now ready, and may be had on application. A copy has been posted to all our Customers, if not received an early intimation will oblige.
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ORCHIDS for Sale, cheap.—A Gentleman has a few Orchids, which he wishes to Dispose of at once. For List apply to
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Cologyne cristata.

R. S. YATES has pleasure in announcing that his CŒLOGYNES are, as usual, very fine; they are now swelling into bloom-buds. R. S. Y. has 12 or 15 plants with 150 spikes, and 500 to 600 bulbs on each pot, a portion of which he offers at Twenty-five Guineas each, for cash only. He has a large stocks of plants from Two Guineas each. Sale Cheshire.

The Best Cauliflower.

SUTTON'S KING OF THE CAULIFLOWERS.

Of rather dwarf and compact growth, with large and beautifully white heads.

From Mr. T. Rabone, *Gr. to* the Right Hon. the Earl of Shrewsbury and Talbot, *Alton Towers, Sept.* 16.—"Your King of the Cauliflowers is the admiration of every one. We have hundreds of the best Cauliflowers I ever saw; they are a marvel, plenty 12 and 14 inches across, and as close and compact as possibly could be. It is a wonder, certainly."

Price 1s. 6d. per packet.

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LARGE TREE BOX and EVERGREEN HOLLY.—Handsome, bushy, and well-rooted, will transplant safely in any kind of soil or situation, 5, 6, and 8 feet high. Tree Box lives under trees better than any other Evergreen tree. An inspection invited. Price on application to
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VERBENAS, VERBENAS, VERBENAS.—Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6s. per 100, 50s. per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, first prize Bows, for 5s. Terms cash.
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ENGLISH FURZE, 1-yr. old, from 5s.; 2-yr., extra, from 10s. per 1000. ENGLISH BROOM, 2 to 3 feet, 15s. per 1000. BITTER OSIERS, 2 to 3 feet, 25s. per 1000.
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To the Trade.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Clifton, Bristol, have to offer PEACHES and NECTARINES, standard maiden, in leading varieties, clean and well grown, 24s. per dozen.
FILBERTS, best varieties, good, 50s. per 1000.
CURRANTS, Black, strong and clean grown, 6s. per 100.

Hyacinths.—Choice Named Sorts.

WM. CUTBUSH AND SON have a few hundreds of their splendid HYACINTHS left, which they can offer by 100, very cheap for cash. Price on application. Highgate Nurseries, London, N.

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WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these Varieties from Mr. WEBB, Kidderminster.

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The Best and most Distinct Early Dwarf Wrinkled PEA.

SUTTON'S BIJOU.
—*From* Mr. Robert Cocks, *Gr. to* Lord Auckland.—"Your Bijou is the best Pea of its height I have seen, and an immense cropper; it is also very early."

From Mr. T. Lockie, *Gr. to* the Right Hon. Lord Otho Fitzgerald.—"Your Dwarf Wrinkled Pea, Bijou, has proved the earliest and best Marrow Pea of its class I have ever grown." Price, 3s. 6d. per quart.

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Asparagus, Asparagus, Asparagus.

ROBERT AND GEORGE NEAL have the above to offer in large or small quantities, 1-yr., 2-yr., and 3-yr. old:—
1-yr. old, 20s. per 1000.
2-yr. old, 25s. per 1000.
3-yr. old, 35s. per 1000.
Price to the Trade on application.
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YEWS for SALE.—About 2000, from 3¼ to 4¾ feet high, at 90s. per 100; also from 4½ to 5½ feet, at 120s. per 100; all in first-rate condition and well-rooted, and proper Hedges or Ornamental Trees—as fine as any could wish to see.

HOLLIES, Green, bushy, from 15 inches to 2½ feet, at 23s. per 100, all recently moved and well-rooted; will move well.
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CHARLES LEE AND SON (Successors to Messrs. John & Charles Lee), of the Royal Vineyard Nursery, Hammersmith, W., beg to announce that in consequence of the Retirement of Mr. John Lee from the business, they have TAKEN OVER the ENTIRE NURSERY and SEED TRADE so successfully carried on for many years by the late Firm, and they trust the same liberal patronage so long given to Messrs. John & Charles Lee will be continued to the New Firm.

Charles Lee & Son pledge themselves to devote all their energy to raising First-class Stock in every department, which the large resources at their command will enable them to supply with considerable advantage to the Public both as regards quality and price. With a view to a more extensive production of Stove and Greenhouse Plants of the best quality they intend to almost entirely rebuild their extensive ranges of Glass on a new site, a portion of the old Nursery being taken up for building purposes. All orders to be addressed to CHARLES LEE AND SON, Royal Vineyard Nursery, Hammersmith, W., where the general business of the Nursery and Seed Trade will be carried on; or to

Mr. DIXON, Feltham Nursery; Mr. CANNON, Ealing Nursery; Mr. WEBB, Arboretum, and Mr. MARSLEN, Wood Lane, Isleworth.

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THE following SPECIMEN PLANTS, in fine health and condition, from the plant-houses of a Gentleman relinquishing their growth for the cultivation of Grapes, will be Sold cheap. Height and widths given in feet, tr. for size of trellis :—

Anthurium cry-stallinum, strong, in 10-inch pot	Livistona australis, 4½ by 3½
Bougainvillea speciosa, 2½ by 2 tr.	Livistona rotundifolia, 3½ by 4
Clerodendron Balfourianum speciosum, 2½ by 2	Latania borbonica, 4 by 6
Chamærops excelsa, 2½ by 2½	Pychosperma Cunninghamii, 1½ foot stem, 3 — 3 feet fronds
Cissus amazonica, 2 by 1½	Phœnix dactylifera, 3 feet
Cissus discolor, 5½ by 2	Rondeletia speciosa major, stands 3 feet
Euphorbia splendens, 2½ by 1¾ tr.	Stephanotis floribunda, 2½ by 1½ tr., and 2½ by 2 tr.
Ficus Parcelli, 2 by 2 (1½) tr.	Thunbergia laurifolia, 1½ by 1¼ tr.
Hoya carnosa, 3 by 1½ tr.	
Jasminum Sambac, 2½ by 2	

STEPHEN BROWN, Seed and Plant Establishment, Weston-super-Mare.

To the Trade, &c.

SURPLUS NURSERY STOCK.—Limes, Standard, extra fine, 8 to 12 feet; Portugal Laurels, Standard heads 2 to 3 feet diameter; Laurel, common, extra fine, 3 feet; Box, Standard, and other sorts, 3 to 4 feet, extra fine; Spruce Fir, suitable for Christmas trees; all recently transplanted. Price on application.
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SPECIAL OFFER.
GRAND STOCK.

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Kentish Cob Nuts	Elms, four kinds
Filberts	Laburnums
Morello Cherries, std. trained	Limes, very stout
Damsons	Mountain Ash
Grape Vines for outdoors	Poplars, Silver
Mulberries	,, Lombardy
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,, 2-yr.	Thorns, of sorts
Finely rooted and well-grown EVERGREENS.	CONIFERÆ.
Aucubas, 2 to 6 feet	Biota elegantissima
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Evergreen Oaks	Pinus austriaca
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	Yuccas, sorts and sizes.

Also a splendid lot of Daphne indica rubra, set for bloom in burst cases; Camellias, azurea, and the fine new Centifolia Gloire de Versailles; home-grown Cucumbers and Melon Seeds.
Private Buyers and the Trade treated with. For prices and particulars apply to
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Complete Liberal Collections of
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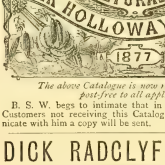
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NEW PLANT and BULB COMPANY
Beg to call special attention to their NEW LIST (No. 31), just published.
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NEW HARDY BULBS,
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SEEDS of NEW HARDY FLOWERING PLANTS, &c. ;
Als of sterling merit, and at low prices. Post-free on application.
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These Nurseries comprise about 10 Acres of well grown and a most useful assortment of STANDARD, ORNAMENTAL, FOREST, FRUIT, and ROSES, and SHRUBS, all of which are in a most healthy and fit condition for removal. A personal inspection invited. CATALOGUES free on application.
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At the Royal Nurseries, Merriott, Somerset, every description of Nursery Stock is grown largely, and at Scott's Royal Seed Stores, Yeovil, choice Seeds, Bulbs, and every kind of Garden Requisite may be obtained.

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H. CANNELL begs to announce that he has a splendid stock of the following, established in 60's, just ready for shifting :—
CALCEOLARIAS, 2s. 9d. per dozen.
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Smaller, 1s. per dozen less, and post-free. Special prices per 100 or 1000.
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Azalea indica and Camellias.	Roses, Standards and Dwarfs, also in pots.
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YUCCA ANGUSTIFOLIA, strong plants, 1 foot high, £2 per dozen, £12 per 100. In my opinion this beautiful new Yucca withstood, without the slightest protection, the severe winter of 1875.
APPLES, strong 2-yr. Palmettes and Pyramids, 40s. per 100, £12 15s. per 1000.
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Roses—Pæonies—Gladiolus.

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CATALOGUES sent post-free on application to C. V., as above, or to
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H. AND F. SHARPE have secured a fine stock of the above excellent POTATO, which is pronounced to be not only the earliest, but the most prolific, and the finest quality in cultivation. Being very short in the haulm it is peculiarly adapted for forcing purposes. Price and further particulars may be had on application to
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Original plants 21s. and 15s. each, younger 10s., 7s. 6d., and 5s. each.
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Dr. HOGG has spoken of this excellent Melon in the highest terms, and after tasting it pronounced it a fruit of the highest merit.
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Messrs. Charles Lee & Son are now prepared to offer this very useful and delicious new Melon in sealed packets, at 3s. 6d. per packet.
CHARLES LEE AND SON, Hammersmith, W.

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18s. to 30s. per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or £5 per 100.

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The finest English and Ghent varieties, splendidly budded, £5 to £7 10s. per 100, or 18s. per dozen.

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FOREST TREES AND SHRUBS.

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The Stock of Seedling and Transplanted FOREST TREES, SHRUBS, and COVERT PLANTS is most extensive, and in unusually fine condition.

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SPEED'S VINE AND ROSE MILDEW ANNIHILATOR.

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Have much pleasure in offering this excellent preparation for the destruction of Mildew. It proves to be perfectly harmless to the Grape Vine, the Rose, and the Peach when applied to the youngest and most tender foliage, and the fruit itself may be dressed with perfect impunity in any state, even before the thinning period, and there are few things more sensitive than the cuticle of young Grapes in the early stage of their growth.

It kills the Mildew instantaneously, and can be rinsed off within a few minutes of being applied, leaving no smell or sediment, or other traces of its application.

It is not poisonous to Animals, although it is instant death to all Fungi.

Experiments were made on a piece of Mushroom spawn, and one puff of the spray distributor on its little active thread-like mycelium shrivelled it up as if charred. As it kills the fungus in a resting state as well as in an active state, there is every reason to hope that it may be found useful in checking diseases of the Potato, the Hollyhock, &c., that are caused by Fungi.

The following Testimonials have been received:—

From ROBERT HOGG, Esq., LL.D., F.L.S., &c., *Pomological Director of the Royal Horticultural Society.*

"I have great pleasure in bearing my testimony to the magical effect which your mixture has upon the Mildew of the Vine. When I was at Chatsworth a few months ago, the application of the mixture, through a spray distributor, on the foliage of the Vine, was so destructive and so instantaneous as to leave no doubt on my mind as to its perfect efficacy in destroying the Mildew. On examining the foliage with a magnifying glass after the application, I could find no trace of the disease."

From Mr. WILLIAM THOMSON, *Tweed Vineyard, Clovenfords.*

"I tested Mr. Speed's remedy for Mildew this last summer, when staying for a few weeks at Chatsworth, and in my life I never saw a more radical remedy for any such pest. One puff of the spray distributor cleared the leaf of a Vine badly affected with Mildew, doing the leaf no harm, and I believe it can be safely applied to the most tender plant, as well as the fruit of the Vine. I believe it will completely supersede the use of sulphur for destroying Mildew on Peaches, Roses, Heaths, and all other plants liable to attack by Mildew, and that it will prove a great boon to horticulture."

From Mr. STEVENS, *Gardener to* His Grace the Duke of Sutherland, *Trentham.*

"I have much pleasure in bearing testimony to the efficacy of your liquid for destroying Mildew upon Vines. I saw the liquid applied with a spray distributor, in one of the vineries at Chatsworth, to some badly infested leaves, and upon examining them early the following morning they were perfectly free from Mildew. If the liquid will destroy Mildew on Roses, Hops, &c., as completely as in this instance, it will be a most valuable article of commerce."

From Mr. HARRISON, *Knowsley Gardens.*

"Your Mildew mixture seems effectually to prevent the spread of Mildew. It is also very cleanly in use, being almost without smell, and leaving little or no sediment behind it unless used very strong, and even then it is easily rinsed off with a little clean water."

From Mr. JAMES ANDERSON, *Nurseryman, Meadowbank.*

"The solution prepared by Mr. Speed is the most effective that has come under my cognisance. By simply blowing the spray through a pipe on any leaf affected with Mildew the destruction of the fungus is complete, without the slightest injury to the most tender leaf. For the Stove, Greenhouse, Orchard-house, Vinery, or Peach-house, or even for the Rosary out-of-doors, this solution will undoubtedly prove invaluable, all that seems necessary to guard against is that the leaves operated upon should be as dry as possible."

Sold in Bottles, at 2s., 3s. 6d., 6s., and 10s. each; to make 1 Quart, ½-Gallon, 1 Gallon, or 2 Gallons, ready for use.

Price to the Trade on application to J. VEITCH & SONS, Sole Wholesale Agents.

GARDEN AND FLOWER SEEDS.

THOMAS METHVEN & SONS

BEG TO INTIMATE THAT THEIR DESCRIPTIVE PRICED

CATALOGUE of KITCHEN GARDEN and FLOWER SEEDS, IMPLEMENTS, &c., for 1877,

Is now ready, and may be had post-free on application.

EAST LOTHIAN INTERMEDIATE STOCK (true), in three colours. In packets, 1s., 2s. 6d., and 5s. each colour.

SNOW-WHITE WALL-LEAVED EAST LOTHIAN INTERMEDIATE STOCK. This is a sterling novelty. The purity of the white shows up well upon the grassy green foliage, and it bears the large truss of the East Lothian varieties. In packets, 1s., 2s. 6d. and 5s. each.

SEED WAREHOUSES:
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THE HUNTINGDON NURSERIES.

WOOD & INGRAM'S

CATALOGUE OF SEEDS FOR THIS SEASON

Is now ready, and will be forwarded free on application.

THE NURSERY AND SEED BUSINESS

So successfully conducted for a number of years by the late Mr. JOHN INGRAM, will be continued to be carried on in its various branches, as heretofore, by his Widow and Two Sons, in the name of WOOD AND INGRAM, who respectfully solicit a continuance of the kind and liberal patronage which has been given for a lengthened period to their Establishment.

THE NURSERIES, HUNTINGDON.—January, 1877.



JEFFERIES' LITTLE QUEEN COS LETTUCE,

Per Packet, 1s. 6d.,

Is the Earliest, Best Flavoured and Best Coloured Lettuce in cultivation.

MR. EARLEY, *The Gardens, Valentines, says :*—"Your Little Queen Lettuce proved a good selection, although the weather was very adverse to the trial."

MR. MEADES, *Gr. to the* Rt. Hon. Viscount Barrington, *Becket Park, says :*—"Your Little Queen Lettuce is a capital variety, as hard as a stone, and has kept well from running to seed this dry summer."

MR. FARR, *Gr. to* Sir R. Knightley, Bart., *Fawsley Park, says :*—"Your little Lettuce has proved a very useful one, although the season has been very trying for that class of stuff; its early hearting and crisp sweet flavour are sufficient to recommend it to all who are desirous of a small but good Lettuce."

A Packet of this excellent Lettuce will be included in all our Collections of Vegetable Seeds.

JEFFERIES' HALF GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' TWO GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' THREE GUINEA COLLECTION OF VEGETABLE SEEDS,

Are the best obtainable. For particulars, obtain our "Illustrated Garden Guide."

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CIRENCESTER.

Monro's Duke of Edinburgh Cucumber.

J. MONRO begs to inform the Trade, &c., that he has SOLD the ENTIRE STOCK of Seed of the above-named Cucumber to

Messrs. CARTER AND CO., The Queen's Seedsmen, 237 and 238, High Holborn, London, W.C.; and as no other Cucumber is grown by J. Monro, those having it from the above-named Firm are bound to have it true.

Potter's Bar, January 8, 1877.

The Best Scarlet-fleshed Melon.

SUTTON'S HERO OF BATH. *From* Mr. W. Wildsmith, *Gr. to* the Right Hon. Viscount Eversley.—"I consider your Hero of Bath the best scarlet-fleshed Melon yet in commerce, being A 1 in quality, appearance, and productiveness. His Lordship, who previously had a prejudice against scarlet-fleshed Melons, pronounces this variety superb."

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Price 2*s.* 6*d.* per packet.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

SPECIAL OFFER of FOREST, FRUIT, ORNAMENTAL TREES, &c.

FINUS AUSTRIACA, well furnished, 3 to 4 feet, 15*s.* per 100; 4 to 6 feet, 20*s.* per 100

FIR, Scotch, very fine, 4 to 6 feet, 6*os.* per 1000

ASH, common, 2 to 3½ feet, 20*s.* per 1000

CHESTNUT, Horse, very fine for avenues, 6 to 8 feet, 12*s.* per dozen, 90*s.* per 100

POPLARS, Lombardy, fine, 8 to 10 feet, 40*s.* per 100

OAK, Turkey, 5 to 6 and 8 feet, 80*s.* to 100*s.* per 1000

HORNBEAM, 5 to 6 feet, 50*s.* per 1000

LABURNUMS, Standard, very fine, 8 to 10 feet, 9*s.* per dozen

WHITETHORN, Quick, 4-yr., 12*s.* per 1000; extra strong, 15*s.* per 1000

BLACKTHORN, Quick, extra strong, 15*s.* per 1000

PRIVET, Evergreen, 3 to 4 feet, 12*s.* per 1000

YEWS, English, extra fine, 2 to 3 and 4 feet, 80*s.* to 90*s.* p. 100

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APPLES, Pyramid, good shape, strong, 9*s.* per dozen

PEARS, Standard, 6 to 7 feet stems, good heads, 70*s.* per 100

,, Pyramid, very fine, 9*s.* per dozen,

CHERRIES, Standard, 6 to 7 feet stems, good heads, 70*s.* per 100

APRICOTS, dwarf-trained, extra fine, 30*s.* per dozen

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CHARLES SHARPE AND CO.'S WHOLESALE LIST of VEGETABLE and FARM SEEDS is now ready, and will be sent post-free on application.

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Select Swede and Turnip Seeds.

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CHARLES SHARPE AND CO. have much pleasure in asking attention to their select Stocks of MANGEL WURZEL SEED, which have been grown under their personal supervision upon their own Seed Farms at Heckington, and in the adjoining parishes. Descriptions and Prices are given in C. S. & Co.'s Wholesale Seed List for 1877.

EVERY DESCRIPTION of HORTICULTURAL and AGRICULTURAL SEEDS, SEED POTATOS of finest quality, both Home-grown and Imported.

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OSBORN & SONS

BEG TO ANNOUNCE THAT THEIR

ANNUAL CATALOGUE OF KITCHEN GARDEN AND FLOWER SEEDS

Is now ready, and will be forwarded post-free to all applicants.

It contains a choice selection of "NOVELTIES" and of the "BEST" and most approved kinds of VEGETABLE and FLOWER SEEDS, including among

VEGETABLE SEEDS—Osborn's Forcing French Bean, which has been proved one of the best and most prolific; Osborn's Select Red Beet (or Dell's Crimson), Osborn's Winter White Broccoli; and among

FLOWER SEEDS—Pyrethrum aureum laciniatum, a very distinct and beautifully cut-leaved form of the deservedly popular "Golden Feather." Like its prototype it is perfectly hardy, but of dwarfer habit and more spreading, and is admirably adapted for bedding. It obtained a First-class Certificate at the Meeting of the Royal Horticultural Society, May 3, 1876; and also a First-class Certificate at the Grand Exhibition held at the Westminster Royal Aquarium, May 16 and 17, 1876.

FULHAM NURSERIES, LONDON, S.W.

NEW SEED CATALOGUE

For SPRING, 1877.

All intending Purchasers of choice Kitchen Garden or Flower Seeds should send for a copy of the *Illustrated Guide for Amateur Gardeners*, which will be found the most complete, useful, and beautiful Seed Catalogue ever published.

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ABIES DOUGLASII, extra transplanted, 2 to 3 feet, 100s.; 3 to 4 feet, 140s. per 100

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ASH, Mountain, 6 to 7 feet, 60s. per 1000, 8s. per 100; 7 to 8 feet, 12s. 6d. per 100

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,, Wych, 1½ to 4½ feet, 40s. per 1000, 6s. per 100; 5 to 7 feet, 12s. 6d. per 100; 7 to 8 feet, 25s. per 100

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EUONYMUS RADICANS VARIEGATUS, excellent dwarf shrub for edgings or borders, 25s. per 100, 4s. to 6s. per dozen

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PICEA NOBILIS, 2 to 2½ feet, fine stout plants, 20os. per 100, 30s. per dozen; 2½ to 3 feet, do., 28os. per 100, 42s. per dozen; 3 to 3½ feet, do., 35os. per 100, 52s. 6d. per dozen

POPLAR, Black Italian, 10 to 12 feet, 30s. per 100, 6s. per dozen; 15 to 18 feet, extra, 21s. per dozen

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VINCA ACUTILOBA (Italian Periwinkle).—A fine addition to the number of hardy creepers, and will be especially valuable for clothing banks or rockwork. It is of compact and bushy growth, with shining deep green leaves, and pale lilac or French-white flowers, 2s. 6d. each; 24s. per dozen

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,, 2-yr. seedling, extra fine. Price to the Trade on application

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STANDARDS and HALF-STANDARDS, fine named sorts, our selection, 15s. per dozen, 10os. per 100

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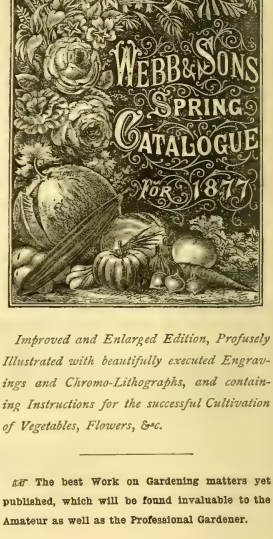
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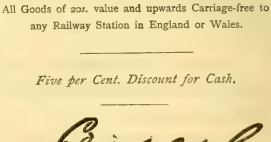
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MR. WILLIAM BULL,

Being an annual Importer of many thousands of Liliums direct from their native habitats in various parts of the world, can supply all the choicest sorts at very moderate prices.

Good and varied selections can be made by Mr. W. B. at 18s., 30s. and 42s. per dozen.

The following Handsome and Choice Hardy kinds can be recommended:—

AURATUM.—Consignments of many thousands have now arrived, and the bulbs are in magnificent condition, so that they are offered at the following low prices:—18*s.* and 30*s.* per dozen; extra-sized bulbs 3*s.* 6*d.* each.

BLOOMERIANUM OCELLATUM.—An extremely handsome hardy Lily, producing large flowers of a rich tawny orange colour, spotted nearly to the tip of the perianth segments with blackish crimson. 5*s.* and 7*s.* 6*d.* each.

ELEGANS SPLENDIDUM.—Bright orange spotted with black; a very showy and attractive variety. 3*s.* 6*d.* each.

HUMBOLDTII.—A splendid species, from Humboldt County, California; it is quite hardy, and produces large golden-yellow flowers, which are spotted with purple. One of the best of modern introductions. It has been awarded a First-class Certificate by the Floral Committee of the Royal Horticultural Society. 3*s.* 6*d.* and 5*s.* each.

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NEILGHERRENSE.—This magnificent Lily is by far the finest of its section. The flowers are deliciously fragrant, and of great substance; the Collector writes that it bears as many as seven flowers on a stem, each flower of the marvellous length of 1 foot. They range in colour from pure white to primrose, some of the varieties having pink flower-tubes. 5*s.*, 7*s.* 6*d.* and 10*s.* 6*d.* each.

NEILGHERRENSE TUBIFLORUM.—A handsome and distinct variety of the preceding. 10*s.* 6*d.* and 15*s.* each.

PARDALINUM (puberulum).—A very beautiful hardy Lily, freely producing its fine flowers, which are of a rich golden-orange colour, attractively spotted with maroon-purple. 3*s.* 6*d.* and 5*s.* each.

PARVUM.—A pretty Californian Lily; flowers recurved, canary-yellow, slightly spotted. 3*s.* 6*d.* and 5*s.* each.

PURPUREUM.—This is a beautiful and distinct Californian Lily. It produces very fragrant flowers; the petals on opening are of a light colour, changing to a delicate purple; densely spotted, 5*s.* and 7*s.* 6*d.* each.

TIGRINUM FLORE-PLENO.—This attractive variety produces beautiful double flowers of a bright orange-scarlet colour; it has been introduced from Japan, and is a distinct and extremely handsome variety. 3*s.* 6*d.* and 5*s.* each.

TIGRINUM JUCUNDUM.—(Maximowiczii). —A very bright and cheerful-looking Japanese Lily; flowers light cinnabar-red colour, marked in the lower half of the segments with black dots. 5*s.* and 7*s.* 6*d.* each.

WALLICHIANUM.—This is an extremely handsome species; the flowers are very large, deliciously fragrant, and of a delicate creamy-white colour. 7*s.* 6*d.* and 10*s.* 6*d.* each.

WASHINGTONIANUM.—This noble Lily inhabits the western slope of the Californian Sierra Nevada; its gives six, twelve, to eighteen large flowers on a stem; white, slightly flushed with lilac, and sweet-scented. 3*s.* 6*d.* and 5*s.* each.

LILIES BY THE 100 OR 1000,

For planting in Borders, Shrubberies, among Rhododendrons, massing in beds, or grouping among Shrubs.

As MR. WILLIAM BULL annually imports immense numbers from their native habitats, he can offer choice and new Lilies, also the well-known ordinary showy sorts, at very low prices when taken in quantity. Special quotations on application.

Good and varied selections can be made by Mr. W. B. at 18s., 30s. and 42s. per dozen.

MR. WILLIAM BULL has just received an importation from California of many thousands of Calochortus of sorts, Cyclobothras, Brodiæas, Triteleias, Calliproras, Erythroniums, Bloomerias, and Fritillarias. Prices per dozen or 100 on application.

Establishment for New and Rare Plants,
KING'S ROAD, CHELSEA,
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FLOWER AND VEGETABLE SEEDS FOR 1877.

	Per packet	s.	d.
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BEGONIA SEDENI SEMI-PLENA, per packet ..		2	6
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CYCLAMEN PERSICUM GIGANTEUM.—This is a great improvement on the old type, the flowers being thrown well above the foliage, each flower measuring from 2 to 2½ inches in length; pure white, with a fine bold violet-purple eye ..	5*s.* and	2	6
CYCLAMEN PERSICUM, Williams' Superb Strain,	5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.*, and	1	6
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CALCEOLARIA, Williams' Superb Strain,	5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.*, and	1	6
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PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance		5	0
PYRETHRUM GOLDEN GEM		1	0
SOLANUM, Williams' Improved Hybrids		1	6
STOCK, Williams' Improved Giant Scarlet Brompton		1	6
WALLFLOWER, Harbinger, Autumn and Winter flowering		1	0

Packets of Flower Seeds, excepting heavy kinds, Free by Post.



VEGETABLE SEEDS.

	Per packet.—s.	d.
BEANS, Williams' Early Prolific Dwarf French—per qt.	3	0
BRUSSELS SPROUTS, Welch's Giant, one of the finest in cultivation .. .. per packet	1	0
CUCUMBER, Walker's Hero (New)	2	6
Osmaston Manor	2	6
ENDIVE, Williams' Gloria Mundi	1	0
MELON, Osmaston Manor Hybrid	2	6
,, Laura's Beauty, (New)	2	6
,, Surprise (New)	2	6
ONION, Williams' Magnum Bonum	1	6
PEA, Williams' Emperor of the Marrows .. per quart	2	6
TOMATO, The 100 Days .. .. per packet	1	6

*** *All seeds amounting to 20s. will be delivered free of carriage to any Railway Station in England.*

☞ ILLUSTRATED SEED CATALOGUE gratis and post-free to all applicants.

VICTORIA & PARADISE NURSERIES
UPPER HOLLOWAY, LONDON, N.

SATURDAY, JANUARY 13, 1877.

THE CEDARS OF LEBANON.

WHEN Seth, the son of Adam, was sent by his dying parent to fetch the "oil of mercy" from Paradise, he saw from the gate of that glorious garden, which an angel opened for him without permitting him to enter, a Cedar of Lebanon, with branches borne high towards Heaven. The tree seemed to typify the great disaster of Adam's early career. It stood there stricken and leafless, and yet suggesting hope—for the legend is of Christian origin—since a child in glittering raiment was seated on its top, the symbol of hope for all future generations.

This ancient legend—the dream, perhaps, of a Syrian hermit—shows that the Cedar of Lebanon, the timber tree of the Temple built on Zion, was held in highest estimation, and exercised the fancy. The story proceeds that Seth received from the angel three seeds of that tree which he beheld still standing upon the spot where sin had been first committed, but standing there blasted and dead. He carried the seeds home, placed them in the mouth of the dead Adam, and so buried them. And here the natural history of the legend is at fault, for the three seeds, ripened on the same tree in Paradise, produced three trees of different kinds. The truth is, the Cedar of Lebanon, the Cypress, and the Pine, which grew from those seeds, were held in equal estimation by the recluse who dreamt this legend, and therefore the same marvellous, though inconsistent origin was claimed for them all. Their future history is curious. Growing on the grave of Adam in Hebron, they were afterwards mostly carefully protected by Abraham, Moses, and David. After their removal to Jerusalem, the Psalms were composed beneath them; and in due time, when they had grown together and united into one giant tree, they, or it—for it was now one tree, a Cedar of Lebanon—was felled by Solomon for the purpose of being preserved for ever as a beam in the Temple. But the design failed; the king's carpenters found themselves utterly unable to manage the mighty beam. They raised it to its intended position, and found it too long. They sawed it, and it then proved too short. They spliced it, and again found it wrong. It was evidently intended for another, perhaps a more sacred office, and they laid it aside in the Temple to bide its time. While waiting for its appointed hour, the beam was on one occasion improperly made use of by a woman named Maximella, who took the liberty of sitting on it, and presently found her garments on fire. Instantly she raised a cry, and feeling the flames severely, she invoked the aid of Christ, and was immediately driven from the city and stoned, becoming in her death a pro-Christian martyr.

In the course of an eventful history the predestined beam became a bridge over Cedron, and being then thrown into the Pool of Bethesda, it proved the cause of its healing virtues. Finally, it became the Cross, was buried in Calvary, exhumed by the Empress Helena, chopped up by a corrupt Church, and distributed.

Other inconsistencies in the history of this famous tree are the enormous weight of the relics of the true Cross as disposed of by the Mediæval Church, and the fact that most of the relics are of Oak, which has always grown freely in the grounds of Italian and English ecclesi-

astics, and which does not grow in Hebron, except the evergreen species. The above story is suggestive in many ways.

In Evelyn's *Silva* of 1664 he does not mention the Cedar of Lebanon, and we may therefore be sure that it had not then descended from its Syrian mountain to the congenial level of the banks of the Thames, in our higher latitude. It was first planted largely by John, Duke of Argyle, the friend of Jeanie Deans. The noble grove at Whitton Park, near Twickenham, was planted by him, and the seeds, which he distributed among his friends, produced the existing ornaments of several sites at Fulham, Richmond, and other neighbourhoods, and established the Cedar of Lebanon in the various gardens on the Thames, where it is still an ornament that may be often observed.

One of the oldest, if not the oldest, Cedars of Lebanon in England is that standing in Bretby Park, Derbyshire, on the east front of the Hall. The gardeners' accounts prove this tree to have been planted in February, 1676. The girth of its trunk, at 4 feet, is 15 feet 8 inches; and so far as we could judge the size of the trunk is not much less at 15 feet or 16 feet, where it divides. From this point the main stem runs up 50 or 60 feet. The spread of the two longest lateral branches is about 100 feet. This tall Cedar has lost many limbs, and is now only scantily provided. The stump of every lost limb has been carefully sealed with lead, and each remaining branch is supported by chains.

There is a legend that a limb of this tree falls at the death of a member of the family. On Maundy Thursday, 1773, when the Cedar in the park was nearly a hundred years old, a friend called to see Lord Chesterfield. He was dying. "Give Dayroles a chair" were his last words, and no doubt the Cedar lost a large limb, for the departed Earl, who died true to his principles, whispering faintly those courteous words with his latest breath, was far beyond the average of men, and greater than his detractors. That fine gentleman of manifold accomplishments was not the despicable individual that the delightful poet Cowper, a morbid man and by no means an impartial judge of men, imagined him.

His life was one of many sacrifices. He poured forth the fruit of his experience with infinite pains for a son to whom he was devoted, and the youth died almost before entering the great world. The old Cedar must have lost a heavy branch. It has lost many since, and the family history has been a mournful one. The last Earl died a young man and childless, on reaching home after a visit. His sister was the wife of Lord Carnarvon, and her death will be remembered. The fall of these recent limbs has left the old tree a wreck—a lofty and noble trunk, almost naked except a few remaining branches on the top, supported by artificial means.

It is said there are seven trees remaining of the forest thinned for the building of Solomon's Temple, and the girth of the largest is 45 feet. [Of late years other forests of the same tree have been discovered, see our volume for 1866, p. 876. EDS.] There is a Cedar of Lebanon at Wilton Abbey 26 feet in circumference at 1 foot from the ground; there are famous trees, too, at Strathfieldsaye, Sion House, and Shobdon.

In England this type of indestructibility produces only second-rate timber. In Palestine documents of particular value were kept in Cedar boxes by preference, and there was a common saying in reference to articles of value that they were worthy to be cased in Cedar. Not only was the wood extremely durable, but it was of rapid growth, and in Hebrew families it was not uncommon for the parents of a child to plant a Cedar of Lebanon at his birth, to be cut down for the construction of a bedstead at his marriage. In England, where colliers marry at eighteen, and farm labourers at twenty, and the middle-class at twenty-five, there are no trees of strength and toughness which would in like manner overtake the wedding-day, so as to be adapted to the purpose above suggested. *H. Evershed.*

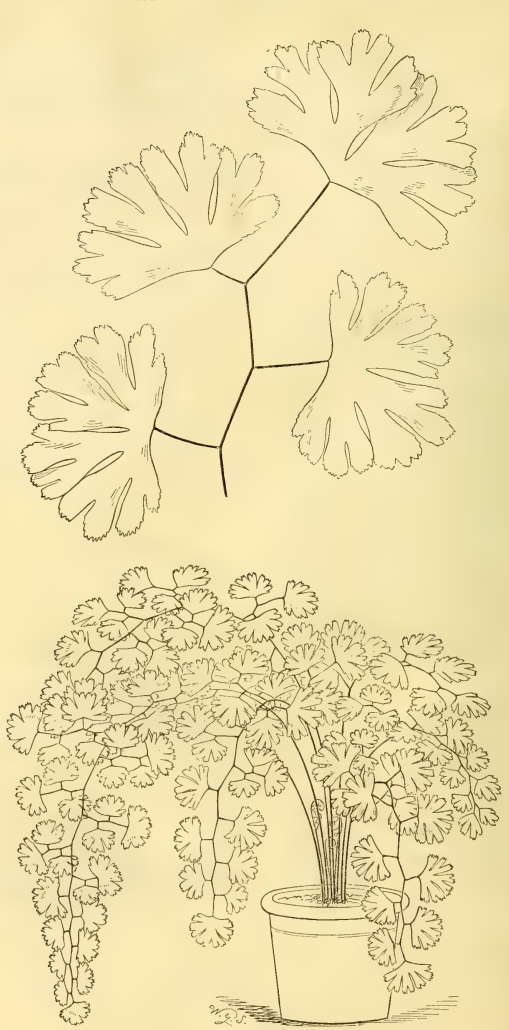


FIG. 5.—ADIANTUM PALMATUM, SHOWING HABIT. (¼ NAT. SIZE.)

New Garden Plants.

ONCIDIUM CRISPUM (*Lodd.*) OLIVACEUM.

I found last autumn a very rich display of Oncidium crispum (Lodd.) in the nursery of Messrs. Veitch, and those gentlemen were in a state of despair as to the endless quantity of varieties. As to me I felt much pleased by what I regard as a most interesting variety. It has no Horse-Chestnut-brown in it at all. It is olive-green over and over. The area at the base of the anterior lacinia of the lip is finely yellow, and the calli, column, wings, and a few blotches at lips base are beautifully black-purplish. The combination of these colours makes an unusually nice impression. *H. G. Rchb. f.*

ADIANTUM PALMATUM, *sp. n.**

The species of this group of palmate-pinnuled Maidenhairs have been much misunderstood. Being all once considered as one, they have been classed with

* *Adiantum palmatum*, sp. n. — Fronds scrambling or scandent, elongate-oblong, narrowed to the apex, tripinnate;



FIG. 6.—ADIANTUM SPECIOSUM (⅓ NAT. SIZE.)

A. Feei, as forming a scandent group; but this at least does not apply to A. speciosum. The first to be named was the A. digitatum of Presl, a plant of which specimens, presumably correct, are in the Kew Herbarium. The A. speciosum of Hooker, described and figured in *Species Filicum* (ii., 45, t. 85 c) came next, and this appears to be well represented by living plants, which have been sent out under this name by Messrs. Veitch & Sons. These two were thrown together under the name of A. digitatum, in the *Synopsis Filicum* of Hooker and Baker (p. 125), and a third species included with them, the latter being that here called A. palmatum. The three plants are of course near allies, but they are distinct enough for all practical purposes. A. digitatum is by comparison smaller in its parts, and of a much neater aspect than the rest, and, so far as can be judged from the specimens referred to—one from the Berlin Herbarium, where A. digitatum originated, and another from M. Glaziou—it would seem to be altogether a smaller and a dwarfer-growing plant. A. speciosum is of much stouter habit than this A. digitatum, and produces broadly and abruptly triangular spreading fronds, 2 feet long and 20 inches broad, the large pinnules of which, and at least the ultimate rachides, are downy; while in the A. palmatum now described the fronds are narrow, elongate, reaching 3½ feet in height, and about 10 inches in breadth, apparently almost, if not quite, indefinite in evolution, and having the rachises and the pinnules everywhere quite smooth, the ultimate rachides being distinctly flexuose.

A. palmatum is cultivated by Messrs. Veitch & Sons, and by Mr. B. S. Williams, of Holloway, to both of whom we are indebted for specimens. Our best examples are from the former, and were gathered by one of their collectors at a high elevation on Chimborazo, where the plant is noted as being rare. This specimen, which may not include the whole of the stipes, is 3 feet 6 inches long, and indicates a scrambling habit, though not perhaps strictly scandent. The rhizome is creeping, and the fronds are of an indefinitely elongated form. A very noticeable feature in the plant is the flexuose or zigzag character of the rachides, most marked near the apex of the fronds, and in the rachides of the primary pinnæ. The pinnules are herbaceous in texture, smooth, large, from 1 inch to 1¾ inch in breadth, distant, and very distinctly stalked, the stalks varying from ½ to ¾ of an inch; the terminal ones are usually wedge-shaped, while the lateral ones are usually truncate at the base, so as to become semicircular in outline; they are deeply cut down into from three to

pinnules distinct, the lower ones obliquely deltoid, the posterior side being broadest; ultimate pinnules large, smooth, distant, distinctly stipitate, the stalks ½—¾ inch long, in outline varying from obovate wedge-shaped to semi-orbicular, but all palmately cleft half-way to the base or more, and varying in breadth from about 1 inch to 1¾ inch; sori oblong, variable in length, situate at the tips of the segments, usually one to each; indusium glabrous, entire; veins forked, 6—8 to each ultimate segment; stipes smooth, dark castaneous, the rachises also smooth and of the same colour, flexuose.—Hab. Chimborazo and Peru.

five large lobes, which are again more or less parted, an oblong sorus terminating each of the divisions in the fertile portions. When there are no sori, the tips of the segments are shallowly toothed. The fronds are deciduous. It will be a very elegant garden plant, as the accompanying illustration shows (fig. 5). We understand that it thrives best in a cool stove temperature, and during summer and autumn we have seen it growing vigorously in a house entirely without fire-heat. Our figures were derived from one of Mr. Williams' plants, which we are informed were collected in Peru, by M. Roezl.

A. speciosum, as we have said, was imported by Messrs. Veitch & Sons, and is represented by our accompanying figure 6. It has a creeping rhizome, from which arise stout triangular deciduous fronds, with a lamina nearly as broad as long, and very distinct in character from the elongated lamina of the fronds of A. palmatum. The fronds are at least tripinnate, the lowest pinnæ fully 10 inches long, with the first anterior pinnule 2 inches long, and the first posterior one 4 inches, thus forming an unequal-sided triangle. The ultimate pinnules on fronds of this size are from 1 to 1½ inch across, the terminal one being wedge-shaped at the base, and the others more or less truncate, but in the more leafy fronds of a younger stage of development there are often pinnules of 2 or 3 inches in breadth. The pinnules are deeply lobed in about three or four divisions, the lobes themselves being again deeply parted, and the sori oblong, crossing the tips of these ulterior lobes. The pinnules are covered with short dense hairs, which give them a woolly feel. Messrs. Veitch's plants were introduced from Peru. *T. M.*

THE FERTILISATION OF PLANTS.

MR. DARWIN's new book,* like its predecessors, is a perfect mine of facts and generalisations; and it has been no easy task to digest it. I, however, purpose endeavouring to give as concisely as possible some of the chief facts and conclusions which are of more especial value to horticulturists.

In the introductory chapter Mr. Darwin describes the plans pursued, which were as follows. Confining his observations almost entirely to cultivated and conspicuous flowers, he protected by a net the parent plants. Several flowers were fertilised with their own pollen, the seedlings resulting being called "self-fertilised plants." Other flowers on the same plant, the stamens not being removed, so that bees might be closely followed, were fertilised with pollen from a distinct plant of the same stock, growing, however, under the same conditions. Their seedlings he calls "intercrossed plants." I shall limit the word "crossed" to plants derived by a cross with an entirely new stock. As the two kinds came up, whenever one of each kind appeared simultaneously, they were planted one on each side of a pot. Proceeding thus until from six to twenty or more pairs were established, the remaining seedlings were planted thickly in a large pot or in the open ground, often thus having to struggle for existence, with results to be mentioned hereafter. Conditions of soil, light, moisture, &c., were made as exactly alike as possible.

To determine the results, the relative heights of the fully-grown plants were compared, and a long table (A) in chapter vii. gives them for fifty-four species of thirty orders; the height of the intercrossed being fixed at 100—the mean of all the self-fertilised is 87. Mr. Darwin, however, omits certain cases which are more favourable to the latter kind; thus, while inserting all ten generations of Ipomœa, he omits all mention of the wonderful self-fertilising and tall variety he named "Hero." Again, of Mimulus, while inserting the first to the third generations, he omits the fourth to the seventh inclusive, when the self-fertilised exceeded the intercrossed in height: for while the average difference for the first three generations is shown by the proportion of 100 : 65, in the subsequent years the ratios were as 100 : 110, 100 : 126, and even as 100 : 137; neither has he inserted the second year's growth of Eschscholtzia, viz., 100 : 100, nor that of Lobelia fulgens, viz., 100 : 167—the self-fertilised being in these vastly superior to the intercrossed. Had our author added these—and I cannot see any good reason for their omission—the resulting mean ratio would have been as 100 : 118! Height, however, as Mr. Darwin confesses, is not always a satisfactory nor even trustworthy test; for it shows only one element of vigour; and if a plant be unnaturally "drawn," as occurred with Dianthus, not even that. The weight of the entire plant, had it been possible to ascertain it in all cases, would have been more desirable. Some few plants were weighed, and a table (B) is added, and the difference is often striking. Thus the height of intercrossed plants of Brassica oleracea is to that of the self-fertilised as 100 : 95, that is practically the same; but their respective weights were as 100 : 37; giving a difference between the percentages of fifty-eight! That difference is exceptionally great; for if we take the eleven plants that were weighed, a similar difference between the weights and heights of the mean is twenty-six. Unfortunately weighing could not be always done; and, as might be expected, the heights in some cases gave adverse results, *i.e.*, the self-fertilised grew exceptionally taller than the intercrossed. The reverse, however, was the general rule. Hence it is concluded that intercrossed plants grown under the same conditions have, at least for the first few generations, a decided advantage; unless the plant, like Pisum sativum, has been cultivated for many years and propagated solely by self-fertilisation, for in such a case intercrossing does no good. This advantage is shown in the greater vigour of the intercrossed, especially under competition, though it does not always show itself from the very first, the self-fertilised seedlings being often equal to if not taller than the others; but soon after the preliminary stage is past, then the intercrossed begin to surpass their rivals, and ultimately evince greater luxuriance, darker foliage, greater fertility, and brighter tints in the flowers. But after several generations of close interbreeding, the latter become more uniform in colour. This fact is associated with another—viz., that although intercrossing is beneficial at first, subsequently it does no good at all; and then closely interbred and related plants become equal to, if not inferior to, plants of the same kind which have been repeatedly self-fertilised. Mr. Darwin more than once attributes the slight differences between certain self-fertilised and intercrossed plants to the deterioration of the latter through constant interbreeding; but he does not observe that actual self-fertilisation is a still closer form of inbreeding; hence such results tell in favour of the "lasting" powers of self-fertilisation—that they have not deteriorated, at all events, in the same ratio as the intercrossed. This, again, is analogous to the fact that intercrossing distinct flowers on the same plant often does no good, or else gives results inferior to self-fertilisation; excepting in the case of some nearly self-sterile plants. Thus, Mr. Darwin speaks of Ipomœa 1:—"That the self-fertilised plants grew a little taller, were heavier and generally flowered before those derived from a cross between two flowers on the same plant." A few cases, such as Digitalis, Eschscholtzia, Corydalis cava and Oncidium are mentioned, in which a slight advantage accrued to the offspring of flowers fertilised with pollen from others on the same plant. It is an observable fact that these four plants are nearly self-sterile, so that it would seem that the flowers on the same plant had become more and more highly individualised in some way, though it would be dangerous to generalise from so few cases, especially as it was not the case with some other self-sterile plants. An interesting case, not recorded by Mr. Darwin, is the Victoria regia, which is said to have yielded 25 seeds only when naturally self-fertilised; 60 when artificially self-fertilised; 100, when by pollen from a different flower on the same plant, and as many as 300 seeds when intercrossed with pollen from a separate plant.

The third series of experiments brought out the most important result of all—that when either intercrossed or self-fertilised plants were crossed with pollen from plants raised from an entirely new stock, the ancestors of which had grown at quite different localities, then the resulting "crossed plants" vastly superseded the self-fertilised, and very greatly, though to a less extent, the intercrossed plants of nearly related origin. Every element of vigour was usually enhanced, and colours became much more varied and pronounced. These experiments thus strongly corroborate the custom of seed growers and propagators, of introducing fresh seed from distant localities. Here, then, we may see how Nature brings to her aid various means to effect this. Insects do the first office in intercrossing the closely related plants growing in the same district; and the strong persistency in Nature would imply that all the individuals of a species growing in the same locality were not only closely related, but were seldom crossed with pollen brought from a great distance. This is the first step in the progress of improvement. As the species spread into other areas, birds, especially, perhaps, "of passage," will carry about seeds from different stocks, and having introduced them into new areas, insects will then fertilise the old long-residents by means of the newly bird-imported seedlings; while the fact that insects and birds often feed more or less exclusively on one and the same kind of plant respectively, will favour such crossing. Illustrations will be hereafter given of the benefits which result from crossing distinct stocks.

It may be interesting to the reader to know that Dean Herbert long ago anticipated these results of Mr. Darwin, for he says (*Amaryllidæ*, p. 371):—"I am inclined to think that I have derived advantage from impregnating the flowers from which I wished to obtain seed with pollen from another individual of the same variety, or, at least, from another flower rather than its own . . . and especially from an individual grown in a different soil or aspect."

Though self-fertilisation does not usually produce such marked results as intercrossing, nor the latter such benefit as crossing with a distinct stock, yet it must not be supposed that, therefore, plants cannot fertilise themselves. The known number of self-sterile plants is very small, *i.e.*, plants in which the flower's own pollen is inefficient on its own stigma; and even these would probably become self-fertile under certain climatal conditions, as some are known to do, especially on the reduction of temperature. Moreover, in several instances amongst Mr. Darwin's experiments the self-fertilised were more prolific and more vigorous than the intercrossed and in some genera highly self-fertile forms appeared and transmitted their self-fertilising properties to their descendants: so that, as was the case with Hero in Ipomœa, they did not even profit from a cross with a distinct stock! Then again many plants possess "cleistogene" flowers as the Violet; *i.e.*, minute nearly apetalous and closed flower-buds, which produce an abundance of good seed; while on the other hand conspicuous flowers adapted for intercrossing often set no seed at all in the absence of insects. Lastly, a considerable number of our wild genera with very inconspicuous self-fertilising flowers, such as Chickweed, Knotweed, Fumitory, &c., are abundant in individuals, prolific, and very rapid seeders, vigorous in growth for their size, and when transplanted into other regions of the globe, as Polygonum aviculare into New Zealand, grow to much larger dimensions, and, what is more remarkable, completely invert the rule deduced from Mr. Darwin's observations on cultivated plants—for they oust the native population, and are wonderfully vigorous in the struggle for life! On the other hand Mr. Darwin's experiments on cultivated plants clearly show the great superiority of intercrossed, and especially crossed, plants when under competition with self-fertilised individuals. Mr. Darwin, though often speaking of the "evils" of self-fertilisation (a term which I hope to show requires a relative interpretation only), is obliged to confess "that self-fertilisation is in some measure more beneficial than crossing, unless the cross bring with it some decided and preponderant advantage, and this is only to be acquired by different constitutions in the parents."

Some horticultural importance lies in the fact that the colouring of self-fertilised plants always tends to become extremely uniform in successive generations. This tendency already appeared in the later generations of closely related intercrossed plants subjected to the same environing conditions; but it is even more marked in the case of self-fertilised plants; and an obvious fact issues out of this—that if horticulturists wish to retain and render permanent any particular "strain," they should carefully select it, and then endeavour to fix it by securing self-fertilisation as much as possible, accompanied by entire freedom from competition.

The first chapter of Mr. Darwin's work being introductory, is followed by five chapters in which are recorded the results of his experiments on a large series of plants, the seventh chapter containing tables and a summary of these results. I propose in the next communication to select some of the more interesting cases. The subsequent contributions to the *Gardeners' Chronicle* will treat of the various matters dealt with by Mr. Darwin in the remaining five chapters of the book. *George Henslow.*

(To be continued.)

* *Cross and Self Fertilisation of Plants.* By C. Darwin. Murray.

A PLEA FOR THE SPECIALIST.

IN your issue of December 16 you favour us with your views on the "number of special societies that are springing up on all sides."

With your opening paragraph I believe you will have an almost, if not quite, universal sympathy, and few specialists, however sensitive or thin-skinned may seem their normal condition, will object to the gentle banter you bestow upon them; but to the closing propositions of your article I feel bound to take exception. Thus you say, "Let a man be a specialist by all means if he likes, but before he bands with others in what we may call a corporate capacity . . . let him be thoroughly well versed in general horticulture." This appears to me, unless interpreted in so narrow a sense, as really to fritter away its meaning, to involve a paradox. As well might we say "let no man study, unless perfectly informed upon the subject to be studied." As a matter of fact in my experience the specialist, whether of horticulture or floriculture, becomes versed in general horticulture as the result of his specialism, not as a necessary introduction thereto; and he bands himself with others in a corporate capacity, not alone to extend his special acquirements, but for the acquisition of that knowledge collateral to and lying around every point of his field of specialism, whether it be large or whether it be small.

Going back over a large number of years, I can recall few instances where the cultivation and development of special tastes have been injurious, and none where the really earnest, devoted florist, has not been catholic in his sympathies, though his circumstances utterly forbad his attempting "general horticulture;" and so far from assenting to your proposition that the cultivator of the Rose, the Tulip, the Auricula, or the Carnation, in the gratification of his tastes and opportunities is not "promoting some great and worthy object, such as horticulture, for instance," I boldly assert, that every one who adds aught to our knowledge of those subjects, or to the development of beauty in the subjects themselves, adds to horticulture, and may be said to deserve well of his country. Throw away the work of the specialist, and where, indeed, would be horticulture?

It is quite true there is nothing "in the cultivation of Roses, Auriculas, Carnations, Tulips, &c., that differs aught in broad general principles from the culture of any other plant," but I cannot admit that, because in the, as I hope, passing paralysis of the central body—which, if vital and vivacious, would make such action unnecessary—florists join together and organise shows of subjects they specially affect, they thereby "degrade horticulture, with its widely beneficent aims, its hopeful future, its philosophic basis, into a mere affair of prize-money and flower shows." An acquaintance such as I have had with special shows and their results would lead the writer, I am confident, to a different conclusion. He would find no degradation of horticulture in them, and as for its being an affair of prize money, the florist who thought to make money by such means would be simple indeed.

But speaking with a commercial experience of upwards of forty years, and, therefore, of many men, I say the true florist knows naught of mercenary feeling. It is his greatest delight to share the objects of his care and regard with his brother florists, no matter what may be the difference, for he knows none, of social degree, but he instinctively turns from the pretender.

For myself, and I doubt not I may assert the same for others taking action for the promotion of these special shows, I shall be indeed thankful when the necessity for such action has no existence. [But where around London, save for this special action, can you point me to a field for a display of the Auricula, the Rose, or the Carnation, or a point for the gathering together of the growers thereof, and the interchange of kindly feeling beneficial alike to the man and the subjects of his regard? And surely, whilst it has hitherto been, and as I think is likely ever to be, that the mighty mass of workers in every direction must be specialists, you would not harshly deprive them of the delight which is their guerdon. Adopting a phrase from Macaulay, I may say the culture and study of the Carnation and Picotee has been "health in sickness, wealth in poverty, society in solitude" to me, and I doubt not a similar romance has been known to others—many others—of my brother specialists.

Work by all means, and with the utmost energy, to remove the occasion for those developments of specialism; but do not involve the specialist in condemnation because he refuses to stand still when, from its faults or misfortunes, or both, the central body is paralysed and helpless. *E. S. Dodwell.*

THE NEW PLANTS OF 1876.

IN taking a retrospective view of the new plants of the past year, we find as usual that stove subjects predominate. This circumstance we suppose must be attributable to the generally more brilliant foliage and inflorescence of tropical as compared with temperate plants, and which fact we may believe induces the introducers of novelties to send their collectors into those countries which yield them subjects likely to be appreciated in these luxurious times. It is to the enterprise of these gentlemen—of whom Messrs. Veitch, Bull, Lowe, Williams, &c., in this country, and MM. Linden, Van Houtte, Verschaffelt and Jacob-Makoy in Belgium, stand in the foremost rank—that we are now mainly indebted for these introductions from foreign lands; and taking into account the enormous expense and the personal risks encountered in thus adding to our home enjoyments, the horticultural world may well accord its heartiest thanks and warmest support to those who, at such risk, cater to enhance its pleasures.

FLOWERING STOVE PLANTS.

Of the flowering section of stove plants there is nothing very startling to record, though there are several of fully average importance. Taking them in alphabetical order, we have first to note Aphelandra Sinitzii, a showy Peruvian Acanthad, with the costa and main ribs white, and the branches surmounted each by a spike of dazzling scarlet flowers issuing from crimson bracts. In the same category come Episcia Luciani, a Columbian Gesnerad, with fascicles of bright red pubescent salver-shaped flowers; Eranthemum roseum, an Acanthad of erect habit, with bold foliage, purplish beneath, and spikes of purplish red flowers having a long, slender arched tube—introduced from the Amazon district; Griffinia ornata, a Brazilian Amaryllid, of winter-blooming habit, with broad, elliptic, petiolate leaves, and large umbels of delicate purplish lilac flowers, on compressed scapes; Hibiscus Colleriі, a shrubby Malvad, from Polynesia, of the rosa-sinensis type, with large double yellow flowers, stained at the base with crimson; Ixora regina, a splendid variety, with bright orange-scarlet flowers passing to yellow, and growing in dense massive heads; and, finally, Utricularia Endresii, a West Indian Lentibularіad, remarkable, like its close ally, U. montana, for simulating when in blossom the aspect of an Orchid; in this case the leaves are lance-shaped, and the flowers freely produced, of a pretty lilac colour with a yellow palate, those of montana being white. Practically, Messrs. Veitch's splendid Poinsettia pulcherrima plenissima is a plant of 1876, since it was only distributed in that year, but its existence was made known sufficiently early in the previous year to permit of its being included in our summary of the novelties of 1875. We have heard of this plant having in some instances been disappointing, but, if really so, it may well be attributed to temporary weakness arising from the excessive multiplication which was found necessary to meet the demand for it.

FINE-FOLIAGED STOVE PLANTS.

The choice amongst stove plants cultivated for the beauty or interest in their foliage, is larger, but here again there is no one subject sufficiently prominent to be singled out for special remark, and we shall therefore take them alphabetically. This arrangement gives the precedence to Aralias, and certainly in numbers, perhaps in merit, they are entitled to this distinction. We have here first M. Linden's Aralia gracillima (doubtless a form of Veitchii), in which the toothletted leaflets of the slender digitate leaves are reduced to the narrowest dimensions; then come Aralia elegantissima, a plant of similar character, but with broader narrow lanceolate toothletted leaflets, which are slightly drooping, and of a deep green colour shaded with brown, the midrib being ivory-white; the New Caledonian Aralia splendidissima, a densely-leafy plant, with long pinnate leaves, having about eleven pairs of opposite entire or lobed shining undulated leaflets; and Aralia filicifolia, *alias* spectabilis, from the South Sea Islands, a very handsome plant, having bright green pinnato-pinnatifid leaves, the leaflets lanceolate-ovate, and the segments falcate. These Aralias are all extremely valuable decorative plants, and M. Linden's diminutive A. gracillima is indeed quite a gem, and must not be confounded with a simple-leaved plant sent out under the same name by Mr. Bull. Alocasia Johnsoni, another acquisition of the year, shown at Brussels, is remarkable for its erect arrow-shaped dark green leaves, which are veined with red, and supported by purple-mottled stalks furnished with short prickles arranged in groups and spiral lines. Clidemia vittata is an erect-growing Peruvian Melastomad, with large elliptic bullate leaves, of a rich metallic green, with a central bar of white. Curmeria Wallisii, of which we intend to publish a figure shortly, is a remarkably elegant dwarfish plant from New Grenada, with the oblique oblong-elliptic leaves freely marbled with angular blotches of yellow. Crotons are still pouring in, but we are not able to report any that exceed in beauty those already known, or introduce novelty of character like the C. Disraeli and C. tribolus of last year. The best are C. Macafeanus, C. Mortii, C. Andreanus, and C. Mooreanus. Dieffenbachia Shuttleworthii, a Columbian plant, is of a distinct type from those in general cultivation, being of dwarf habit, with spreading lanceolate-oblong leaves of a satiny green, marked with a broad feathery central band of white. Dracænas have been well represented throughout the year by the novelties introduced by Messrs. Wills, Linden, Bull, Veitch and Williams, but unfortunately their number is embarrassing; and singularly enough those of a very distinct type, having a salmony or flame-red tint conspicuous in their variegation, giving them quite a novel, and, as it seems to us, a very ornamental aspect, have failed to win the suffrages of plant judges; these and some of Mr. Wills' high-coloured narrow-leaved types will, however, be found invaluable as decorative plants both for tables and plant-houses. Maranta Massangeana, a Brazilian species, is a beautiful addition to the dwarf forms of this ornamental family; its leaves are spreading, roundish-oblong, flat, of a rich velvety maroon, marked through the centre with a lobate silvery band and vein-like lines running out to the green margin. Philodendron Holtonianum is a striking plant with deflexed three-lobed leaves of a bold character, the young leaves often beautifully puce-coloured (see 1876, p. 365, vol. vi.). Phyllanthus roseo-pictus, a South Sea Islander—evidently of the same specific type as that called P. nivosus, with much of the foliage pure white, and P. atropurpureus, with the growths similarly of a dark purple—is the prettiest of the triad, the stems of the young shoots being purple, and the small ovate leaves green, blotched with white, and suffused with crimson. The climbing Smilax Shuttleworthii is one of the plants sent home by Mr. Shuttleworth, who has just returned from New Grenada with his life in his hands (see p. 18); it has large cordate leaves of a deep green colour, mottled with dull grey on the face, and of a purple hue at the back.

PALMS.

Certainly one of the most beautiful of the novelties amongst Palms is one which M. Linden calls Kentia gracilis, introduced by M. Linden from New Caledonia, and recently figured in *L'Illustration Horticole* (t. 245), and which if not, as is averred, the true plant, might well bear the name of Kentia concinna. It is said to have a slender stem as thick as one's finger, and extremely elegant fronds about 2 feet long, with an ovate, pinnately-parted limb of about twelve distinct narrow linear, drooping, pointed segments, almost rivalling Cocos Weddelliana in graceful beauty, and at the same time very distinct. Kentia Linden is has the young leaves coloured red as in Welfia regia, and is of stout and vigorous habit, the mature leaves being of a deep green, with reddish brown varnished stalks. Two handsome new Palms have been introduced by Mr. Bull from the United States of Colombia. One, called Geonoma Carderi—collected by Mr. Carder, who, as related at p. 18, comes home stripped of all his belongings, in company with Mr. Shuttleworth—has erect pinnately-parted leaves, with broadish segments varying in width; the other is Chamædorea formosa, and is also pinnately divided in a more symmetrical manner with numerous narrow linear-lanceolate pinnæ, 18 inches long. It may be noted that the Californian Fan Palm, introduced under the name of Brahea filamentosa, has now the generally adopted *alias* of Pritchardia filamentosa. Under whatever name, it is a most welcome and ornamental plant, thoroughly adapted for greenhouse culture. *T. Moore.*

(*To be continued.*)

MRS. PINCE'S BLACK MUSCAT GRAPE.

I CAN hardly hope to accomplish the task which your correspondent "Enquirer" (p. 21) has assigned me, viz., pointing out the cause of this excellent late variety of Grape so frequently failing to take on the desired colour, or declining to appear in a "black dress," as your correspondent so well puts it.

I will, however, endeavour to answer some of the questions he asks, and will even venture to hazard a conjecture as to what I consider likely to be at least one of the causes of the non-colouring of the fruit of this useful and delicious variety.

"Enquirer" asks if the Vines I have referred to "are of the same age, similarly cropped, both having the same relative proportion of foliage and fruit, and especially are they from the same source?" As regards the first question, or as regards the first and last portion of this compound question, the Vines are of the same age, and are also from the same source, being each the produce of scions taken from the same plant, which was procured direct from Mr. Pince's establishment soon after the variety in question was distributed; each was grafted upon similar stocks, viz., the well-known West's St. Peter's variety. The two Vines are to all appearance equally healthy, and there was no perceptible difference in the condition of their leaves: but one of the Vines certainly bore a heavier crop than the other, and the Vine which bore the lighter crop was that which produced the best-coloured fruit. In stating that one of the Vines bore a heavier crop than the other I do not wish to infer that it carried an unduly heavy crop, more particularly when compared with the crops borne by other varieties in the same house, such as Lady Downe's, Alicante, and West's St. Peter's, all of which ripened and coloured their fruit as well as could be desired. But a weight of fruit which might not be a too heavy crop for any of the varieties just named, might nevertheless be so for a Vine of similar dimensions with the Mrs. Pince's variety, which may inherit from its parents (one of which was the Muscat of Alexandria) some innate constitutional weakness, which prevents it from being able to properly colour its fruit when subjected to the strain of anything approaching to a very heavy crop; so that I feel constrained to consider over-cropping, or allowing the Vines to carry a greater weight of fruit than the health and strength of the plants appear to justify, as a fruitful cause of this fine variety so frequently failing to properly colour its fruit. The weight of fruit which may with propriety be left upon any given plant must, of course, be left to the judgment of the cultivator, who ought to be guided in the matter by the more or less vigorous and healthy condition of the same; and I am inclined to think that in the case of the Mrs. Pince's Grape a moderately light crop will generally mean well coloured fruit, and *vice versâ*. It is all very well to say that the foxy-coloured fruit of this variety is equal in point of flavour to the black, which is in many instances really the case; but, as Mr. Gilbert very wisely says, it is quite as necessary to please the eye as it is to please the palate.

It has been suggested that this Grape may require a higher temperature, viz., the temperature of the Muscat-house, to induce it to ripen and colour to perfection. This may be so, but as far as my experience in the matter goes, this has not been found to be necessary; but it must be borne in mind that the natural soil here is light, and of a dry, warm nature, and this circumstance doubtlessly operates more favourably in the ripening of certain fruits than would those of a soil of a cold and wet character. Soon after the Mrs. Pince's Grape was introduced I was engaged in planting a vinery for the purpose of furnishing a late supply of fruit, and having formed a favourable opinion of this variety from what I had heard respecting its good qualities, I procured a plant of it, as I have already stated, direct from Mr. Pince. This I planted under the central rafter of the house, under each of the other rafters a plant of the Lady Downe's Grape was planted, the roots being placed in a prepared border outside. I am no advocate for giving the roots of Vines the option or choice of remaining inside or going out, but prefer to know for certain as to their whereabouts.

From the plant of Mrs. Pince's Muscat in the centre of the house two rods were taken, which, during the first, or, it may have been the second season, reached to the top of the house, and were then brought to a horizontal position, along the front of the house, and from these rods a shoot was trained vertically under the centre of each light, and, as has already been said, a rod of the Lady Downe's variety was trained under each of the rafters—the object of this arrangement being that, in the event of the Mrs. Pince variety proving as valuable as was expected, the plants of Lady Downe's might be removed, and the one plant of Mrs. Pince's might be allowed to occupy the entire house.

This intention, however, has not as yet been carried out, as the two ladies continue to thrive so well in the company of each other, that it has not been thought advisable to disturb them. The house containing them is what we consider our latest, and the crop is still entire, and is what I suppose may be considered as a regular (but not a heavy crop) of medium-sized bunches, which as yet (January 9) shows no symptoms of shrivelling or decay. The fruit of Mrs. Pince's is in all respects as well-ripened and coloured as that of Lady Downe's, and I cannot perceive a foxy-coloured berry in the house. A somewhat close inspection is necessary to distinguish the one sort from the other, the fruit of Mrs. Pince's being quite as black as that of Lady Downe's. The house they occupy is only furnished with a common fire-flue, which was only used for about ten days or a fortnight during the time the Vines were in bloom, and occasionally during the present wet and damp weather, in order to keep the atmosphere of the house as dry as possible; so that it does not appear that a high temperature is absolutely necessary to thoroughly ripen and colour either of the varieties in question. *P. Grieve, Culford, Bury St. Edmunds.*

THE CULTURE OF WOAD IN LINCOLNSHIRE.

THROUGH the courtesy of Mr. Fitzalan Howard, who, with his brother, Mr. Frederick C. Howard, carries on the growth and manufacture of this curious and now little known article of commerce, I early in December last, had the pleasure (although in a teeming rain) of walking over the farm and of inspecting the process of manufacture. Mr. Howard also kindly afforded me full information as to the course of culture, and the after-treatment adopted in preparing it for market.

For more than a century the cultivation of Woad (or "Wad," as it is called by the labourers) has been carried on by the Howard family, and some twenty years ago the father of the Messrs. Howard, who now conduct the business, purchased about 100 acres of land at Parson Drove, a village about 5 miles from Wisbeach, for the express purpose of growing Woad, to which place he moved the necessary mill, ranges, &c., required in its manufacture.

The plant itself (Isatis tinctoria) is a hardy biennial, with a fusiform fibrous root, and smooth branching stem, rising to the height of 3 or 4 feet when flowering; but it is the plant in its first year's growth with which I have to treat, and it seldom then attains a greater height than 12 inches. Mr. Howard informs that it is on record that it has reached 18 inches on soil most unusually rich, and in a season favourable to its growth, but the average is to be put down at from 8 to 10 inches. Being a most exhaustive crop, none but the richest and best soils are suited to its successful cultivation; it is therefore never grown on any but the best old pasture land. From this fact, and that the demand for the manufactured article is very limited, the area annually devoted to the crop is not extensive; indeed, with the exception of some two or three growers in Lincolnshire, I believe the Messrs. Howard are the only persons engaged in the trade.

The first point, therefore, is to obtain soil adapted for its growth, and as landlords seldom will sanction the breaking up of old bullock pastures (the only land on which it can be grown to advantage), the Howards, as before mentioned, have been obliged to purchase land for the purpose at about £100 to £120 per acre. This point, taken in connection with the fact that after six years of cropping even the best soils become exhausted, makes the rent stand at a very high figure to start with.

Early in the spring the land is prepared by first breaking up the sward, and ploughing the land into stetches 12 feet wide, and by working it into a solid and fine condition. At the end of April the seed is drilled (about 3 bushels per acre), with an ordinary 6-feet corn drill with eight coulters, 9 inches between the rows, thus giving sixteen rows of the plant, or one round with the drill, on a stetch. Sometimes, when the land has been cropped for four or five years, and wants refreshing, about 4 cwt. of artificial manure per acre is drilled with the seed.

As soon as the plants have developed the third leaf weeding is commenced, it being most essential that the crop be kept clean. This work is carried out by families employed on the farm, to whom the several operations of weeding and cropping are put out at so much per acre. In weeding, a short-handled, broad spud, made for the purpose, is used, the labourer carefully chopping up all weeds and drawing them into the furrows between the stetches. It is a curious fact that, notwithstanding the utmost care, the small Nettle can never be entirely eradicated, and each year it gives an immense amount of trouble to the labourer. Chickweed, also, is a boon companion of the Nettle, and is almost as great a nuisance to the Woad grower.

At the end of July, or as soon as the plants are sufficiently ripe, which condition is known by the under leaves beginning to assume a yellow tint, the first gathering, or "cropping" is commenced. This operation is peformed by persons upon their knees, who carefully twist off the leaves of the plant, and deposit them free from dirt into large wicker baskets —somewhat like overgrown Apple sheps—and they are at once conveyed by men to carts to be taken to the Woad-mill, where the following course of treatment is adopted. Before, however, I can fairly explain the operation of grinding, it is necessary that I should roughly describe a Woad-mill. First then, imagine a small equestrian circus, 30 feet in diameter, paved with Yorkshire slabs; beyond this circle upon a platform some 18 inches higher than the slabs, three horses, each yoked to a large wooden wheel, 8 feet in diameter, and about 2 feet wide, shod with iron bars, like the paddles of a steam ploughing engine, slowly walk round. The Woad leaves having been tipped from the cart into the mill, are thus placed in contact with the wheels which, weighing about 1 ton each, soon reduce them to a pulp; this being removed from the mill is thrown into heaps to drain some of the watery juice away from it, after which the process of "balling" commences. This work is also put out, and is paid for at so much per ton of dried and manufactured Woad, the pulp being worked up into lumps about the size of Cocoa-nuts. These balls are then carried to the "range," or drying shed, which is a long and lofty wooden structure open on all sides, with a rough, weather-proof roof, under which five tiers of wattled hurdles, called "flakes," about 3 feet under each other, are placed, and on these "flakes" the balls are laid out singly to dry. In ordinary seasons this is completed in about three weeks or a month, after which they are put into "pens" until they are crushed, the particulars of which process are described further on.

The first cropping over, the land is again carefully weeded, often twice or three times, and the second "cropping" is generally taken and "balled" before November 23, when "yard work" begins, and it is from this point that the chief art of the Woad-man is called to account, for upon the successful crushing and "couching" of the Woad the value of the product is estimated. The crushing [of the balls] is performed in the mill, in the same manner as the grinding of the leaves, after which the dried matter is thrown on to a floor, to the depth of about 2 feet, called "the couch," where fermentation is carried on, the process being completed in about eight weeks, a constant turning of the mass being necessary, and more or less water being added, as the heat may be excessive or otherwise.

The smell of the Woad when "in couch" is very strong, and to some disagreeable, but I believe that it is not unhealthy, for I am told that "Woad-men live as long as they like," or, at any rate, to a good old age.

Mr. Howard says that many years ago the rector of the parish where his father was then growing Woad expressed his dissatisfaction at Mr. Howard's assessment of the value of the crop of Woad in his payment of tithe, so his father measured oft a tenth of the field, and left it for "his reverence" to harvest and utilise as he thought well. Of course, the parson could do nothing with it, and in after years the late Mr. Howard's valuation was taken without question. Times have altered since then, and so have parsons, for Mr. Jackson, the present vicar of Parson Drove,

although his dining-room windows open on to the "range" and "couch" of Mr. Howard's Woad farm, from whence sometimes proceeds anything but a savoury odour, yet never complains, but counts Mr. Howard as his best if not his sweetest neighbour. *Wisbeach, in the "Agricultural Gazette."*

THE ALGERIAN SPECIES OF CROCUS AND FRITILLARIA.

As far back as the *Flora Atlantica* of Desfontaines, the first volume of which was published in 1798, a Crocus has been recorded from Algeria. By Desfontaines the plant was referred to vernus. Of this, till the present year, I have never been able to obtain sight of a satisfactory specimen. Having been engaged lately at Kew in incorporating with the general herbarium the Algerine collection of the late Giles Munby, which after his death was presented by his family to the herbarium of the Royal Gardens, I was very pleased to find that it contained three intelligible specimens of an Algerine Crocus. In the second edition of Munby's *Algerine Catalogue* the genus is dealt with as follows :—

"*Crocus vernus*, Linn. ? Ex Desfontaines.
"*Crocus versicolor*, Gawl. ? Regio Atlantis Provinciæ Oran, rarissimus ; Gharrouban."

The plant contained in the herbarium seems to have been lately regarded by Mr. Munby as C. Salzmanni, but the probability seems to be that these three names, as far as Algeria is concerned, all refer to one and the same plant, and that there is only one Crocus in the country. This plant I have no hesitation in regarding as a new and undescribed endemic species, which should be placed amongst the autumn-flowerers of the section Odontostigma, next to C. Salzmanni, from which it differs materially both in corm-coats and perianth-limb, resembling in the former C. vernus, and in the latter some of the forms of C. biflorus more than anything else. The following is as full a description as I can give without pulling the specimens in pieces.

C. algeriensis, Baker, n. sp.—Corm ovoid, ¾ inch in diameter, with thick tunics, which are entirely composed of fine parallel fibres. Leaves four, contemporary with the flower in December, rising up to a level with it at the flowering time, narrow linear, with strongly revolute margins and a distinct white central band. Top of the flower 4 inches above the top of the corm. Proper spathe one-valved. Perianth-tube dull purplish, protruded ½—1 inch from the spathe. Perianth-limb 1 inch long, the equal obovate obtuse segments ½—¾ inch broad, whitish, with three faint lilac stripes all down ; throat glabrous, concolorous. Stamens half as long as the limb ; anther yellow, twice as long as the flat glabrous filament. Pistil rising to the top of the anthers, orange-yellow, the three short cuneate forks strongly toothed on the upper edge.

Mr. Munby's specimens were gathered by M. Pomel in December, 1855, at Rass el Assfoua, near Gharrouban, and it is to be hoped that laying the matter before the readers of the *Gardeners' Chronicle* may be the means of the plant being refound and made fully known.

At the same time I should like to call attention to the genus Fritillaria as represented in Algeria. The following is what is said about it in the last edition of Munby's *Catalogue* :—

"*Fritillaria montana*, Hoppe ? ; *F. pyrenaica*, Munby, Fl. Alg., *non* Gawl. ; *F. Meleagris*, Desf. ? *non* Linn. ; Oran, rather rare (*an nova species*?).
"*F. messanensis*, Rafin. High plateau of the province of Algiers, rare (Boghar)."

In the second part of Munby's fasciculus of Algerian plants, published in 1851, under No. 33 are given specimens of a Fritillaria which is named montana. In my monograph of the genus, published in vol. xiv. of the *Journal of the Linnean Society*, I have described a plant under the name of F. lusitanica var. algeriensis. After studying the full material in Mr. Munby's herbarium, in the shape of specimens both in flower and and fruit, and a coloured drawing evidently made from the living plant, I am led to conclude that all the specimens in his herbarium are identical with my lusitanica algeriensis, and that it is an endemic Algerine species, closely allied to, and intermediate between, lusitanica, pyrenaica and messanensis, and to suspect strongly that all the foregoing names belong to one and the same plant, which I would now name and describe as follows :—

Fritillaria Munbyi, Baker, n. sp.—Bulb globose, ½—¾ inch in diameter, with membranous tunics. Primordial leaves (produced before the flowering-stem appears) oblong, acute, 1½—2 inches long, narrowed to a distinct petiole, which is longer than the blade. Flowering-stem 1—1½ foot long, slender, glabrous, ending in a single drooping flower. Leaves 8—9 to a stem, scattered over the upper half of it, all alternate, or the uppermost opposite or very rarely ternate, 2—3 inches long, the upper ones linear, the lower ones lanceolate, ⅜—½ inch broad. Perianth campanulate, 12—15 lines long, dark vinose-purple, obscurely tessellated on the face, and sometimes banded down the back with green, the outer three oblong, ½—¾ inch broad, the three inner obovate, ¾—⅞ inch broad, all furnished with an obscure greenish oblong nectary above the claw. Stamens half as long as the perianth. Anthers oblong, a third as long as the glabrous filaments. Ovary clavate, under ½ inch long ; entire part of the style as long as the ovary ; three subulate stigmatic forks half as long. Capsule obovate-oblong, under 1 inch long, furnished with a distinct neck, obtusely rounded on the sides. Seeds discoid, 3—4 lines broad, pale brown, with a thick, distinct border.

The plant flowers in February. The specimens I have seen are from "Oran, in collibus herbosis" (Munby), "Oran, montagnes" (Bové), "Pente nord du Djebel-Santo, près d'Oran" (Balansa, Fl. Alger. 1852, No. 223), and "ad planitiem Rass el Assfoua, Gharrouban, Tlemcen" (Munby, the same station as that of the Crocus). For garden purposes the more southern Fritillaries—pyrenaica, tenella, lusitanica, and messanensis—and now let us add Munbyi (which I see from the herbarium that Mr. Munby had in his garden at Wood Green in 1874, and which therefore is very likely in existence in a living state somewhere in the country now, and not improbably may be in our Kew set of the genus)—are to my appreciation far less ornamental than our English Meleagris. *J. G. Baker.*

A PARK ENTRANCE.

THE annexed (fig. 7) is a plan of entrance well adapted to a first-class mansion. It was arranged for a gentleman living in one of the home counties. It faces a road running parallel to it ; hence the necessity of setting the gate well back, so that an easy means of

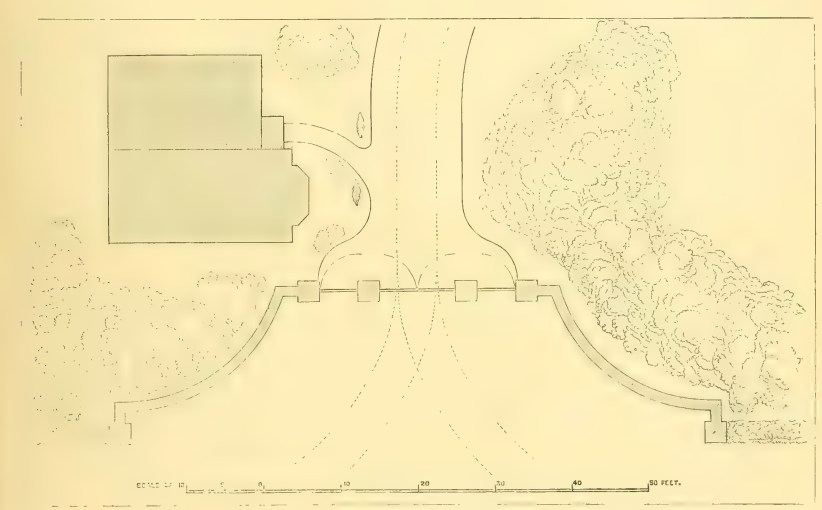


FIG. 7.—DESIGN FOR A PARK ENTRANCE.

ingress and egress might be obtained. In this plan there is a central entrance for carriages, and two side entrances for pedestrians. Should the gates be of iron it would be necessary to make the carriage gates in two parts. If wood be preferred, one gate will be sufficient.

It is quite lamentable to see so many fine domains in different parts of the country with entrances quite unsuitable and out of keeping with the surroundings : in many cases, indeed, scarcely fit for a modern farmyard. It is to be hoped that these sketches may induce proprietors, having entrances of this mean, unbefitting character, to improve them. An entrance should be a kind of preface to the place, and explain pretty well what we may expect to find as to matters of taste and fitness in the park and the gardens. *G. Eyles*, 44, *Eardley Crescent, South Kensington.*

Forestry.

THE last number of the *Indian Forester* contains an article putting in a very clear way the views of those who advocate the sending forest students to Germany or France to study in the forest schools. We extract a portion of the article, which is sure to arrest attention. We cannot, however, see any reason why a good grounding in theoretical and] practical forestry may not be obtained whenever the proper organisation is established in Scotland or elsewhere within easy access of woodland. This obtained, the pupil would be in a better condition to profit by a visit to Germany than he is now. After all, in the case of youths of this description it is the training they receive, which, together with their natural intelligence, is the main point. The circumstances with which they have to deal in India are so different from those which they have to encounter in Europe, that a good grounding in general principles is all that can be effected here, whether in Germany or in Scotland.

"Of large areas of natural forest, often subjected to a long course of previous ill-treatment, and now destined to be put under a restorative treatment -on which, too, the country is absolutely dependent both as regards local and export consumption) for a variety of products, the British forester knows absolutely nothing. No such areas exist in the country, and consequently no forester in Great Britain has ever been called on to treat such areas either theoretically or practically.

"British foresters, and *à fortiori* British botanists who are not foresters, are therefore completely out of court when attempting to argue on the requirements of training in a service destined to deal with large tracts of forest land of this class.

"It is perfectly true that botany (systematic and physiological), surveying, the arts of draining, planting, thinning, felling, &c., are of the highest importance, but they are only detached parts of the subject, and the mere fact that *the* great points—the 'weightier matters' of the law, viz., the preparation of 'working schemes' for forests, and the treatment of forest on the system of natural regeneration, are not even alluded to in the curriculum of studies, is not only sufficient in itself to prove what I above urge regarding the necessary incapacity of foresters of only British experience to understand our Indian requirements, but shows further that, if the forest officer came out ever so well trained in the proposed course, he would still be ignorant of his chief duties.

"It must not be supposed that I am casting any slur on the well deserved reputation of many English and Scotch foresters in their own line. It is not the British forester's fault that he has no large areas of natura forest to deal with, no rights and privileges to be provided for,* no immense tracts once stocked with valuable timber which have to be led back into a condition of productiveness, and so forth, any more than it is the fault of England that it does not produce the silks of Lyons or the tobacco of Havanna. And therefore I cannot conceive why it should be resented by any one as a hard saying that British forestry is incompetent for Indian requirements.

"We go to France and Germany, where there are schools teaching forest management (in the enlarged sense of the term), not because we love foreign things and despise those at home, but just as we go to foreign markets, because they produce what we do not. We do not think it a reproach in the one case, why should we in the other?"

* Of course I am fully aware of the difficulties of the New Forest question and of the rights of common, &c., which have to be dealt with in proceedings under the Enclosure Acts ; but that is quite a different thing from managing forests with a view to the yield of various classes of materials for right holders and communities having rights.

Foreign Correspondence.

MORTOLA, NEAR MENTONE: *Jan.* 1, 1877.—I send you a list of plants I find in flower here in my garden to-day, which may interest your readers ; as I have no greenhouse they are all in the open air. Abundant rains have fallen during the month of December, and the weather being now sunny and genial, vegetation in the gardens and surrounding country here is very promising. The crops of wine and Olives have been poor, but Lemons are plentiful, though the price is low and unremunerative. *Thomas Hanbury.*

Plants Growing in the Open Air in the Garden of the Palazzo Orengo, Mortola, near Mentone, in Flower on Jan. 1.

Abutilon var.
Acacia iteaphylla
,, lophanta speciosa
,, obliqua
,, retinoides
Artonia capensis
Aloe africana
,, ciliaris
,, frutescens
Alstrœmeria aurantiaca
Anturrhinum var.
Arbutus Andrachne
,, Unedo
Arum Arisarum
Aster argophyllus
,, elongatus
,, muricatus
Bougainvillea glabra
,, Warscewiczii
Bouvardia leiantha
Buddleia asiatica
,, madagascarien-sis
,, salicifolia
Callitris Mohrii-alvisii
Cassia grandiflora
Cassiarna quadrivalvis
,, tenuissima
Cestrum roseum
,, tomentosum
Chimonanthus fragrans
Chrysanthemum frutescens
Cobæa scandens
Colletia spinosa
Conyza glutinosa
Convolvulus argenteus
,, floridus
,, mauritanicus
Cornulla pepluyllla
Correa alba
,, cardinalis
Cotyledon macrantha
,, luridum
,, orbiculatum
Cyperus strigulosus
Cytisus ferox
Datura alba
Dipl-pappus filifolius
Duranta mermis
Echeveria metallica
Eriobotrya japonica
Erysrophalos africanus
Ephedra distachia
Eucalyptus eugenioides
,, globulus
,, maculatus
Euryops spadaceus
Eupatorium ianthinum
Euphorbia globulus
,, splendens
Fabiana imbricata
Geranium (many sp.)
Globularia Alypum
Gomphostigma scoparioides
Hardenbergia monophylla
Heliotropium peruvianum
Helleborus viridis
Iberis sempervirens
Indigofera coronillæfolia
Jasminum azoricum
,, nitidiflorum
Justicia adhoea
Kleinia neriifolia
Lantana Camara var.
Lavandula multifida
,, pinnata
Lavatera californica
Linum trigynum
Lobelia sp.
Lophospermum scandens
Malva fragrans
Mandevilla laxifolayana
Mesembrynthemum aureum
,, perfoliatum
Morticandia arvensis
Narcissus (many sp.)
Othonna carnosa
,, triphylla
Pachyphytum bracteosum
Passiflora racemosa
,, vespertilio
Petunia (var.)
Phytolacca decandra
Plumbago capensis
Polygala virgata
Ricinus sanguis
Rochea coccinea
Rosa (many sp.)
Rosmarinus officinalis
Salvia azurea
,, frutescens
,, Grahami
,, leonuroides
,, praecox
,, semiatrata
,, splendens
Senecio melanoides
,, angulatus
,, longifolius
,, macroglossus
Solanum robustum
,, verbascifolium
Sparmannia africana
Stapelia quinquenervis
Tacsonia manicata
,, mollissima
Tecoma capensis
Templetonia retusa
Veronica (sp.)
Vinca (sp.)

OOTACAMUND, *Dec.* 15, 1876: *Lilium neilgherrense.*—Mr. Elwes, in his notes on Lilium neilgherrense, which appeared in the *Gardeners' Chronicle* of September 9 last, mentions that there are three varieties of this Lily. No less than four very distinct varieties are found within 15 miles circuit of this place. This difference in character is probably caused in a large measure by the different aspects and situations in which this plant is found. When it is explained that the rainfall on the western slopes of the Neilgherry Hills is frequently 400 inches, whereas on the northern sides of the mountains the rainfall is often as little as 50 inches, the different circumstances under which the plant grows will fully account for it varying so much in character as to have been figured by Wight in his *Icones Plantarum India Orientales* as three different Lilies.

Wight's figure, No. 2031-32, is the grand form of Lilium neilgherrense, colour pure white, found on precipitous rocks 8000 feet above the level of the sea, in situations where there is a heavy rainfall. It is not at all uncommon to find this with six flowers on a stem, each flower 1 foot long. It flowers a month earlier than the other varieties. Wight's figure, No. 2033-34, "tubiflorum," is also a very fine Lily, and much more widely distributed. It varies in colour, the flower-tube is longer, and the leaves also are much longer than the leaves of the large variety. Of this plant there are two very distinct forms, one yellow and one white.

Wight's No. 2035 is a small variety, it grows at Kulhutty, the driest part of the hills, and instead of choosing the crevices of the rocks it is found growing in loam on the sides of the hill, not more than 4000 feet above the level of the sea. The petals are very much recurved, and this led Wight to suppose it to be L. Wallichianum. The stem is very leafy, the leaves are very narrow, and it invariably bears a single flower on each stem. This variety does not form on the roots the offsets which are so numerous in the other varieties. Mr. Elwes seems to have some information regarding a pink variety ; there is no variety which can be properly called pink. There is a fourth variety, with very dark stems, and the dark marks on the stems are carried up the exterior of the flower-tube, giving a pinkish colour to the outside of the flower, but the flower itself is pure white. It is a charming variety, and rather scarce.

These last two varieties flower very late, not beginning to flower until November ; this is probably owing to their being found generally on the northern slopes, where there is little sun and a small rainfall.

At the Royal Horticultural Society's show on November 28, the Hon. and Rev. J. T. Boscawen exhibited a plant of Lilium neilgherrense in flower. It would be interesting to those engaged in the culture of Lilies to note whether this was one of the late-flowering varieties above noticed.

Flowering, as this Lily does, from August to December, it will repay any trouble there may be in growing it. It remains to be seen whether the varieties given above will retain their distinct characters under cultivation, or whether the whole will become blended into one form when grown without the varying conditions of rainfall and climate which are peculiar to the different districts of the Neilgherry Hills. *E. S. B.*

Natural History.

THE GOATSUCKER.—As this locality is a favourite resort of the goatsucker (Caprimulgus europæus) I have for a period of nearly fifty years had an opportunity of observing the habits of this very remarkable and interesting bird. It is to be regretted that the original name, "goatsucker," given to it by Aristotle in the days of old, is still retained, as it is apt to create an idea in the minds of the ignorant that the bird is one of destructive propensity and ill-omen, whereas, if there is one bird more than another that ought to be fostered and protected it is the goatsucker, or, as we familiarly call it at home, and which is by far the most appropriate name, "nightjar." It arrives every year about the last week in April, and leaves again the last week in September. Very few birds are of more service to mankind than the nightjar, and of such value do I esteem them that I would rather give £5 than one should be destroyed. To sit and watch their graceful flight and quick gyrations during a warm summer's evening, "when fades the glimmering landscape on the sight," is always most amusing to myself and visiting friends. They are not very shy birds, and unless wilfully disturbed or shot at will take but little notice of persons moving about. They feed wholly on moths and insects caught on the wing, and during the season they must, of course, devour an immense quantity. They rarely volantarily take to flight in the day-time, but immediately the sun sinks below the horizon the expected and well-known chur-r-r is heard, very similar to a spinning-wheel and quite as loud. This sound they continually emit for an hour after sunset, and at greater intervals during the night until sunrise, after which they are never seen unless accidentally disturbed, as they always rest on the ground in the day-time, when they flit a short distance and settle again. The very singular burring or spinning sound is sometimes sustained for many minutes together, and always when settling on a bank, post, tree, or other convenient perch, when the head is crouched downward and almost brought on a level with their feet. It would not be possible for the same sound to be emitted while on the wing. During their aërial flight they utter a loud and distinct cry, which may be either playfulness, a love-note, or a warning of danger. They also produce a great and startling noise by clapping their wings smartly together over their backs.

The nightjar makes no nest, but selects a retired spot on the ground, generally beneath a bunch of Furze, Heath, or Fern. The eggs, two in number, are a greyish white colour, singularly marked with dark irregular spots, and may easily be mistaken for stones of a peculiar character, which abound on heath-land. The young birds, too, when hatched, and until they

can almost fly, have a very peculiar appearance, not unlike speckled toads, which assimilates them with the colour of the soil, and, doubtless, protects them in a great measure from their natural enemies. Their favourite breeding haunts are decidedly "heath-lands, moors, and commons," but for food they affect cultivated grounds, "tree-studded meadows," parks, and plantations, where it is easily obtained, and in abundance. *W. H. Rogers, Red Lodge Nursery, Southampton.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—It is time now to see about starting some Allamandas. If A. Hendersoni and A. Chelsoni are grown, begin with them first. In the case of full-sized specimens the se may be cut back to the same point as last year. Allamandas ought to be repotted at the time they are pruned, and they should have one-half of the old soil taken away. There is no better way of doing this than working it from the balls with a pointed stick, after which they must be soaked in tepid water for some hours, as if this is not done it is difficult to get them into the proper state as to moisture; let them drain awhile, and then pot them. Good loam is the best for them, to which add about a sixth of rotten manure and as much sand as will keep the whole porous. Make the soil very solid in the pots, as they like it firmer than most things. Put them near the glass, and syringe daily overhead. A plant or two of Clerodendron Balfourianum should also be started at once; in this case, however, unless more pot-room is required, the roots must not be disturbed, and when potting is necessary only remove the crocks from the bottom of the ball. It will be found to succeed best at the coolest end of the house, or in a night temperature of 65°; keep it well elevated—close up to the glass; brought on in this way the flowers are very useful for cutting, being in both colour and form distinct. Of Dipladenias likewise a few plants should now be pushed on. Where it is desirable not to start for some time, the Allamandas, Bougainvilleas, or Clerodendrons of the above-named section, it is much better to keep them dormant by putting them at the coolest end of the stove, and only giving them as much water as will prevent the bark from shrivelling, than as is sometimes done to subject them to a higher temperature. Anthurium Scherzianum is frequently kept on growing all the year round, which is not a good plan. It is much benefitted by a rest in a temperature of not more than 50° by night for six or eight weeks, when it has finished growth, whilst here withholding water, but not letting the leaves shrivel. Any specimens that have completed their growth should be treated as described. A few Achimenes and Gloxinias should now be started. As soon as they begin to grow they must have all the light possible by putting them on shelves close to the roof, or in some similar place. If this is not done their flowers will be very soft, and worthless for using in a cut state. Where roof climbers are grown they must not be allowed to keep too much light from the plants under them: this will be prevented by thinning the branches out and cutting back those that are to remain. Give a good light position to Aphelandra cristata and A. nitens, by so doing the colour of the flowers will be intensified. Plants of Gardenia intermedia and G. citriodora, which are the two most useful species, that are coming into bloom, should be put at the coolest end of the house, and give only enough water to the roots to keep the plants in a healthy growing state, and none overhead; the flowers will be more lasting treated in this way. Eucharis amazonica and Imatophyllum miniatum ought also to have a place where their opening flowers will receive the least possible amount of moisture. Put Hyacinths, Crocus, early Tulips, Narcissus, Tuberoses, Rhododendrons, Deutzias, Scillas, Lily of the Valley, and Prunus in heat regularly to keep up a supply. It is well to remember that these things last much longer in bloom when they are not brought on in a very high temperature. Time will be saved further on if all insects are as far as possible got under now. Fern-house.—It is not well to have much moisture in the atmosphere here at the present time; neither should the plants be excited into growth by being kept too warm; managed thus, they will make better growth later on. Leucostegias and Davallias, that cast their leaves, ought to be kept a little drier at the root in the winter, but this must not be carried too far, or they will be injured, and consequently make weak growth. The entire stock should be gone over and thoroughly cleansed from insects before active growth commences. *T. Baines.*

FLOWER GARDEN.

The extremely wet weather we have is unfavourable for getting forward with ground-work, but much may be done with sweeping the lawns, raking leaves from under the shrubs, &c. Where the turf has settled down in places and left the surface unlevel, this is a good time to have it put to rights, as work of this description can be got on with now while the weather is mild. It is also more favourable for the purpose than when the drying winds of spring set in. Proceed by cutting and rolling back the turf, and make the ground up to the level with sand or any poor soil; this prevents the grass from growing too strong, which it always has a tendency to do. After the ground is made firm and levelled with a rake, roll back the turf and settle it down with the back of a spade, or the wooden beater, then run the roller over it, and all is finished. Let the grass and gravel walks be frequently rolled; this gives a clean and finished appearance. Shrubbery borders and clumps may be thinned where getting too crowded, and what thin places there are with the plants that are removed, the ground dug over, and all left as orderly as possible. Where planting has to be done have the ground well trenched; this requires more labour at the time, but plants and trees always succeed better and give more satisfaction to employer and planter. Those expected to do well must be planted in well-prepared ground. If the soil is light, give it a good dressing of manure and clay. After planting mulch the surface with manure; this will enrich the ground and help to protect the roots. Any tender plants left unprotected had better have a covering of fern, Spruce branches, or anything convenient, for sharp weather may be expected. *T. Blair, Shrubland Park*

FRUIT HOUSES.

STRAWBERRIES IN POTS.—A supplementary batch of these plants should be placed in heat of a similar nature to that recommended in the former note, these plants for December 9, in quantity sufficient to meet the ordinary demand, and to make up for defective plants from amongst the early started ones. In order to keep up a good supply of ripe fruit through the spring months, a batch of these plants should now be introduced into heat every fortnight or three weeks. Dove is a good time to introduce amongst others those highly esteemed varieties, British Queen, Sir Charles Napier, and President. Let the former lots of plants have every requisite attention, an abundant supply of water being essential when necessary, throughout the whole process, until the colouring of the fruit commences. The moist and suitable condition provided by the use of sods, or soil in well drained pans beneath the pots is one to be commended, inasmuch as it frequently sustains the plant when the lack of water is most detrimental. By all means keep the plants which are in growth free from the attacks of the green-fly, either by fumigation or otherwise dipping the foliage of the plants in a solution of tobacco or quassia water. *George T. Miles, Wycombe Abbey.*

VINES.—Early houses started in November and December will now require daily attention and care. The rules for disbudding, stopping and tying having been so frequently laid down in former calendars, I will assume that all these operations have been regularly performed, and that there is still a considerable space of trellis available for covering with young growth. When Vines break and start away evenly, I prefer pinching back to the third or fourth joint beyond the fruit, and afterwards allowing the first set of leading laterals to grow unchecked until every portion of the trellis is covered with foliage, when the strongest shoots are again pinched, to prevent overcrowding. The dull, dark weather which has so long prevailed being unfavourable to fruit setting, the night temperature should be allowed to range low, until we have a change to brighter days. The supply of moisture should also be reduced in proportion. Remove all surplus bunches as soon as the best can be distinguished; assist shy-setting kinds by means of artificial fertilization, and thin when the berries attain the size of No. 6 shot. The pruning of all houses from which the fruit has been cut should now be brought to a close, and advantage taken of the unfavourable weather for getting the Vines washed and painted with the usual composition, the houses thoroughly cleansed, inside borders cleared of all exhausted mulching, well watered, and top-dressed with good turfy loam and crushed bones. The outside borders, too, as a rule the worst managed borders in a garden, may also be exposed to the influence of rains by the removal of shutters or other means of protection, leaving a slight covering of litter or Fern to keep out frost. Look over late Grapes and remove all decaying berries. Do not allow the house to fall below 45°, and to prevent condensation on the berries always keep it a few degrees above the outside temperature.

MELONS.—To have ripe Melons in May seeds should now be sown and plunged in a bottom-heat of 80°, as near the glass as may be convenient, to prevent the young plants from becoming "drawn" when they appear above the soil. To specify kinds would be useless, as every grower now stakes his reputation on this or that hybrid or hero of his own raising. For general purposes, early or late, in houses or in frames, I may, however, safely assert that I have not yet found anything better than Victory of Bath Improved, for the introduction of which every gardener is indebted to Mr. Gilbert, of Burghley. Those who have the convenience of efficiently heated hot-water pits will experience but little difficulty in raising sturdy plants; but where fermenting materials alone have to be depended upon too much care and attention cannot be devoted to their preparation. Assuming that a good supply of fermenting horse-dung and Oak leaves have been thrown up into a heap, well-turned, worked, and sweetened, a bed should be made up for a single light frame, care being taken that the bed is only a few inches larger than the frame. A lining may be placed round it at once; a good body of old tan or leaf-mould, 12 inches thick, should be laid over the surface of the bed, and when warmed through the seeds may be sown in single pots, and plunged or otherwise. The best frames for this purpose are those made on the old McPhail plan, using 2-inch deal for the outside shell, with a lining of 4-inch boards tongued together to form a cavity 4 inch in width, open at the bottom for the admission of heat, but closely made at the top to keep out steam. From frames made upon this principle I have seen Cucumbers cut on March 9. The next point, equally important, is the preparation of the soil, and fortunate are those who, acting upon our advice, have laid up a good store in a dry, airy shed for spring use. Where this has not been done, no time should be lost in getting a supply into a dry vinery, where it can be brought into condition by exposure to light and warmth. *W. Coleman, Eastnor Castle.*

HARDY FRUIT GARDEN.

Notwithstanding all that has been said and written against pruning hardy orchard fruits, most cultivators are agreed as to its necessity and the beneficial effects it has on the quality and produce. There is no one better able to form a sound judgment on matters of this kind than those who cater for the public and have to get a living profit out of what they grow, and if we go to the best managed establishments we there find, not trees and bushes left to themselves, but skilfully thinned and pruned and bristling all over with fruit-buds. It does not necessarily follow that the pruning should be confined to the tips of tops or branches, as in many cases that would have the effect of inducing a greater number of strong rank shoots to put forth, and no doubt much of the satisfactory state we see trees in in the most notable market gardens arises in a great measure from the constant root-pruning they undergo by the deep digging that takes place in the cultivation of the land within a short distance of their stems, the effect of which is to largely increase the number of their fibres; and as it is to these that we must look as a means to produce fertility, it often becomes necessary to attack the trees before. This being so, any that are of a gross, unfruitful habit should at once have their roots laid bare, and such as have penetrated the subsoil severed with a sharp knife, and then be raised and laid in a more horizontal position that what fibres they make may feed nearer the surface. In the case of trees long that have been planted, this interference with the main roots should not be carried to extremes so as to cause a severe check all at once, and to avoid this it will be better to operate on one side only, leaving the other to be effected at some future time, a twelvemonth or two years hence. If the natural soil appears to be too close and stiff, or of an unsatisfactory character, fresh cut turfy loam should be in part substituted, but on no account ought leaf-mould or other decomposing vegetable matter to be used as a corrective, for sooner or later it is sure to produce fungus, and if this gets hold of the roots it at once brings on decrepitude and ill-health, and eventually destroys the trees altogether. I would urge on those who have choice fruit trees in an unsatisfactory state to examine them at once, and, if they find this destructive agent has got possession of the border, to clear away the soil as far as the roots extend and renew it altogether, cleaning the fungus from them as the work proceeds, and shortening back any at the same time that have not plenty of young feeders attached. In shallow, light lands, resting on a sandy bottom, I have found an admixture of clay or marl of great value in sustaining the trees during dry weather, and enabling them to carry a crop of fruit that they would otherwise have been unable to do, unless assisted by a free use of the water-pot. It is surprising how retentive of moisture clay is when buried in small nodules on ground of an opposite description. Many that cannot obtain good turfy loam for renovating exhausted fruit trees may be able to substitute clay for it, which if used in moderation and properly mixed up with the soil in the lower portion of the border will have a most beneficial effect, and last for a great number of years. In regard to top-pruning of orchard trees, the principal thing is to see that they are properly thinned, that the main branches do not cross each other or become too crowded to shut out light and air and cause a weak spindly growth. *T. Sheppard, Woolverstone.*

THE

Gardeners' Chronicle.

SATURDAY, JANUARY 13, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, Jan. 17 { Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.: Scientific Committee, at 1 P.M. Sale of Fruit Trees, Shrubs, and Bulbs, at Stevens' Rooms.

THURSDAY, Jan. 18 { Meeting of the Linnean Society, at 8 P.M. Sale of Orchids and Lilies, at Stevens' Rooms.

WE have most of us in youth been told that the reason why policemen on duty wear a badge on the sleeve of their coats is to enable them to distinguish between their right hand and their left. At first sight it would seem as if this discrimination were no difficult matter, but the discrepancy of opinion on the subject that one meets with in books is soon calculated to undeceive one. Of course, in spite of the unveracious policeman story, no difference of opinion exists as to which is the right and which the left side of one's own body. We do not hesitate for a moment in deciding which is the right and which the left hand of our neighbour. The starting point is certain, it is only when we come to the consequences that ensue from it, and from the different point of view taken by different observers, that the difficulty is met with; which way, for instance, do the hands of a watch turn, from right to left, or from left to right? What is a right-handed, what a left-handed screw?

The answers to these questions depend, of course, upon the position of the observer, or the way in which the object is viewed, and no common agreement exists as to viewing such objects from a definite point of view. Among plants we have, as every one knows, the leaves arranged in one or more series of spiral curves, beautifully exemplified in the leaves of the Screw Pines (Pandanus), in the scales of Fir cones, or in the rosettes of the House Leek, &c. Similarly we often see the lobes of the corolla in flowers twisted, some in one direction, some in another. Or, again, take the case of twining plants. Some twine regularly and constantly one way, others as constantly curve in the opposite direction.

In describing these curves writers make use of the expressions "dextrorse," or right-handed, and "sinistrorse," or left-handed, according as the direction is from the left hand to the right, or from the right to the left. This would be intelligible enough if those who use the terms would always specify in what sense they use them; but still better would it be if all would use the terms in the same manner. As it is, among those whose business it is to describe plants opposite practices prevail, and as these practices are carried out by authorities of equal reputation it is idle to point to Dr. So-and-so for justification because Professor This-and-that is exactly of the opposite persuasion. In the case of a twining plant, for instance, the observer may imagine himself in the centre of the coil—the stem around which the plant twines from his right hand, beginning from below, and going upwards across the front of the body towards the left hand. But as the coil winds round his back, it, of course, proceeds from left to right, so that here, unless the position of the observer be specified and well understood, confusion may arise. The other way of considering the matter is to suppose the observer standing outside and in front of the coil, and observing in which direction the spiral lines ascend, whether from the right or from the left. Scarcely two books agree in this matter, and sometimes the confusion is intensified by some writers meaning by a right-handed or "dextrorse" spiral one that goes *from* the right *to* the left, while others use the term in exactly the opposite signification; and so, of course, with the terms left-handed or sinistrorse. How difficult it is to secure agreement even on such simple matters is shown by the fact that such authorities as BENTHAM and HOOKER suppose the observer to be outside and opposite the coil, using, therefore, the terms dextrorse, or right-handed, and sinistrorse or left-handed, in precisely the opposite way to that intended by the great law-giver LINNÆUS. At a recent, or at least at a not very remote meeting of the Linnean Society, the question was discussed, and Mr. BENTHAM then advocated the mode of using the terms we have just mentioned, and DARWIN in his *Climbing Plants* adopts the same course.

It was, therefore, with some interest that we observed that at the June meeting of the Botanical Society of France, M. A. DE CANDOLLE followed exactly the opposite plan, but, what is better, he gave his reasons for so doing. In accordance with many English writers, M. DE CANDOLLE supposes himself in the centre of the coil, and looking down in front of him, sees the coil ascend from his right to his left hand, or *vice versâ*, as the case may be. His reasons for so doing are these:—That LINNÆUS adopted this rule, and has been followed by the elder DE CANDOLLE, MOHL, PALM, and A. BRAUN, and other observers. This rule, then, has at least the *prestige* of priority, however widely some may have departed from their allegiance. Another reason given by M. DE CANDOLLE is founded on the practice of the learned Professor of Berlin (A. BRAUN), to whose authority in such matters the highest deference is due. Professor BRAUN remarks that the best way to follow in determining the direction of a spiral is to follow the indications of the object itself. It is the animal or plant itself which ascends or descends, or goes to the right or to the left. Again, in the case of an animal, the position of the observer is of no consequence; we distinguish the right and left sides of the animal, not from our position with relation to it, but according to the conformation of the animal itself. The animal cannot speak to us and tell us which is his left and which his right flank, but we speaking animals are able to do so. A drill-sergeant, says M. DE CANDOLLE, in giving the command "right wheel" does not expect his men to turn to his own right, but he expresses himself as if he were in the position of the men whose movements he directs. So in the case of a river, the universal practice is to call the left bank that to the left hand of an observer supposed to be proceeding from the source of the stream to its outfall in the sea, following, therefore, the natural onward course of the stream. For these reasons, which appear to us to be sound, M. DE CANDOLLE advises those who have to deal with twining plants and other spiral growths to be guided in the use of terms by the direction in which the plant itself is growing, and the advice is so reasonable that we could wish it were henceforth universally followed, but so difficult is it to secure uniformity of practice that we do not look forward with any confidence to so desirable a result.

—— OUR central illustration (fig. 8) represents two tropical Australian CYCADS growing in the Botanic Garden at Brisbane, under the charge of Mr. W. HILL. That opposite the right of the reader is Macrozamia Mackenzii, that to the left M. Miquelii. The two species are botanically similar, but for garden purposes are different in habit and general appearance. They are admirably suited for the decoration of warm conservatories, and would, like some of their allies, form noble plants in the subtropical garden. The fronds or leaves of both forms are elongate and deeply divided into very numerous linear segments, of a deep green colour, thickened at the base. The rachis or common stalk is slightly flattened, and more or less covered with fluffy down. We shall have more to say concerning them on another occasion.

—— The gentlemen recommended by the COUNCIL of the ROYAL HORTICULTURAL SOCIETY to fill the vacancies for the ensuing year caused by the retirement of Mr. ROBERT WARNER, the Hon. and Rev. J. T. BOSCAWEN, and Sir TREVOR LAWRENCE, Bart., from the Council, are Sir CHARLES STRICKLAND, Bart., Messrs. H. J. ELWES and T. M. SHUTTLEWORTH.

—— The culture of Chicory as a salad under the Flemish name of WITLOOF has, strange to say, only recently been introduced among us. The Brussels market gardeners, it appears, grow it in trenches, covered with 6 to 8 inches of soil; but Mr. DE VENSTER, as recorded in the *Moniteur Horticole Belge*, grows it on what is said to be a better and quicker method. At the base of an east wall a bed of old tan is made, about 8 inches thick and 7 feet in width. In this tan are plunged, side by side, the roots, previously shortened to a length of about 5 inches. They are covered with the tan to the depth of 7 to 8 inches, and over the tan is spread a layer of dung, between 2 and 3 feet in thickness. In this manner longer and better heads are said to be produced in a fortnight than in double the time according to the ordinary method.

—— We are much gratified to hear that our old correspondent, Mr. WIGHTON, the gardener at Cossey Park, has lately been presented with a valuable purse of money by his employer, Lord STAFFORD, as a testimonial of respect for long service in his lordship's family. It is always pleasing to hear of such kindness, which exemplifies the good feeling that should exist between masters and servants, and we congratulate our correspondent on his success in having given satisfaction for so long a period to so kind-hearted and appreciative an employer.

—— We have received from Mr. STEPHEN BROWN, of Weston-super-Mare, a few sprays of an EUONYMUS, which he obtained a few years ago from a green sport of the variegated form of Euonymus radicans, to which it has clearly reverted. Mr. BROWN states that it grows very rapidly, and soon covers a large space on a wall, where it must have a very pretty effect during the winter months, being covered with beautiful orange seeds. The foliage is in places very slightly stained with white variegation, but not sufficient to be noticed except by close examination.

—— One of the most charming of all the Spruces is the COLORADO ABIES MENZIESII, of which some small examples may be seen in Mr. A. WATERER'S nursery at Knap Hill. Two very beautiful selected trees of this new Fir are growing in the garden of Professor C. S. SARGENT, at Brookline, near Boston. These trees are from 7 to 8 feet high, with the symmetrical growth of typical A. Menziesii, but specially remarkable for the bright blue glaucous hue of the entire plant, which as a blue is as bright and striking as is the green of the Knap Hill Cypress, Cupressus Lawsoniana erecta viridis. The tree is indeed, on account of its soft glaucous hue, and naturally symmetrical habit, one of the most lovely that can be imagined.

—— The report of the Council of the ROYAL MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY, to be read at the forty-ninth annual meeting of proprietors, to be held on Monday next, congratulates the shareholders on the improved circumstances of the Society. The financial statement shows that the mortgage to the Lancashire Insurance Company, which has stood at £5000 for the last twenty-five years, is now reduced to £1000. This favourable change has been brought about by means of donations, and the establishment of Life Memberships. The exhibitions held during the past year were very satisfactory from the horticultural point of view, the exhibits being very meritorious in nearly all the sections; but the depression of trade and the unfavourable weather prevented such a satisfactory financial result as the Council have had to lay before the shareholders in connection with previous exhibitions, and in addition to these circumstances influences have also been at work to draw visitors in another direction. For seven years prior to the opening of Manley Hall the average profits upon the Whitsun week exhibitions were £600 per annum;

for the two years that Manley Hall has been open the profits on the Whitsun week exhibitions have been £300 per annum. The musical promenades formerly yielded a profit of from £80 to £100 per annum, for the last two years they have not paid expenses. The Town Hall shows have become an important feature in the Society's proceedings, and the increasing interest evinced has induced the Council to arrange for holding three exhibitions of the same character during the ensuing year. It is proposed that an exhibition of window plants and cottage garden

—— Twenty sheep, the property of Mr. SAVILL ONLEY, of Stisted Hall, near Braintree, have been poisoned by eating poisonous shrubs in the garden, into which they got access on Saturday night last, in consequence of the park gate being left open. Nearly a whole flock of 100 entered the garden, and as they were all in lamb it is feared there may be still further losses.

—— One of the sublimest things in Nature is found in the ROAR OF THE STORM amidst the branches of

and pastime of the raging storm. In her beautiful poem of the Pilgrim Fathers, Mrs HEMANS tells how the

"Woods against a stormy sky,
Their giant branches toss;"

perhaps in deciduous trees nothing affords more complete compensation for the loss of the summer foliage than the watching of the motion of the spray produced by the passing winds. With a background of deep blue cloud lit up by the lurid light emitted from a sun bathed in moisture, there is then



FIG. 8.—AUSTRALIAN SPECIES OF MACROZAMIA. (SEE P. 48.)

produce, grown in and around Manchester and Salford, be held in the gardens, on August 4 and 6 next, the prizes offered to consist mainly of articles for household use; and the Council desire to record their grateful acknowledgments to several ladies and gentlemen who have already promised useful articles to be competed for on that occasion. The suggested arrangements for the year 1877 are—Floral and horticultural meeting, Town Hall, March 20; Auricula show, Town Hall, April 27; National Horticultural Exhibition at the Gardens, May 18 to 25 (inclusive); special exhibition for cottagers at the Gardens, August 4 to 6; exhibition of Chrysanthemums and fruits at the Town Hall, November 27 and 28.

GIGANTIC TREES. Sometimes the sound resembles that emitted by an army of wild bulls, and anon it is lulled into a gentle and soothing murmur; but to all who love trees and woods the sounds alike are sweet music, varying like the notes of an organ from the sweetest symphonies to the crash and thunder of a grand chorus. Not less effective, however, is the motion excited under fine deciduous trees when leafless in winter, under the influence of a fierce and sweeping gale. An imprisoned giant lashing his mighty arms in impotent rage affords but a weak illustration of the magnificence and grandeur displayed by some lofty Oak or Elm, as firmly fixed in the earth it yet has its monster branches bent hither and thither, the sport

beauty and elegance displayed that might well inspire some worthy poet. Wild, wet and stormy as the past weather has been, it has not left us without something to admire.

—— Some idea may be gained of the extent of the disasters caused by THE PHYLLOXERA by a recent report of M. DUCHARTRE, of the Central Horticultural Society of France, in which the learned Professor of the Sorbonne details the results of his examinations in various districts of France. Where the invasion of the insect took place first some years ago no traces are now left, for the Vine itself has disappeared! and no traces are apparent that the regions in question were

once wine-growing districts. Where the destroying influences are still at work the spectacle is heart-rending (*navrant*). In many places American Vines are being planted rapidly, these so far not being attacked by the Phylloxera, and on these it is intended to graft the European kinds. It must be remembered, however, that this immunity does not extend to all the American kinds, but principally, as shown by M. FLANCHON, to those Vines derived from Vitis rotundifolia (*sitis vulpina*), from which the Scuppernong, Thomas, Flowers, and other American varieties have been derived. These Vines require much heat to ripen their fruit, and their juice requires the addition of sugar to be converted into palatable wine.

—— Chance GROUPINGS OF PLANTS not unfrequently turn out to be more effective than combinations upon which much study has been bestowed. A case of this sort has been mentioned to us by Mr. WATERER as having been observed by him during his recent trip to America. A group of double white Primroses was surrounded by a broad belt of Omphalodes verna, and both were doing well, flowering freely and at the same period. Though thus associated by mere accident, the combination proved to be most beautiful.

—— We are informed that Mr. ROBERT AUGUSTUS ARNOTT retired on December 31 from his engagement with Messrs. CHARLES SHARPE & Co., of Sleaford, and is now associated with Mr. WM. BAXTER SMITH and Mr. JAMES WATT, the partners of the old established firm of LITTLE & BALLANTYNE, seedsmen and nurserymen, Carlisle.

—— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, January 15, when a paper will be read by Mr. W. T. MARRIOTT, entitled "Riparian Rights." The chair to be taken at 8 o'clock.

—— The following SPECIAL EXHIBITIONS will be held on the dates given in the gardens of the Royal Botanic Society, Regent's Park:—Clematis, by Messrs. GEORGE JACKMAN & SON, of Woking, from May 22; Rhododendrons and American Plants, by Mr. ANTHONY WATERER, Knap Hill, from June 1; and flowering and fine-foliaged plants, by Messrs. JAMES CARTER & Co., High Holborn, from June 27 to July 12.

—— We learn from Messrs. J. BLACKBURN & SONS' circular that the stock of RUSSIA MATS is quite cleared out in Russia, and, as a proof of this, the quotations for next year's shipments will be higher than last. Stocks are nearly exhausted in England, and they cannot be replenished for the next six to eight months; prices in the meantime must therefore advance still higher.

—— The total number of bales of COTTON imported during the twelve months ending with December 31, are 3,615,627; comprising 2,098,978 of American, 315,835 of Brazilian, 759,508 of East Indian, 335,209 of Egyptian, and 106,097 of miscellaneous. The number of bales exported during the same time are 513,127, comprising 109,133 of American, 17,139 of Brazilian, 364,321 of East Indian, 9495 of Egyptian, and 13,039 of miscellaneous.

—— There is this year promise of a more ABUNDANT BLOOM on the AMERICAN PLANTS than has ever before been known. At Knap Hill almost every plant is full of buds, so that, if no mishaps intervene, the blossoming period may be expected to be a glorious one—one to be made a note of.

—— A correspondent of REGEL'S *Gartenflora*, writing from Nikita, in the Crimea, states that there is a tree of XANTHOCERAS SORBIFOLIA at Karasson which is at least fifty years old, and another in his own garden twenty years old, so that it cannot be regarded as a new introduction. In the Crimea this small ornamental tree flourishes admirably, producing annually a profusion of its beautiful white flowers, and sometimes ripening its seed. It is strange that so distinct a thing should have escaped observation so long. If the writer is not mistaken—and he seems to entertain no doubt as to the identity of his trees—Xanthoceras sorbifolia was probably introduced by some member of the Russian Embassy from North China, or possibly it has a wider range of distribution than was supposed. Chamærops excelsa is also quite hardy in the same region, and ripens its fruit.

—— It will be remembered that we published a short time ago an account of the vegetable productions of Japan; and Dr. VIDAL stated there that the JAPANESE always ate their PEACHES in an unripe state. In the *Gartenflora* Dr. REGEL says, in some remarks on Japanese fruit trees, that Dr. MAXIMOWICZ informs him that the Japanese regard a ripe Peach as "rotten"! We remember eating with great relish in our younger days green Gooseberries and Apples, and a variety of other equally delicious fruits; but only so long as there were no ripe ones. A green Peach, however, would have been about the place to draw the line, even then, when scarcely anything came amiss.

—— The *Bulletin* of the French Society for Acclimatisation for October contains a long account of the HISTORY AND USES OF THE TRUE JABORANDI, PILOCARPUS PINNATUS. It appears that its introduction, or rather re-introduction, is due to a Brazilian, Dr. CONTINHO, who brought some leaves of it for his personal use about two years ago. He attended Professor GUBLER'S lectures, and when speaking of sudorifics the learned Professor of the Faculty of Medicine observed that no drug in use really deserves the name. This statement induced Dr. CONTINHO to bring the Jaborandi into notice. The report in the publication referred to is a lengthy one, giving the results of the most important experiments made with this drug by eminent physicians. The physiological action of infusions, chemical composition, and the physiological action of the peculiar alkaloid pilocarpine are detailed. P. simplex gave similar results. It is not only a powerful sudorific, but an equally active sialogogue.

—— RETINOSPORA FILIFERA GRACILIS is one of those plants that has been much condemned because of its somewhat abrupt and moppy style of growth, notwithstanding that the pendulous habit is graceful and elegant. It is a plant that cultivators have left too much to itself, and then it is apt to grow bunchy and ugly in appearance. A judicious employment of the pruning-knife would keep these bunches somewhat cut away, and when this is done the plant will put forth leading shoots which soon augment its height and elegant appearance. There are among the Japanese plants which Mr. FORTUNE introduced many things of an extremely interesting character that are in great danger of falling into oblivion. Their pigmy appearance and slow growth are much against their recognition, but what an interesting group might be made of them were they arranged in a cold conservatory, either planted out in suitable soil or pitted and cultivated in pots; or a collection might be made of them in a small garden, where they could not fail to be a perennial source of pleasure.

—— The following extract is taken from a letter recently received by Messrs. THOMAS CHRISTY & Co. from Mr. CHARLES DRAKE, of the Culloor Coffee Estate, Vythery, South Wynaard, Malabar:—

"The Prickly Comfrey is doing remarkably well. Some of the forward plants are now larger round than a very large Cabbage. Next week I intend commencing to feed some of our stock on the leaves, which I might have done at least a month ago, but waited so that they might make roots as well as leaves. This fact speaks for itself, and I have not left England two months yet; six weeks of this were spent on the voyage, and it was quite a month after I arrived on the estate before the roots were all planted. I notice, as you remarked, that they flourish better in shade, where you are sure of a plant on all soils, but I dressed our land so well with cattle manure that although part of it is exposed day after day to a tropical sun, little or no difference is noticeable between those in shade and those in the sun. I am sure if some of our English farmers knew of its quick growth, neither they nor any cowkeeper would be without it. I have already fed some of our cattle occasionally with it myself, mixed with grass, and a decided improvement is noticeable, and much as cattle are averse to Europeans they will follow me for it in preference to grass or grain."

At a time when much interest is centred on the PRODUCTION AND CONSUMPTION OF SUGAR, owing to the rapid rise in the price of this most useful commodity, it is satisfactory to hear of the extension of the cultivation of the Sugar-cane in any country where it is likely to succeed. Thus we learn from China that in the neighbourhood of Swatow the cultivation is extending, and is likely to continue to do so. Though no sugar is sent from this port to Great Britain, a large quantity is sent to other ports, and during the year 1875 the exports showed an increase of 170,000 piculs above those of the previous year.

Home Correspondence.

Lily of the Valley.—There has been a good deal said about the superiority of the French Lilies of the Valley over those imported from Belgium, but is this borne out by facts? My impression is that it is not so, and I am inclined to think that this cry in favour of the French variety is attributable only to the plan they have adopted in growing the fine early flowers we see sent over. I have sent you a few spikes from English-grown crowns, which I flatter myself are fair, and not so far-fetched. They were forced two years ago this season, and when out of flower were planted out. About five weeks ago they were taken up again, the flowering crowns selected and placed thickly in boxes in moss. The first flowers were cut on the 1st inst. *George Thomson, Crystal Palace, Sydenham.* [The flowers received were quite first-rate. EDS.]

Bambusa Ragamowski.—Having examined the leaves sent with Mr. Wheeler's interesting notice, published in issue for Dec. 30, I have been able to identify them with Bambusa tessellata of my monograph. Consequently, I suppose that is the name which the plant ought to bear, as I cannot ascertain, after diligent enquiries, that the name of B. Ragamowski has ever been published. The Rev. H. N. Ellacombe, of Bitton Vicarage, has also sent me specimens of leaves rather larger than Mr. Wheeler's, in fact, exactly corresponding in size with those described by me in my monograph, namely, 1¼ foot long and about 3 inches broad. The plants can readily be recognised by the tomentose line on one side of the midrib running nearly the whole length of the leaf on the underside, this line being always on the longer side of the leaf. *William Munro.*

The Web of the Embia.—The insect recently engraved in the *Gardeners' Chronicle* undoubtedly weaves a web which must not be confused with the web of the spider. The specimen illustrated was sent for engraving in a large pill-box, and on its arrival a web had been woven inside, attaching the lid to the body of the box. The insect was then very lively and rapid in its movements, ever and anon retreating into a small loose silken den or tunnel it had woven for itself at the bottom of the box. Two drops of chloroform stilled the quick movements of the insect, and then the engraving was made direct from a camera-lucida reflection from the microscope. *W. G. S.* [Mr. Michael has favoured us with an inspection of another specimen. There can be no doubt that the insect does spin a web. The whole matter is one of great interest, and we are glad to learn that it is being investigatsd by the most competent entomologists. EDS.]

Limekiln Heating.—The Cowan Patents Company's advertisement fell into my hands the other day, and in it I find it stated that the piping heated at Emo Park is 2000 feet. In a letter from Mr. Ennis, the gardener, which appeared in the *Gardeners' Chronicle* of September 30, he stated that the kiln had between 3000 and 4000 feet of 4-inch piping attached. How does Mr. Ennis explain this discrepancy? *Veri Amator.* [Mr. Ennis informs us that his statement is quite correct. The error rests with the Cowan Company, and it perhaps arose thus. Before the system was adopted there was about 2300 feet of 4-inch piping in the range of plant and fruit houses at Emo Park, but finding that the heat was so powerful, a range 350 feet long, in which there is a flow and return 4-inch pipe, was attached. This added 200 feet more, and with another 150 feet, used for connecting the one range with the other, makes the total amount between 3000 and 4000 feet, as stated. After some fourteen months' trial, Mr. Ennis informs us that he cannot speak too highly of the system of heating, and will be happy to show the apparatus to any one who may call at Emo Park. EDS.]

The Glastonbury Thorn.—One of the discomforts consequent on a mild winter is that our attention is arrested by ridiculous lists of plants in flower. It is one thing to record fairly the peculiarities of a peculiar season, and quite another to adulterate the record with details that prove the reporter to be destitute of the experience requisite to intelligent reporting. In a list of plants in flower at Christmas, lately published in an important daily paper, the first plant mentioned is the ever flowering and universal Senecio vulgaris. There was never a winter known

to the present generation in which the Groundsel did not flower in the intervals of frost, and even during an hour or two of sunshine, while the thermometer registered some 10° or so of frost. About one-third of the plants enumerated as having been of late wondrously in flower, may be consigned to the same category as the Groundsel, and amongst the remaining two-thirds very few indeed were of sufficient interest to justify any special note upon them. What can it matter to any one that the common Chickweed, the common Shiny Thistle, and the red dead Nettle, were showing a few flowers at the close of the year? They range from here to 82° north latitude, and are always ready to flower, unless frozen stiff as sticks, and then only three or four days of a temperature somewhat above the freezing point will make them gay with flowers once more. Vegetation is at this moment remarkably quiet, considering the range of the thermometer for two months past; but in the later days of December I saw young Lime trees brightly spangled with golden-green leaves, and a Hornbeam under my *sanctum* window threatened to go ahead, but changed its mind in time, and is now as still as a stone. Two things in the way of "floral phenomena" have interested me in making an occasional "tour of my garden." On December 25, our new-fangled Christmas Day, I found a glorious sheet of pale blue flowers of Scilla bifolia in a very cold, damp corner; and on January 6, the real old Christmas Day (the only proper Christmas Day in this connection), my Glastonbury Thorn was in flower. It is the first time in all my days that I have been blessed with the Christmas flowers of this holy tree. And I must say in its praise that it presents at this time a remarkably buxom appearance, being more densely laden with flowers than I have ever seen it before, and with such a wealth of bright new leafage as makes a sheen of springtime in the cold, damp shrubbery wherein the tree is located. The sample sent will show you that the tree carries still the leaves of last year, a little the worse for wear, while the new leaves are conspicuously forward and of the most delicious tint of tender green, and every twig bristles with clusters of new flower-buds, the expansion of which is purely a question of temperature. As a matter of course the few flowers I found on Christmas Day were claimed by pious pilgrims, and as it was enough for me to have seen them, I could but hope those who obtained permanent possession would find in them aids to faith. It is somewhat strange, however, that this precocious Crataegus is so rarely met with, although there is not a more interesting garden tree in cultivation, and as regards its beauty it is an advance on the common Thorn in several respects, its leafage being much richer, so that if planted in a sheltered nook it becomes a bower of brightness long before the "swallow dares." Having seen Joseph's Staff in flower on the festival of the Nativity I shall hope to see it in fruit some day, for hitherto I have never seen a berry on the Glastonbury Thorn. *Shirley Hibberd, Stoke Newington, Jan.* 8.

The Rainfall of 1876.—I have been looking at Mr. McCombie's account of the rainfall in 1876 at Wallington, Northumberland (see p. 20), and the total amount for the year there appears to be nearly 11 inches in excess of what fell in this part of Suffolk. Thinking it possible that you may consider it interesting to your readers to know something of the rainfalls of various and distant parts of the country, I have appended a statement of the rainfalls of the various months as recorded at this place:—January, 1.80 inch; February, 2 59 inches; March, 2 10 inches; April, 2.27 inches; May, 0.70 inch; June, 2 75 inches; July, 1.39 inch; August, 1.71 inch; September, 4 45 inches; October, 0.84 inch; November, 2.59 inches; December, 3 97 inches: total rainfall in the year, 27.16 inches. The rain gauge stands 1 foot 6 inches above the ground; the funnel is 5 inches in diameter, which with measure was supplied by Casella, of Hatton Garden, London. The rain is measured each day at 9 A.M. *P. Grieve, Culford, Bury St. Edmunds.*

Cotoneaster vulgaris.—This rare plant is still to be found on the Great Ormes Head. In company with a friend a few days back I saw it growing in two distinct places. Its stunds relished by sheep, who devour every leaf they can obtain, which makes the plant now difficult to find. There is one fine plant growing in the centre of a Whitethorn bush, very healthy. *Thomas Shortt, Llanduduo, Jan.* 8.

Erica codonodes.—This Heath has been very handsome here all through December. I do not remember to have seen it before February in previous years. Can you inform me if it is really a native of the Cape of Good Hope, as stated in Paxton's *Botanical Dictionary*? *H. K.* [No, South of Europe. EDS.]

The Weather.—Up to the time I now write (January 9) the weather continues to be mild and wet. During the first week of the year upwards of an inch of rain fell here, and the minimum temperature seldom falls under 40°, vegetation is consequently in an unusually forward condition. The bloom-buds on Apricot trees are here about to unfold their petals, while the ends of young shoots are furnished with perfectly developed leaves; Filbert bushes are already in full flower, Roses are almost in leaf, and in coverts the Elder has already made shoots of considerable length. It is much to be feared that a change in the weather, which will undoubtedly take place before long, may have a very serious effect upon fruit trees, more particularly the Apricot. *P. Grieve, Culford, Bury St. Edmunds.*

Winter Broccoli in Cornwall.—The market gardeners around here have been cutting their first Brocooli since November, and will finish before the end of the present month, when they will commence on their second variety, which will last until the end of March. I may say that from twenty to thirty railway trucks leave here daily for London and the northern markets—price in the field is from 1*s.* 3*d.* to 1*s.* 6*d.* per dozen. The seed of this Broccoli is sown in the end of February, and the plants are put out after the Potato crop is gone. I believe that this variety would succeed further up if sown early enough, and the seed obtained from some of the growers, who, by-the-by, are very careful in parting with it. The variety is large, and perfectly white and distinct. *H. Roberts, Gulove, Penzance.*

Premature Growth of Vine Roots.—I quite agree with Mr. Wildsmith that it is a bad practice to induce Vines or any plants to make roots when the plants are without leaves; this I pointed out in your volume for 1874, p. 719. It is now long known that Vines left to themselves do not make new roots until they have made leaves, but I cannot agree with Mr. Wildsmith that inside borders are the best for either early or late forced Vines. You cannot keep the soil so sweet and healthy for the roots in an inside border as when it is exposed to the influence of the outward air; but let the Vines decide the point. I assert that you cannot keep the roots of Vines in an inside border if they can get out, and they will overcome almost insurmountable difficulties to attain their purpose. If they find themselves so comfortable inside, why do they struggle to get out? *M. Henderson.*

Flowering of Agave schidigera.—It may interest some of your readers to know that in our collections we have fine plants of Agave schidigera—one at home, one at Regent's Park, and two at the Alexandra Palace, which are all flowering at once. The tendency to flower at the same time proves to me that they are all from one lot of seeds, though we got them from very different sources. At first they were very different in their development, but with age they have lost these differences, and have assumed the common type. They are about seven years old. *T. Croucher, Gr. to T. T. Peacock, Esq., Sudbury House, Jan.* 4.

Paraffin and Carbolic Acid. — Your correspondent "F. C. N." does well in being cautious in recommending paraffin oil as a dressing for fruit trees, for nothing can be more destructive to the bark—it completely destroys it wherever it touches. I consider paraffin and carbolic acid equally dangerous. If your correspondent would try a bottle of Bridgford's Antiseptic Liquid, he would find nothing so effectual, and it is quite safe; it is a compound of spirits and oils, and need not be diluted for fruit trees. It can be procured at any of the principal seed warehouses. *C. W. B.*

Fruiting of the Common White Jasmine.—Mr. W. Wilson has called your attention to the fruiting of this Jasmine at General Sir F. Gray's. I beg to say that I can testify to the germinating powers of the seeds, as Mr. Hamilton kindly gave me a few dozen, and every one of them grew. *Thomas Rixon, South Hill Park, Bracknell.*

Which are the Best Late Grapes?—In my opinion Mrs. Pince's Black Muscat stands first as a fine keeper. It is of excellent flavour, and a fine bearer. To those who do not succeed well with it, I would say, Don't overcrop, and use plenty of charcoal in the formation of the border, and it will colour all right. I ure it quite fine from the bottom of the charcoal heaps after the burners have left. Little did the late Mrs. Pince think when she pushed the seeds of the Grape she was eating into a flower-pot that the result would be as it has turned out—such a first-class Grape. Lady Downe's is the next best with me; but, singular enough, it never keeps so well as the former, nor is it half such a good flavour. West's St. Peter's keeps pretty well, and is very fresh and brisk in flavour. Gros Guillaume should always be grafted on the Hamburgh, when it is easily managed, and is a very useful late Grape. The finest I ever saw of this [kind was at] Chiswick, where the roots ran over an arch which covered the hot-water pipes between the boiler and the large house. White Lady Downe's I dug up, and so I have Royal Vineyard, for it neither set well nor kept well. Our soil is stiff, the rainfall considerable, and the situation 400 feet above the sea. Perhaps these three things had something to do with its failure, but White Tokay does very well, and is no bad eating after Christmas. Waltham Cross I have planted; it grows capitally, which is saying a good deal after the poor figure some of our new Vines have cut in growth. I have not fruited it. Snow's Muscat Hamburgh had its origin, or was preserved as an old variety, at Hurlingham House, Fulham; it was propagated by the late James Lane and the late Mr. Snow, of West Park, who sold it jointly to Mr. Henderson, Pineapple Place, for an incredible sum. The late Sir Joseph Paxton and my late lamented friend, Mr. Thomas Osborn, of the Fulham Nurseries, and many others, believed it to be nothing more nor less than the old Black Muscat. It is a delicate Grape, only fit for a mid-season fruit, and then when grafted on the Hamburgh. Gros Colman is a noble-looking Grape and keeps well, but is only third-rate in flavour. Raisin de Calabre is a fine-keeping white Grape, and not bad as to flavour. *J. Rust, Eridge Castle.*

—— I was rather surprised to read in your last issue that Mr. Grieve had placed my favourite Grape, Black Alicante, third on his list. In my opinion it far exceeds other varieties in many good qualities, and no doubt soil and situation have something to do with it. Mr. Grieve writes, "the berries become shrivelled long before there are any indications of this taking place in the fruit of Lady Downe's or Mrs. Pince's Black Muscat;" I certainly cannot give it that character here, for I know of no Grape that will keep so well without shrivelling, or carry its bloom so well, although I admit that the Lady Downe's has the finest flavour. I cut a house of Grapes here on December 15, 1875, bottled, and hung them up in the Grape-room, and on May 17, 1876, I had bunches of Alicante hanging without a shrivelled berry in them, and as good as on the day they were cut; whereas the Lady Downe's began to shrivel long before. *J. Browne, Leadenham, Grantham.*

—— The results of the inquiry respecting the most useful varieties of late keeping Grapes best suited to the various localities are somewhat disappointing. Had your invitation been responded to more liberally, and from more extended sources, the information would have proved both interesting and valuable. I send for your inspection this day a few samples that are most appreciated by my employers. They have been grown in Muscat heat, and have been ripe since August, and kept in a temperature of 45° to 50°. We find Grapes kept in a low temperature are deficient in flavour. What has become of Gros Colman, so highly spoken of last season? *J. H. Goodacre, Elvaston.* [The samples received were fine bunches of Lady Downe's, Alicante, and Gros Guillaume, their order of merit as regards flavour being as we have placed them. Lady Downe's was far in advance of the others. EDS.]

Spent Hops for Potato Culture.—Being interested in reading the article by G. A. Dains in the *Gardeners' Chronicle* of December 16, 1876, regarding spent Hops, I beg to make a few remarks on the results of a lengthened experience. I live near a farm 2 miles south of Edinburgh, of which my father is land steward, and having an interest in agriculture as well as horticulture, I will briefly state two different trials I have seen spent Hops undergo. Four years ago, when Hops were first introduced on the farm referred to, it was spread over the ground at the rate of 35 tons per acre, and ploughed in in autumn, and the Potatos planted the following spring. When lifted it was found, to the disappointment of all concerned, that the tubers were small in size, deficient in quality, and a remarkably poor crop, while the stalks, when measured, were found to be 6 feet in length. Another method, something similar to that referred to by G. A. Dains, was tried the following year: the ground was ploughed in autumn, and in spring, when the drills were made and the Hops spread in them, the sets were placed thereon and covered in; exactly the same result was witnessed when lifted as already alluded to, but ever since it was mixed with other composites it has done very well, so that in my opinion, and that of practical farmers, spent Hops by themselves, as a manure for Potatos, are absolutely worthless. *J. H. C.*

—— Mr. Ingram's successful practice of using spent Hops as a manure for Potatos, as confirmed by that of Mr. Dains, should draw the particular attention of cultivators to the subject. There is something in this manure, as both these gentlemen observe, especially adapted for Potatos. A delicate vegetable fibre reduced by boiling to a tender condition, and enriched by some small addition of the wort imbibed—the same sweet fluid which is provided in the root itself by the conversion of starch into sugar—to nourish the

shoots in their earliest stage of growth. And besides this, the crops so manured were not only good, but in successive years, and as a rule, remarkably free from disease. This is important. Perhaps Dr. Lindley's observation that the neighbourhood of fragrant oils prevents the growth of moulds, may have held good here. Some small part of the fine aroma of the Hops may remain after boiling sufficient to repel the attack of the mould. The refuse of distilleries where such plants as Lavender and Peppermint are boiled for the oil they yield, should, as well as spent Hops, be tried by those who have opportunity and the results made known. There seems to be a ray of hope in this direction, which may encourage further experiments. *S. S., Sevenoaks.*

A Vision of Poinsettias.—The practice at Acton certainly seems to be a very simple one. Would Mr. Reeves, or some one else, be kind enough to state the lowest degree of temperature for October, November, December, &c., which the Poinsettias will thrive in so as to come to a tolerable state of perfection? By so doing they would confer a great boon on not a few who are expected to grow the Poinsettias and have not much convenience in the way of heat. *Enquirer.*

The Weather at Ochtertyre, Crieff, in 1876.—The mean temperatures of the various months, as computed from daily observations (the thermometer being shaded and 4 feet from the ground) were :—January, 38°.34; February, 35°.45; March, 37°.11; April, 43°.35; May, 51°.26; June, 56°.31; July, 60°.14; August, 58°.24; September, 52°.33; October, 49°.16; November, 40°.38; December, 38°.39. The highest temperatures recorded during each month were :—January, 49°; February, 49°; March, 51°; April, 62°; May, 67°; June, 78°; July, 81°; August, 76°; September, 61°; October, 60°; November, 54°; December, 48°. The lowest temperatures recorded during each month were :—January, 24°; February, 25°; March, 24°; April, 25°; May, 31°; June, 42°; July, 45°; August, 43°; September, 37°; October, 37°; November, 25°; December, 27°. With the thermometer exposed, the highest temperatures in the sun's rays were :—January, 103°; February, 105°; March, 111°; April, 122°; May, 109°; June, 123°; July, 118°; August, 121°; September, 111°; October, 103°; November, 100°; December, 76°. The lowest temperatures with the thermometer exposed on the grass were :—January, 14°; February, 17°; March, 14°; April, 14°; May, 22°; June, 30°; July, 36°; August, 32°; September, 27°; October, 29°; November, 14°; December, 21°. The number of nights on which the thermometer fell below 32° in each month were :—January, 23; February, 28; March, 28; April, 16; May, 13; June, 5; July, 0; August, 1; September, 3; October, 4; November, 16; December, 13. The temperatures at 3 inches below the surface were :—January, 37°.3; February, 35°.3; March, 37°.1; April, 44°.1; May, 53°.5; June, 58°.7; July, 62°; August, 59°.9; September, 54°.2; October, 50°.4; November, 41°.1; December, 38°.6. At 12 inches below the surface :—January, 38°.2; February, 37°.2; March, 38°.1; April, 44°.8; May, 53°.2; June, 58°.5; July, 62°.5; August, 60°.9; September, 56°.1; October, 51°.2; November, 44°.1; December, 39°.7. At 22 inches below the surface :—January, 39°.1; February, 38°.3; March, 38°.3; April, 43°.5; May, 50°.7; June, 55°.6; July, 60°.3; August, 59°.7; September, 56°.1; October, 52°.5; November, 45°.9; December, 41°.1. The greatest rainfall during the various months was :—January, 3.01 inches; February, 4.57 inches; March, 4.50 inches; April, 3.52 inches; May, 0.19 inch; June, 3.84 inches; July, 1.58 inch; August, 3.32 inches; September, 2.84 inches; October, 6.70 inches; November, 4.51 inches; December, 11.32 inches. The greatest rainfall during twenty-four hours in each month was :—January 20, 0.66 inch; February 27, 0.79 inch; March 4, 0.63 inch; April 28, 1.23 inch; May 14, 0.09 inch; June 22, 0.98 inch; July 1, 0.53 inch; August 3, 1.90 inch; September 5, 0.87 inch; October 12, 1.14 inch; November 15, 2.63 inches; December 31, 1.53 inch. *G. C.*

Autumn Planted Potatos.—Having read Mr. Webster's letter at p. 816, vol. vi., in your number for December 23, I beg to say, with all respect to him, that I have nothing to retract or add to what I have written on this subject. I think Mr. Webster was easily discouraged from trying more than once, and further that his trying the experiment in a season when the disease was exceptionally bad was all against its success; for, as a rule, the Potato disease is no respecter of seed Potatos, and when the disease is very rife good seed is difficult to procure, and as he says his Ashleaf Potatos produced small tubers without tops, is to me a proof that diseased Potatos were planted. Plant good sound whole Potatos on light well-drained soil, and the result will satisfy the planter. *R. Maher, The Gardens, Boyne House, Tunbridge Wells.*

The Weather of 1876.—A few notes taken from the records kept here may be of interest to the readers of the *Gardeners' Chronicle*. The total rainfall for the year was 32 98 inches, against 37.14 of 1875. The number of days on which 0.1 or more fell during the year was 144; the heaviest rainfall in twenty-four hours occurred on September 28, when 1.36 was taken; the four wettest months were April, 3.71, September, 3.97, November, 3.04, and December, 5.57, rain falling on twenty-three days during this month. The three driest months were May, 0.78, June, 1.94, July, 0.46, while January, February, March, August, and October, gave a steady average of 2.57 inches. The maximum temperature in the shade was reached on August 14, when 89° was registered; the minimum occurred on January 12, registering 17° of frost. The highest reading of the barometer was 30, the lowest 28.3. Two of the most winterly days experienced during the year were April 13 and 14; the warm sunshine of the preceding week was succeeded by cold east winds and foggy mornings, and one of the heaviest snowstorms ever remembered in this neighbourhood, being 13 inches on the level, and in places drifted to the depth of as many feet, *F. Clarke, Barleythorpe, Oakham.*

Hatching Boxes.—In Christiania and its neighbourhood, and doubtless in other parts of Norway, the gardeners and proprietors fasten (with wire or nails) "Ruge Kasser," or "hatching-boxes," to the upper parts of the trees in their gardens and grounds. These are regularly resorted to by such birds as build their nests in holes in trees (which are not frequently to be found in the young, healthy, growing trees in a

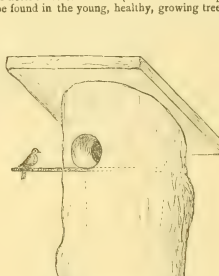


FIG 9.—HATCHING BOX FOR BIRDS.

garden or plantation near a house), and broods are hatched and reared, safe from the depredations of Felis domestica. The presence of such birds in our gardens as the pied and spotted flycatcher, the redstart, titmouse, wryneck, starling, &c. (all of which would, I believe, build in such a "Ruge Kasser"), must be looked upon as an advantage, as they all feed upon insects, and they are pretty and interesting objects in the eyes of young students of ornithology. I send you a rough drawing of a "Ruge Kasser" (fig. 9), and beg to remind your readers that now, in the slack gardening season, is the time to make them, ready to be nailed or wired up at the beginning of February. *S. Bryan Crowdher, Emery Down, Lyndhurst, Hants.* [The dimensions are :—Height at back, 16 inches; and of the front, 11 inches. Diameter, outside measure, 8 inches; inside measure, 5 inches. Length of sloping roof, 13 inches. EDS.]

Holly Berries.—It is perfectly true there is a great deficiency of Holly berries this winter, but that is not a very unusual occurrence after a fruitful year. The reason is obvious, that if trees bore largely every season they would soon become diseased and worn out. In fact, a rest at times is essentially necessary, in order that the tree may regain its vigour, as an excessive fruiting year is not conducive to strong growth, and *vice versâ*. With respect to the scarcity of Holly berries being attributable to the want of bees fertilising the flowers on the female plant (the Holly being dioecious), I think Mr. Darwin's theory is wrong, as also that the common Holly (Ilex Aquifolium) is so very hardy, for I know it will not thrive in Canada, and is only indigenous in most parts of the middle and south of Europe. Although the blossoms in early spring are likely to be, and frequently are destroyed by frosts, which are so apt to occur at that period of the year, and which would account for a partial or total failure of berries, I believe the present failure has been occasioned by an excess of moisture in the ground, followed by a warm spring temperature, which gave the Hollies an impetus of growth, which they had not had for several preceding years, and thus, instead of producing berries, an unusual growth was made. To prove this, I transplanted many large Hollies the year before last, which at the present time are full of berries, whereas similar plants, not transplanted, have not one; showing that when the redundancy of sap is checked, whether from removal, drought, or disease, fructification ensues without the intervention of bees. Hollies are particularly fine and plentiful in this locality, and so are bees, but still there are no berries. The failure is of too general a character throughout the country to be attributed to the dearth of bees, which I think must be more imaginary than real. *W. H. R., Hants.*

—In my nursery there was up to Sunday night, December 10, a splendid bed of the common Silver Holly, pyramids, 5 to 6 feet, laden with berries, and joining it on the south side ran a bed of similar plants of the small-leaved Silver, male. In other parts of the nursery where the common Silver stands alone, there is not a berry, and the same is observable of the Aucuba plants contiguous to the males, being covered with green berries, while distant plants are without fruit. If bees are the chief fertilisers (I have six hives close by), as Mr. Darwin suggests, how comes it that the other beds are without berries, where all stand within an area of 17 acres? On the Sunday night alluded to the thieves entered the nursery, and cut down to the stock fifty-nine of the berried plants, leaving the males alongside looking as disconsolate as their owner. *George Haveloek, Abbey Wood Nursery, Kent.*

The Fungi of "Whales."—In a recent number of the *Gardeners' Chronicle* Professor M'Nab communicated an interesting and amusing paragraph, headed the "Flora of the *South Wales Express*." More recently my friend, Mr. Charles B. Plowright, has published in *Grevillea* a list of fungi found by himself in the dead carcase of a whale stranded near Kings Lynn. The whale-bones, says Mr. Plowright, produced an "orange fusarium" and various moulds. From a crack in the skull of the whale sprang (like Minerva from the brain of Jupiter) an Agaric very near to, if not identical with, Agaricus bullaceus—a fungus hitherto supposed to be confined in its ravages to horse-dung. But, strangest of all, "in the very centre of the cranium," luxuriating "upon a thin stratum" of dry brains, grew, says Mr. Plowright, "a cluster of Agaricus ostreatus"(!) Now this disrespectful parasitism of the Oyster Agaric on the collapsed cetaceous brains can only be termed oyster sauce to a whale! *W. G. S.*

Vicomtesse Héricart de Thury Strawberry (see p. 21).—The Vicomtesse and its synonyms, namely, Marquise de la Tour Maubourg and Duchesse de Trevise or Trevisse, were all raised by Jamin and Durand; but I do not know the parentage. I believe the "bees" know more about hybridisation than the guessing hybridator. I may say, in passing, that I believe Mr. Darwin's article on the Holly berries is right, but frost and excessive droughts may have had something to do with it. I saw some few green berries in our church, but not one "coral." How blind we are. Locke truly said—"We know a little, guess a great deal, and then jump to a conclusion." *W. F. Radclyffe, Jun.* 8.

The Weather at Hutton Hall, Guisborough, in 1876.—The rainfall last year at this place was :—In January, 0.96 inch; February, 2.22; March, 2.25; April, 3.25; May, 1.46; June, 2.93; July, 3.67; August, 2.31; September, 4.33; October, 1.78; November, 3.68; December, 1.15;—total inches, 32.93, being in excess of the rainfall of 1873 by 12.05 inches, of 1874 by 7.38 inches, and of 1875 by 2.88 inches. *T. McIndoe.*

Protection *v.* Bottom Heat for Outside Vine Borders.—In the case of early vineries with outside borders, all growers will admit that the borders ought to be protected. Now the common method of doing this is to put any amount of fermenting material on the border six or eight weeks before root-action commences, and at the time that this takes place how often do we see the whole covered with snow, which in thawing together with cold rains forms a sad check to the growth. I doubt not, overheated border, and this at a time when fresh material is generally wanted for other purposes. For the sake of argument let us style this bottom-heat, and contrast it with the following plan of protection. Fix a framework to span the width of the border, and sufficiently strong to support shutters (exactly in the same way as lights or sashes are placed on pits). Very early vineries should have their outside borders well watered by the end of September, or as soon after that time as a supply can be had. Next lay on dry leaves,

as they can be obtained from time to time, till a good covering is on. A shutter or two will have to be removed for that purpose, but care must be taken to replace them again, as the object is to retain the heat by keeping off cold winds, rain, snow, &c. The leaves will check evaporation and keep the border moist. In a border so treated, where the Vines were started in the first week of November, 1875, a thermometer inserted to the depth of 6 inches in the border below the leaves did not fall at any time lower than 58°, and the highest temperature indicated was 62°, the latter being obtained soon after the roots pushed into growth, *i.e.*, after the first leaves were formed. I will only add that the border remained moist enough throughout the period of forcing, and that the shutters remained on till they were required for the protection of bedding stuff, by which time we had been cutting Sweetwaters, the first bunch being cut on May 3. *T. W. Bond, Weybridge.*

Unseasonable Christmas Cards.—Mr. W. G. Smith's "Fungus Cards" are evidently quite unexceptionable for the time of year, as the fungus is such a late autumn product that it shocks no sensibilities to find it allied to Christmas topics. With a large mass of Christmas cards, however, incongruities are abundant. Warm, sunny landscapes, flowers in the richest and most unnatural of hues, Roses, Violets, and numberless unrecognisable kinds decorate these cards to such a large extent that they only serve to show how thoroughly wintrish the Christmastide is. On the other hand, the stereotyped snow and frost of the old school artists is quite as incongruous, and it seems to be very difficult for the ordinary designer to furnish much that is at once new, yet seasonable. *A. D.*

Florists' Flowers.

IN noticing the new Azaleas of 1876, on p. 14, Duke of Edinburgh (Parsons), a finely formed bright coloured variety of good substance, was unfortunately overlooked.

Not only were new DAHLIAS somewhat numerously produced during the past summer, but there was a larger average than usual of thoroughly good flowers. The list of new show varieties obtained by the veteran Mr. John Keynes, of Salisbury, may appropriately lead the way, and perhaps the highest place should be given to Mrs. John Downie, pale ground heavily edged with rosy purple, perfect in form and petal; it is also a flower of great substance, for it could be seen in fine condition at all the Dahlia shows of note, and rarely failed to obtain a First-class Certificate. Next in order of merit should come Perfection of Primroses, beautiful primrose, slightly edged with rose, fine form and substance; John William Lord, shaded orange-buff, paler on the surface, a novel and pleasing flower of high quality; Minnie Bond, pale cream, charmingly edged with purple, a very taking flower, vivid self bright scarlet, fine petal and outline; John Wyatt, crimson-scarlet, extra fine form and petal; John Fraser, chocolate ground, shaded purple and buff, very novel and distinct; and Dauntless, dark orange shaded with buff. Other decidedly good flowers are Mrs. Drummond, pale lilac; Hon. Sidney Herbert, rich shaded crimson; David Saunders, dark mulberry, fine quality; and Benjamin Crosland, rich dark purple, fine form. Mr. Turner's list is small, one calculated to maintain the great reputation of Slough as a Dahlia producing centre. Christopher Ridley, bright glowing crimson-scarlet, fully justifies Mr. Turner's remark that it "is the gem of the season for form," and the fact that it was so often seen testifies to its great constancy; Artiste, yellow, shaded with carmine on the edges of the petals, is a very pleasing flower, of fine form and substance, and is well companioned by Burgundy, rich dark puce, suffused with purple-maroon, a remarkably attractive colour in a show flower; Canary, clear pale yellow, fine form and substance; Drake Lewis, rich bright scarlet, very striking in point of colour, fine form; Figaro, yellow, edged and suffused with bright red; and Black Knight, rich dark maroon, a very near approach to a black Dahlia. The following appropriately bring up the rear:—Elsa, French-white, full-sized and good form; Mr. Urquhart, white, heavily tipped with purple; The Rover, pale buff, a full flower of excellent form; and Vivian Grey, a quite new and very pleasing shade of colour, best described as a straw-coloured brown, fine form. Mr. Geo. Rawlings' Earl of Beaconsfield is a noble self of great quality, colour plum, heavily shaded with purple, and probably the best dark Dahlia to be distributed. Mr. Rawlings also has Countess Tasker, white ground, heavily tipped with lilac.

Of Mr. Keynes' new fancy flowers the best are Monsieur Chauvière, lilac ground, striped and spotted with dark crimson, very fine substance, bold and striking; and Rosetta, a charming flower, white ground, beautifully striped with rosy-purple, most acceptable for exhibition purposes. They are well supported by Hercules, yellow ground, striped and speckled with crimson, a fine bold flower; Tippy Bob, yellow ground, striped with rose and purple, novel and distinct; Lucy Fawcett, straw colour, striped and speckled with rich crimson, and Lady Allington, dark scarlet, tipped with white. Edith Turner and Mrs. Standish fittingly head Mr. Turner's batch: the former is pure pale yellow, delicately tipped with pure white, a charming flower of fine form—the latter pale amber-yellow suffused with carmine and tipped with white, a very pleasing combination; Mrs. Purvis is deep yellow, tipped with white; Gamester, pale buff, striped with maroon; Oracle, deep yellow, heavily striped with bright crimson; and Peacock, dark purple-maroon, distinctly tipped with white. Mr. Rawlings' new Fancy Singularity is something of the character of Mr. Turner's Mrs. Saunders, but quite distinct from it; the ground colour is amber, edged with red and tipped with white; very novel, fine, and attractive.

So many new varieties of GLADIOLUS are being produced both at home and abroad, and so few are seen at the London exhibitions, that it is only of the latter some estimate can be given. Messrs. Kelway & Son were awarded Certificates for Dr. Hogg, white, suffused with rosy lilac, and feathered with crimson; Lady Aberdare, white, streaked with purple; and the Rev. M. J. Berkeley, salmon-red, the outer petals feathered with scarlet, spike very fine. Marquis of Lothian (Codling) is a fine variety, colour rose, flushed with mauve, the lower segments cream, with crimson flame.

In regard to new HOLLYHOCKS, the paucity of them is explained by Mr. W. Chater, who states that the disease has played such havoc during the past three years that he has been prevented publishing his annual autumn catalogue of Hollyhocks, and so severely did the disease decimate the summer cuttings that up to this time he has not been able to send out a single plant so obtained. His new flowers are Crimson Queen, dark shaded crimson, the darkest flower of this colour yet offered; Her Majesty, bright rosy red, in the way of Victor, very large flowers, extra fine spike; Le Grand, in the way of Mrs. Chater, but of a deeper salmon, very fine; Achievement, rosy red, flushed with buff in the centre, very pretty and distinct; Virgin Queen, pure white, a large bold flower of fine quality; and Vesuvius, glowing reddish crimson, very bright, and of the finest form. Of the foregoing, Le Grand and Virgin Queen have received First-class Certificates.

Messrs. Veitch & Sons have been remarkably successful in the production of fine new forms of HIPPEASTRUMS, and were awarded First-class Certificates for the following high-coloured flowers:—Agatha, vermilion, striped with scarlet, very fine broad petals; Circe, rich blood-crimson, extra fine; Clio, bright scarlet, slightly shaded; Junius, deep crimson shaded with vermilion, bright and striking; Phœbe, glowing vermilion-red, very showy. Rev. T. Staniforth, deep red, striped with crimson; Sultan, deep crimson, very fine; and Thalia, rich blood-crimson. All the foregoing have large open flowers, and generally petals of great breadth and substance.

The new HYACINTHS of the past year were not of a character to excite much enthusiasm among the growers of this fine spring flower. Sultan, single blue, dark violet-purple, good bells; Golden Lion, single yellow, clear primrose-yellow, large bold spike; and The Shah, single blue, purple, with a peculiar metallic lustre, were shown by Messrs. Veitch & Son, and received Certificates. Messrs. Cutbush & Son had the same award for Princess Louise, double red, bright deep salmon-red, close spike, and well-formed bells.

Mr. Bull's new double bedding Lobelia cœrulea albo marmorata is a double form of L. speciosa Paxtoni; but whether it will be any more effective or useful as a bedder than the first of the type remains to be seen. A deep indigo-blue single variety, named St. Martin's Blue, promises to be a great acquisition among the pumila section.

Messrs. Harrison & Son's new Mimulus moschatus Harrisoni is an interesting hybrid, and while the scented character of the Musk is retained the flowers are considerably enlarged and nicely spotted.

The newer Zonal PELARGONIUMS have received so much attention of late in the *Gardeners' Chronicle* that it is not necessary to particularise the varieties in this collection. The new flowers raised by the late Mr. J. R. Pearson, Mr. J. George, Mr. F. Miles, and Dr. Denny, among others, have proved to be inclusive of some very fine forms. The trials made at the Chiswick gardens of the Royal Horticultural Society year after year, by Mr. A. F. Barron, afford such valuable opportunities for collecting information and instituting comparisons that the results of these trials may be accepted as reliable. As so many new varieties are constantly being produced, it is well that their claims to value should be investigated and adjudicated on by a competent body like the Floral Committee of the Royal Horticultural Society. I, for one, sincerely hope these functions will not be abdicated in favour of the Pelargonium Society.

The show or large flowered PELARGONIUMS have not been so well represented as in former years; perhaps the new flowers were not in character at the time the meetings of the London horticultural societies were held, and of the three great Pelargonium raisers, Beck, Foster, and Hoyle, only Mr. Foster remains working in the interests of this fine flower. Of the latter's raising the following Pelargoniums received First-class Certificates:—Bridesmaid, rosy purple lower petals, dark top petals, very fine form and substance; Purity, salmon-red lower petals, dark top petals, large white throat, a fine and striking flower; and Toby, orange-salmon, lower petals heavily veined with black, glossy dark top petals, a fine painted flower; Sappho (Turner), cherry-rose, suffused with purple, dark top petals, is a variety of dwarf growth, and extremely free. Of new varieties of Mr. Foster's raising Mr. Turner is distributing Eclipse, Edith, Hesperis, Lord of the Isles, Marchioness, Prima Donna, Rupert, Sovereign, and Viscount, several of which received First-class Certificates in former years. The Rev. J. Matthews received the same award for H. S. Ryder and Wallace, two varieties of considerable promise and good character. The Rev. A. Rawson's striped variety, Queen of Stripes, is extremely distinct in character, and will make an invaluable decorative plant, the lower petals bright rose, striped with vermilion lines; the rosy upper petals flaked with glossy carmine.

In the way of hardy PRIMULAS a most desirable break has been obtained in the cortusoides amœna section by Mr. A. Dean, Bedfont, as a result of crossing the forms already in cultivation. About a dozen seedlings have been selected, and two of them have received First-class Certificates, viz., amœna laciniata, a deep rose-crimson flower, with handsome laciniated segments, and grandiflora maxima, a greatly improved form of grandiflora. A fine yellow hose-in-hose Polyanthus, named Golden Queen, raised by Mr. J. Miller, Upwey, is a decided acquisition, and will be warmly welcomed by lovers of spring blooming hardy flowers.

Picotee Princess of Wales is a fine sulphur-coloured self flower, raised by Mr. F. Perkins, Leamington, which is likely to prove very useful for forcing; it is charmingly scented, and supplies quite a new shade of colour.

Messrs. Veitch & Sons' hybrid greenhouse Rhododendrons of the javanicum type will be of great value for house decoration; and the worth of the strain is seen in the fact that not less than seven varieties have received First-class Certificates. A hybrid named Fisher Holmes, shown by the well-known Sheffield nursery firm, is remarkable for its large white sweetly perfumed flowers.

Finally the ROSE claims attention. Lots of new Roses were exhibited during the past year, and Messrs. Paul & Son received certificates for Duke of Connaught, H.P., deep velvety crimson, flushed with lively red; and Duchesse de Vallambrosa, H.P., a Continental variety, colour glossy rose, tinged with lilac; Mr. W. Paul for Magna Charta, H.P., a beautiful glow of rose, large and full; Mr. Laxton for Mrs. Laxton, H.P., bright rosy purple; Mr. H. Bennett, for Comtesse de Séréaye, H.P., a beautiful flower, delicate rose, tinged with lavender in the centre; and for Madame François Janin, Tea, bright orange-buff, charming in the bud; and Mr. Noble for Queen of Bedders, a Bourbon Rose, dwarf in growth, very free, colour bright reddish rose.

Such is the legacy left to floriculture by the year 1876. It is however incomplete without some reference to the interesting trial of bedding Pansies and Violas which took place at Chiswick, under the

auspices of the Royal Horticultural Society, during the past summer. The newer forms certificated were, Dr. Stuart (Stuart), mauve-purple; lilacina (Dean), bluish lilac tinged with red; Peach Blossom (Dickson & Co), reddish or pucy lilac, paler at the tips; Princess Teck (Dean), pale bluish lilac; Royal Blue, (Dean), deep purplish blue; Sovereign (Dickson & Co), bright deep golden-yellow; White Swan (Dean), pure white; and Williams (Stuart), a greatly improved Viola cornuta Perfection. *R. D.*

MR. DEAN throws out a suggestion for Auricula growers in the last number of the *Florist and Pomologist*. It is that they should admit a class of SELF ALPINE AURICULAS as an equivalent to the self Auriculas admitted as a class amongst the show flowers.

"The first property," he remarks, "in Alpines is the shaded corolla lobes or petals, *i.e.*, the base of the marginal or ground-colour must be dark, with a paler edge, the dark hue shading off into the pale. Another important property is that, whether the centre or paste be yellow, or sulphur-yellow, or cream, or even white, it must be free from any trace of that mealiness which forms the paste in the true self Auricula. But," he argues, "as every correct alpine, according to the Northern estimate, must have shaded petals, it is obvious that some of Mr. TURNER'S flowers, and those produced by other raisers, though perfect in the centre, are yet inadmissible, because of their unshaded margins. But why cannot there be a class for self alpines, as there is for self Auriculas in the show division? Take flowers like Black Prince, Colonel Scott, Diamond, Etna, John Leech, King of Crimsons, Mercury, Perceval, and Spangle, out of many others which have been raised at Slough, and they would find no place among shaded flowers, because almost entirely self-coloured on the margin; and yet, though they have large finely-rounded pips, with golden mealless centres, and brilliant marginal colouring, they are not allowed to start in the competitive race. By all means allow the shaded form to be characteristic of the true alpine, but let there be a class for selfs, so that they also may have a chance to make a reputation on the exhibition-table."

WE are informed that a most important general meeting of the members of the following FLORIST SOCIETIES—namely, the National Auricula Society, the Royal National Tulip Society, and the National Carnation and Picotee Society—will be held at the "Old Bull's Head" (off the Market Place), Manchester, on Wednesday next, January 17, at 2 o'clock P.M., for the purpose of arranging the dates of this year's exhibitions, the schedules of prizes, the plan of judging, and other matters and work connected with the management of the national florist societies.

PROPOSED SHOW OF CARNATIONS AND PICOTEES.—The undersigned beg to be allowed to state that, in consequence of the uncertainty as to the action of the Royal Horticultural Society, they intend to promote a show of Carnations and Picotees, to be held in London during the season (July), and they will be glad of the co-operation of their brother florists in the work. A meeting to arrange preliminaries and commence a subscription for the needed prize funds will be held at the rooms of the Horticultural Club, 4, Adelphi Terrace, Strand, on Wednesday, Jan. 31, at 1 for 2 o'clock, when the attendance of all interested will be greatly esteemed. *Charles Turner, Royal Nursery, Slough; James Douglas, Loxford Hall Gardens; E. S. Dodwell, Larkhall Rise, Clapham, S.W.*

The Villa Garden.

GENERAL OPERATIONS FOR JANUARY.—The kitchen-garden is practically closed to the Villa gardener. The soil is waterlogged, it is so completely saturated with the rain that falls with such persistence—as if Nature were tremendously in arrears in the matter of moisture, and was making rapid haste to pay off the debt—that to move it with advantage is almost impossible. It cannot be dug except under the most favourable circumstances, if they exist, and therefore it is best not to get on it, for he who does so will only tread it into a kind of quagmire, and thus increase the difficulties of getting the soil into workable condition when fine weather comes. If the rain be accumulating on the surface in puddles, and especially near the roots of newly-planted trees, some effort should be made to draw it off by cutting little channels, and causing it to flow towards some lower spot, where it can pass away altogether.

If he can get an pyramidal and espalier fruit trees from the path, or by laying a short plank on the soil about them, and from this reach the trees, let him prune them by cutting away from the main shoots any small thin growths that are not likely to form blossoms, but being careful not to deprive the tree of any quota of its glory of flower in spring by cutting away blooming buds or fruiting spurs—*i.e.*, short spur-like points that will bear blossom and fruit. They can be readily detected by their grey tips. Pyramid trees, when planted in a small garden, have to be pretty freely pruned to keep them within bounds; and whether severe pruning be or be not a practice to be condemned, space is of first importance, and, if the Villa gardener desires to have several kinds of fruits growing on a given space, he must prune to keep his trees well within their proper dimensions. But there is such a thing as judicious pruning, as opposed to erroneous pruning. The summer pruning of these trees, as recommended by Mr. Rivers and others, practically keeps the trees clear of redundant wood, though it will be necessary to cut back the lateral shoots thrown out in late summer, but the leading shoots—the tall upright growths which are more or less strong, according to the nature of the soil in which the trees are growing—can be cut back at the end of the summer, as recommended by some, or left on till mid-winter. Our practice is to leave them on Apple, Pear, Plum, and Cherry trees till this time of the year, and then shorten them back to six eyes or so, according to the height required by the tree. This is what we do; and these leading shoots, having become quite hard by Christmas, prove useful as tie-up sticks to support plants, as Carnations, Pinks, &c. This work can then be proceeded with, even if the soil be wet, so that the plants can be reached from the garden-path on a piece of board laid on the soil as above recommended.

Then wall trees may receive some attention. In many Villa Gardens of oblong shape and restricted dimensions, the garden paths are frequently so arranged as that there is a warm border of 2 feet or so in width, in which the wall trees are planted. These trees can be reached from the path, or at least by placing one foot on the border, keeping the pivot foot on the walk. The weather being so mild, advantage may be taken of it to get all the leading shoots of Peaches, Nectarines, Apricots, and Plums into position, fastening them permanently and securely to the walls by shreds, or to the wires by ties, but not troubling about the points, as these will have to be shortened back later on. The wet season being so hostile to gardening operations generally, it is well to get such work as the training of fruit trees as forward as possible, so that when the long-hoped-for fine weather comes, the attention of the Villa gardener may be devoted to clearing up arrears of ground-work.

Creepers on walls and on trellises, and also those growing over wire archways and against pillars, should be pruned and trained, and made neat and trim. They are all more or less getting quite active; and how can they be less than active while the weather is so mild and the atmosphere so clear? Especially is this true of Roses and Clematises. The latter are moving forward rapidly, and such strong growing sorts as rubella, Jackmanni, tunbridgensis, and others are making a remarkably free growth. It is from the extreme points of the ripened wood of the previous summer that the greatest activity is manifested (shoots that were shortened back to 4 or 5 feet at the end of the summer). If it be requisite to cut back the Clematises close to the ground let it be done at once, and if the wood quickly breaks out again at the points at which it was pruned back, then a few sprigs of evergreens can be placed against them when cold frosty weather sets in. The Clematis is among the hardiest of hardy plants, but sappy young growths are certain to be injured by frost, and they should be protected accordingly. Roses must be left to the tenderness of Mother Nature. In the case of climbing Roses, thin out the wood rather than cut the leading shoots back hard, unless it is necessary to cut back hard to reclothe naked spaces near the ground. Place some manure and leaves about the roots of the creepers after the plants are pruned and trained; it will afford protection in frost, and be an invaluable fertilising agency when, in obedience to the moving influences of a clear, bright, warm spring, all plants and trees will break forth into a renewed being.

Here, then, are a few of many matters that may fittingly occupy the attention of the Villa gardener during the present rainy season. But the winter is none the less a time for active operations in the garden because it is wintry and dull, and the weather is sunless and the days short. There are many things to be done. All necessary outdoor work should be got forward in suitable weather; and house work, such as cleaning, repairing, &c., can be attended to when rain keeps the gardener within-doors. Care is requisite in affording protection against extremes of heat and cold and sudden changes of temperature, to tender plants in the open air—being very careful not to uncover too soon or too early in the day after severe frost, and never failing to bear in mind that dryness is always an invaluable help in these matters. Another matter of importance is to refrain from potting and repotting plants in a state of rest, except it be those that are being aroused from a dormant state, and when a little heat can be given them. Fuchsias, for instance, are commencing to grow fast, but it is far better to let them alone, and keep them pretty dry at the roots till lengthened days bring more sunlight, and the necessity for repotting cannot be avoided. These duties will suggest others, for the gardeners' occupation is one requiring a continuous, unceasing, and endless round of attentions, and the more faithfully and intelligently these are rendered, the more are they likely to become so many guarantees for success in the future.

Notices of Books.

AMONG the principal contents of the *Gardener* for the present month are the following:—Forethought Needed by the Gardener; Conservatory Decoration; On Dwarfing Chrysanthemums; Horticultural Boilers; Ornamental Trees and Shrubs—Betula; Lessons in Drawing, &c.; Market-garden Vegetables; Atmospheric Humidity; The Chrysanthemum and its Culture; Mr. Shirley Hibberd on "Natural Fruit Culture;" Wright's Patent Endless Flame-impact Hot-water Boiler; Flowering Pelargoniums in Winter; White Banksian Rose as a Stock for Maréchal Niel; The Famous Vine Sport; Scorched Leaves.

—— Among the principal contents of the *Villa Gardener* for the present month are:—Water Bouquets; Embellishing Villa Residences; Gardening for Beginners—Drainage; The Auricula; Lilies, Anemones, and Ranunculi; Delphiniums in Pots; Epiphyllums — Leaf-flowering Cactuses for Villa Gardens; The Currant, and its Cultivation; Bush Fruits; Notes on a Few Useful Vegetables of Recent Introduction; Winter and Early Spring Cucumbers; The Treatment of Annuals; The Villa Gardener's Plant Houses; Greenhouse Climbers; Artificial Heat for Small Greenhouses or Plant Stoves; Grafting and Storing Dahlia Roots.

PUBLICATIONS RECEIVED.—Journal of Botany.—Journal de la Société Centrale d'Horticulture de France.—The Royal School of Mines Magazine, a new publication, conducted by students of the establishment in Jermyn Street, and largely consisting of the adventures of former geological students in India, Brazil, &c.—Le Moniteur Horticole Belge.—Revue Horticole.—The Gardener.—Villa Gardener.—Westnik.—Belgique Horticole.—Illustration Horticole.—American Agriculturist.—Hamburger Garten Zeitung.—American Agriculturist.—The Horticultural Directory for 1877.

Obituary.

MR. PETER STEWART, gardener at The Glen, Peeblesshire, for the last five years, died at Lugton, near Dalkeith, on December 22, at the early age of thirty-three, leaving a widow and young family to mourn his untimely loss. He was a native of Dalkeith, and served in the Duke of Buccleuch's Gardens there for about twelve years, afterwards going to the Tweed Vineyard, Clovenfords, with Mr. Thomson, and then to The Glen. His career has been a comparatively short one, but few young gardeners have displayed more energy and ability, or been more successful during the few years he has been at The Glen, and it is pleasant for his friends to know that to the last his services have been most highly appreciated by

Mr. and Mrs. Tennant, his kind and generous employers. Under his able management the gardens at The Glen have become one of the most noteworthy places in the South of Scotland, and during the last three or four years he has been a keen and very successful exhibitor at the "International" and other horticultural shows in Scotland, exhibiting Pines and Grapes in particular in such remarkably fine condition as to have won many of the leading 1st prizes with them against the best growers in the country. Although cut off so early in life, his fame as an energetic and successful gardener will not soon pass away, nor will he be readily forgotten amongst his acquaintances as a most kind and warm-hearted friend, whose loss they deeply regret.

—— We regret to record the death on December 9 last of Mr. F. G. WILKINS, of The Poplars, Leyton. The deceased gentleman had been in ill-health since August last, but as his ultimate recovery was looked forward to, his death at the age of thirty-nine years was rather unexpected. Mr. Wilkins was a great lover of plants, and a warm supporter of flower shows, as his contributions to all the leading metropolitan exhibitions for the last ten years bear witness. Thirteen years ago he began to form the collection of plants which ultimately was destined to become so famous. The first things taken in hand were Pelargoniums, and then, shortly afterwards, Heaths, stove and greenhouse plants, and Orchids were added. Of the manner in which one and all of these subjects were cultivated and exhibited by his gardener, Mr. J. Ward, we need not now essay to speak, so well were his specimens known to most of our readers, and so well did they always stand in the prize lists. We regret to say that the entire collection is to be sold, and that Mr. Ward has to seek a new employer, but we trust, from his abilities as a plant grower, he will not be long in finding a suitable position.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JAN. 10, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading at 9 A.M.	BAROMETER. Departure from Mean of 15 Years.	TEMPERATURE OF THE AIR. Highest.	TEMPERATURE OF THE AIR. Lowest.	TEMPERATURE OF THE AIR. Range.	TEMPERATURE OF THE AIR. Mean for 1935.	TEMPERATURE OF THE AIR. Departure of Mean from Mean of 60 Years.	HYGROMETRICAL DEDUCTIONS FROM GLAISHER'S TABLES 5th EDITION. Dew Point.	HYGROMETRICAL DEDUCTIONS FROM GLAISHER'S TABLES 5th EDITION. Degree of Humidity. Sat. = 100.	WIND. Average Direction.	RAINFALL.
Jan. 4	In. 28.98	In. +0.71	° 51.9	° 46.3	° 5.6	° 49.1	° +7.4	° 46.1	90	S.	In. 0.29
5	29.05	+0.71	51.0	42.1	11.1	0 47.2	+10.7	43.6	88	S. S.W.	0.46
6	29.02	+0.73	52.7	39.8	12.9	46.1	+9.7	42.7	89	S.W. S.W.	0.24
7	29.03	+0.65	52.2	44.0	8.2	48.3	+12.0	43.5	84	S. S.	0.33
8	29.34	+0.39	52.1	44.1	7.8	48.0	+11.8	46.7	96	S.	0.53
9	29.70	+0.03	55.0	41.7	13.3	48.0	+11.8	41.9	90	W. W. S.W. S.	0.28
10	29.71	+0.02	48.8	35.4	13.4	41.8	+5.5	41.0	97	N.E.	0.46
Mean	29.27	+0.47	52.4	41.0	10.5	46.9	+10.6	44.1	91	S. S.W.	sum 2.29

Jan. 4.—Dull and wet till 10 A.M. Fine afterwards. Cloudless at night. Very mild.
— 5.—Fine and bright till 3 P.M.; dull with occasional rain after. Mild.
— 6.—Dull with occasional rain; fine at intervals. Strong gale in evening. Mild.
— 7.—Fine till 1 P.M., cloudy after, frequent rain throughout. Heavy gale in early morning. Mild.
— 8.—Overcast, dull, and wet throughout. Mild.
— 9.—A fine day, but occasionally dull and cloudy, with slight showers of rain. Cloudless at night. Mild.
— 10.—Overcast, dull, and foggy day. Heavy rain fell after 4 P.M.

The rainfall of this week is very remarkable as following the very unusual fall in December. Beginning with December 1, 1876, rain has fallen on every day, with the exception of December 9, 10, 13, 14, 17, and 22; and on two days in December, viz., the 20th and 24th, the falls were very heavy, amounting to 0.8 inch, and 1.1 inch respectively. Since the beginning of this year rain has fallen every day; on January 8 and 10 the amount was nearly half an inch on each day. The amount of rain from January 1 to the present time is 3.1 inches, the average fall for the whole month of January is 1.9 inch. The amount from December 1 to the present time is 6.00 inches, the average fall for December is less than 2 inches, and I believe that so large a fall at this time of the year is unprecedented.

LONDON: *Barometer.*—During the week ending January 6, 1877, in the suburbs of London, the reading of the barometer at the level of the sea decreased from 29.50 inches at the beginning of the week to 28.75 inches by the morning of January 1, increased to 29.76 inches by the afternoon of the 2d, decreased to 29.17 inches by the afternoon of the 4th, increased to 29.35 inches by the morning of the 6th, and was 29.08 inches at the end of the week. The mean reading for the week at sea level was 29.29 inches, being 0.43 inch below that of the preceding week, and 0.69 inch below the average.

N.B.—The mean daily readings of the barometer have been all below their averages from Nov. 25, 1876, to Jan. 11, 1877, with the exception of four days in December, when they were a little above their average values. The mean amount below the average for this period of forty-six days was 0.507 inch.

Temperature.—The highest temperatures of the air observed by day varied from 56° on January 1 to 42.2° on the 2d; the mean for the week was 52.4°. The lowest temperatures of the air observed by night ranged from 33.8° on January 2 to 49.4° on December 31, 1876; the mean value for the week was 42°. The mean daily range of temperature in the week was 10.4°, the greatest range in the day being 16°, on January 3, and the least, 5.8°, on the 4th. The mean daily temperatures of the air were as follows:—Sunday, December 31, 1876, 50°; 2d, 38°; 3d, 44°.4; 4th, 49°; 5th, 47°.2; 6th, 46°.1; and the departures in excess of their respective averages were:—15°.8, 12°.8, 1°.1, 7°.7, 12°.4, 10°.7, and 9°.7. The mean temperature of the air for the week was 46°.8, being 10.6 inch above the average of observations extending over a period of sixty years.

The mean daily temperatures of the air have been greatly in excess of their respective averages since December 27, 1876. The mean amount in excess of the average from December 27, 1876, to January 10, 1877, is 11° daily.

The highest readings of a thermometer, with blackened bulb in vacuo, placed in sun's rays, were 77° on January 5, and 73.8° on the 1st; on the 3d and 6th the reading did not rise above 57°. The lowest readings of a thermometer on grass, with a bulb exposed to the sky, were 34.8° on January 2d, 35° on the 6th, and 36.1° on the 3d; the mean value for the week was 39°.

Wind.—The direction of the wind was S.W., and its strength strong. The weather during the week was generally dull and wet, and exceedingly mild. A strong gale prevailed on Sunday, January 1, and also on Saturday, the 6th inst.

Rain was again measured on every day in the week; the amount collected was 1.37 inch.

ENGLAND: *Temperature.*—The highest temperature of the air was 56° at Blackheath, at Bradford 50.3 was the highest temperature; the mean value from all stations was 53.4°. The lowest temperature of the air was 26.8° at Eccles, at Plymouth 38.4° was the lowest temperature; the mean value from all stations was 32.4. The range of temperature in the week was the largest at Eccles, 27°, and the smallest at Brighton, Plymouth, and Portsmouth, all about 17°; the mean range of temperature from all stations was 20.4°.

The mean of the seven high day temperatures was the highest at Truro and Plymouth, both 53.8, and the lowest at Bradford, 44°; the general mean from all stations was 48.3°. The mean of the seven low night temperatures was the lowest at Manchester, 34°, and the highest at Brighton, Plymouth, and Portsmouth, all about 44.4; the mean from all stations was 41.8°. The mean daily range of temperature was the least at Brighton, Portsmouth, Leicester, Norwich, Hull, and Bradford, all about 7.3°, and the greatest at Manchester, 15°; the mean daily range of temperature from all stations was 9.2°.

The highest temperature of the air for the week from all stations was 44.4, being 7° higher than the value for the corresponding week in 1876. The highest was 49°, at Plymouth, and the lowest 39.4, at Sunderland.

Rain.—The falls of rain in the week were large everywhere, and varied from 4 inches nearly at Truro, 2.7 inches at Plymouth, Portsmouth, Birmingham, Sheffield, and Bradford, to 1 inch at Cambridge and Norwich; the average fall over the country was 2.1 inches nearly, being 2 inches above the value for the corresponding week in 1876.

The weather during the week was cloudy and wet and very mild, though fine at intervals. There was still a continuance of floods in the provinces, and in the Thames they have caused great loss to property.

The Heavy Gale of Monday, January 1, exceeded any previous for a long time, and was felt all over the country, but more in Scotland, doing great damage everywhere. Shipwrecks were numerous.

SCOTLAND: *Temperature.*—The highest temperatures of the air ranged from 50° at Leith to 44° at Dundee; the average value from all stations was 47.2°. The lowest temperatures of the air varied from 16° at Perth to 25.8° at Greenock; the mean value from all stations was 22°. The mean range of temperature from all stations was 25.2°.

The mean temperature of the air for the week from all stations was 34.8°, being 9.2° lower than that of England, and 5.8° below the value for the corresponding week in 1876. The highest occurred at Edinburgh, 36°, and the lowest at Perth, 32.8°.

Rain.—The amounts of rain measured at the several stations were large, and varied from 3.4 inches at Edinburgh to 1.4 inch (nearly) at Aberdeen; the average fall over the country was 2.4 inches nearly.

DUBLIN.—The highest temperature of the air was 53.4°, the lowest 30.4°, the range 23°; the mean for the week was 43°, and the fall of rain was 1.58 inch.

JAMES GLAISHER.



RED SPIDER: LIQUID CARBOLIC SOAP (Qy. 156, p. 25): We have not used the article for the purpose mentioned by "Market Gardener," but have done so for American Blight on Apple trees. The article is Liquid Carbolic Soap, and can be obtained of the Clydesdale Paint Company, Three Mill Lane, Bromley-by-Bow, E. *P. & M.*

BOG: *R. Robinson.* The experiment might be worth trying if you first drain the ground. You might also try Osiers.

CHIMONANTHUS FRAGRANS: *Quenelle.* This is a sweet-scented winter flowering wall plant, common in gardens. You can obtain it from any of the nurseries.

CRANBERRIES: *J. V. V. Cranberry Culture*, by Joseph J. White. Published by Orange Judd & Co., New York.

GRAPE: *W. W.* We cannot recognise the Grape in the condition in which you sent it. Send again when fresher, and with a sample of the wood and foliage.

HARDY PLANTS FOR WINDOW CONSERVATORY: *J. C.* The various forms of Aucuba japonica and himalaica; the variegated varieties of Euonymus japonicus; several of the smaller Retinosporas; Myrtles; Olea fragrans; Osmanthus Aquifolius; various forms of the Ivy, grown both as creepers and bushes; and the golden forms of Cupressus and Thuja. Nicely grown pot-specimens only should be admitted.

INSECTS: *I. H., Peterborough.* The galls on the Swede Turnips are caused by the puncture and deposition of eggs in the wound of the root by a weevil, Curculio pleurostigma, the larva of which feeds within the gall, and changes first to a pupa and then to the perfect insect. Marl or chalk have been proposed as the best preventives. *J. G. W.*

NAMES OF PLANTS: *D. M.* The fruits of the Gladwyn, or Stinking Iris, I. foetidissima, sometimes called "Wagga-wagga Holly." — *S. P. O.* Polybotrya bifurcata (Acrostichum bifurcatum, Sw.), of which you send a larger and a smaller sample; Asplenium tenellum, Roxb. (A. reclinatum, Hort.); the other small specimen too juvenile.—*C. R.* P. pyrenaica.—*N. G.* No. 1 appears to be O. glomerata, or a variety of it.—*Diss.* Cotoneaster buxifolia.—*D. I.* Helichrysum rosmarinifolium var. ericifolium; 2, seems to be a Juniperus, which we cannot name without fruit.—*Mrs. G. A.* The Cotoneaster buxifolia microphylla.—*J. McIndoe.* Calluna vulgaris, the common Ling.—*Gallicus.* Blechnum spicant.—*A. B.* Eupatorium Weinmannianum.—*A. Y. M.* Acacia Riceana.

PLANTING CORNUS ALBA: *G. F. M.* It depends upon the use it is intended to make of the plantation of Cornus alba, to decide the distance from plant to plant. If for cover, 3 feet would be a good distance, but if to be grown for its wood to be used in turnery it should be planted from 6 to 10 feet apart. It is propagated from seeds chiefly. Cornus mas produces much better timber than C. alba.

TEA PLANTATION: *H. M.* Write to Mr. Smith, the Royal Botanic Gardens, Kew; or to Dr. Forbes Watson, the India Museum, South Kensington.

TESTING OF NOVELTIES.—A correspondent writes to suggest that the Royal Horticultural Society should undertake this duty, and not only refuse to certificate inferior varieties, but prohibit, by statute for that purpose enacted by Parliament, the sending out of such varieties! Our correspondent overlooks the fact that the best practical work done at Chiswick of late years has been in this direction, though it is a pity it could not be greatly extended, and the results made more accessible. As to statutory powers, we are afraid the principles of free trade would prevent any such law being enacted.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders, payable at the post-office, King Street, Covent Garden, London, are requested to be good enough to write to the Publisher, at the office of this paper, 41, Wellington Street, Covent Garden, at the same time, to inform him of the fact.

CATALOGUES RECEIVED.—Messrs. J. Jefferies & Sons (Market Place, Cirencester, Gloucestershire), Descriptive Catalogue of Vegetable and Flower Seeds, &c.—Messrs. W. Drummond & Sons (Stirling, and 58, Dawson Street, Dublin), Descriptive Catalogue of Vegetable and Flower Seeds, Tools, &c.—H. & F. Sharpe (Wisbeach, Cambridge), Special List of Seed Potatos, also Wholesale Catalogue of Garden and Agricultural Seeds.—Messrs. C. Sharpe & Co. (Sleaford, Lincoln), Spring Catalogue and Amateurs' Guide.—Herrmann A. Frommer (Budapest, Hungary), General Seed Catalogue.—Messrs. Vilmorin-Andrieux & Co. (4, Quai de la Mégisserie, Paris), General Seed and Plant Catalogue.—Ed. Pynaert Van Geert (142, Rue de Bruxelles, Ghent, Belgium), Catalogue and Price List for 1877.—B. S. Williams (Upper Holloway, London, N.), Descriptive Catalogue of Flower, Vegetable, and Agricultural Seeds, Implements, &c.—Messrs. Webb & Sons (Wordsley, Stourbridge), General Catalogue of Flowers, Vegetables, &c.—Messrs. Haage & Schmidt (Erfurt, Prussia), Trade Seed List.—Messrs. William Cutbush & Son (Highgate, London, N., and Barnet, Herts), Descriptive Catalogue of Flower, Vegetable, and Farm Seeds, &c.—Messrs. J. C. Wheeler & Son (59, Mark Lane, London, E.C., and Gloucester), Little Book, or Short Select Seed List.—Messrs. Brook & Gallop (195, Western Road, Brighton), Catalogue of Vegetable, Flower, and Agricultural Seeds.—Mr. Attell (Westerham, Kent), Spring Catalogue of Kitchen Garden, Flower, and Agricultural Seeds.—Messrs. J. Dickson & Sons (108, Eastgate Street, Chester), Catalogue of Vegetable and Flower Seeds, Tools, &c.

COMMUNICATIONS RECEIVED.—J. B.—J. W. (many thanks).—R. M.—S. W.—N. E. B.—J. W. S.—C. V. M.—M. D. (many thanks).—W. B.—Cornigend.—C.—O.—A. F.—R. McL.—J. J., Kew (yes, please).—R. H.—E. S. D.—T. H.—J. C. B.

DIED, on October 26, at Bankside, Manchester, CHARLES HUSBAND DICKSON, of the firm of Dickson & Robinson, Seed Merchants, Manchester.

—— On the 9th inst., suddenly, at Chappel, Essex, Mr. WILLIAM MORLEY FARROW, aged 38.

Markets.

COVENT GARDEN, January 11.

As American Apples are now nearly off the Market, good late home-grown fruit is realising better prices. Good samples of Grapes are selling well, but inferior ones are very dull. There are very few transactions in Cobs. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	1 6-	6 0	Oranges, per 100	8 0-	12 0
Cobs, per lb.	1 0-	1 6	Peaches, per doz.	0 0-	0 0
Grapes, per lb.	3 0-	12 0	Pears, per doz.	0 0-	0 0
Lemons, per 100	8 0-	14 0	Pine-apples, per lb.	1 6-	4 0
Melons, each	1 6-	3 0			

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per bush.	4 0-	—	Horse Radish, p. bun.	2 0-	—
— Eng. Globe, doz.	4 0-	6 0	Leeks, per bunch	0 2-	0 4
Asparagus, Fr., bun.	30 0-	—	Lettuces, per score.	1 6-	2 0
— English, p. bun.	0 0-	—	— French, per doz.	0 0-	0 0
— Sprue, per bun.	2 6-	—	Mint, green, bunch	1 0-	—
Beans, French (new), per 100	—	3 6-	Mushrooms, per pott.	1 0-	—
Beet, per doz.	1 0-	2 0	Onions, per bush.	0 0-	8 0
Brussels Sprouts	1 0-	2 0	— young, per bun.	0 8-	1 0
Cabbages, per doz.	1 0-	2 0	Parsley, per bunch	0 2-	0 4
Carrots, per bunch.	0 6-	—	Radishes, per bunch.	0 1-	0 3
Cauliflowers, per doz.	2 0-	4 0	— Spanish, doz.	1 0-	—
Celery, per bundle	1 6-	2 0	— New Forcd, doz.	2 0-	—
Chilis, green, per 100	3 0-	—	Rhubarb, per bundle	1 0-	—
Cucumbers, each	1 0-	1 6	Salsafy, per bundle	1 0-	—
Endive, per doz.	1 0-	2 0	Scakale, per punnet	1 6-	—
— Batavian, p. doz.	2 0-	3 0	Shallots, per lb.	0 6-	—
Garlic, per lb.	0 4-	0 6	Spinach, per bushel	1 6-	2 0
Herbs, per bunch	0 2-	0 4	Tomatas, per doz.	1 0-	3 0
			Turnips, per bundle	0 4-	0 6

Potatos.—Kent Regents, £5 to £6; Essex Regents, £4 10s. to £5; Kidneys, £4 to £5 per ton.

PLANTS IN POTS.

	s. d.	s. d.		s. d.	s. d.
Azaleas, per dozen	24 0-	60 0	Heliotrope, per doz.	6 0-	12 0
Begonias, per doz.	6 0-	12 0	Hyacinths, per doz.	8 0-	18 0
Bouvardias, per doz.	12 0-	24 0	— Roman, doz.	9 0-	18 0
Cineraria, per doz.	9 0-	18 0	Lily of Valley, each	2 6-	5 0
Coleus, per dozen	3 0-	9 0	Mignonette, do.	6 0-	9 0
Cyclamen, per doz.	12 0-	30 0	Myrtles, do...	6 0-	12 0
Cyperus, do.	6 0-	12 0	Palms in variety, each	3 6-	21 0
Dracæna terminalis	30 0-	—	Pelargoniums, scarlet, per doz.	6 0-	12 0
— viridis, per doz.	18 0-	24 0	Poinsettia, per doz.	12 0-	24 0
Epiphyllum, per doz.	18 0-	42 0	Primula sinensis, do.	6 0-	9 0
Erica caffra, p. doz.	6 0-	12 0	Solanums, per doz.	6 0-	24 0
Ferns, in var., p. doz.	6 0-	30 0	Tulips, per dozen	3 0-	12 0
Ficus elastica	2 0-	15 0	Valotta purpur., doz.	12 0-	1 12
Heaths, variety, doz.	9 0-	24 0			

CUT FLOWERS.

	s. d.	s. d.		s. d.	s. d.
Azaleas, 12 sprays	1 0-	4 0	Lily of Valley, 12 spr.	1 6-	3 0
Bouvardias, per bun.	1 0-	4 0	Mignonette, 12 bun.	4 0-	9 0
Camellias, 12 blooms	2 0-	12 0	Narcissus, 12 sprays	1 0-	2 0
Carnations, per dozen	1 6-	4 0	Pelargoniums, 12 spr.	2 0-	4 0
Chrysanths., 12 bun.	18 0-	24 0	— zonal, 12 sprays	1 0-	4 0
Cyclamen, per doz.	9 0-	0 0	Poinsettia, 12 sprays	4 0-	12 0
Epiphyllum, 12 blms.	1 0-	3 0	Primula, dbl., p. bun.	1 0-	2 0
Eucharis, per doz.	6 0-	12 0	Roses, indoor, p. doz.	3 0-	12 0
Euphorbia, 12 sprays	2 0-	9 0	— Christmas, bun.	6 0-	1 6
Gardenia, per doz.	9 0-	18 0	Stephanotis, 12 spr.	9 0-	15 0
Heliotropes, 12 sprs.	2 0-	6 0	Tropeolum, 12 bun.	2 0-	6 0
Hyacth., Rom., 12 sp.	2 0-	6 0	Violets, 12 bun.	1 6-	4 0

SEEDS.

LONDON: *Jan.* 10.—A noteworthy feature of the present week is an inquiry from France for red Clover seed. In addition to the orders sent to this country, the French have during the last few days made extensive purchases by cable on the American markets. From some figures received this day it appears that the shipments from the United States have continued on a most limited scale; during the last fifteen weeks of 1876 the total exports from New York to London amounted to only 16,161 bags, equal to about 1000 tons, and as most of our home-grown red Clovers the supply to hand is good, especially so when we take into consideration the late unfavourable weather. Provincial houses, in despair of buying in their seed stocks on lower terms, are now beginning to operate. The Trefoil trade shows some improvement; quotations in France are 3 francs per boll dearer. For Alsike and white Clover the demand is small; quotations unchanged. More attention is now given to spring Tares, without, however, resulting in transactions of any importance. Rape seed sells at stiffening rates. In Canary seed the movement is upwards; the moderate terms on which fine samples are now obtainable naturally induces some speculation. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday trade was dull from obvious causes. There was a small supply of English Wheat offering, and not much foreign. Fine dry parcels were firm, while inferior and ill-conditioned produce were cheaper when pressed for sale. The same remarks apply to Barley, the demand being chiefly confined to the better descriptions of grinding. Malt changed hands at about late rates. For Oats, the market, as a whole, was no better. Maize, Beans, and Peas were slow of sale, and tended lower in price. The flour market was steady, with next to nothing doing. The top price of town-made flour was raised 4*s.*, or to 50*s.* per sack.—Want of activity characterised Wednesday's business, and quotations underwent little or no variation. On the whole a rather better tone prevailed, and the better qualities of produce, whether Wheat, Barley, Oats, Maize, Beans, Peas, or flour, realised fully Monday's currencies. Some dry samples of Wheat, average prices of corn for the week ending, Jan. 6:—Wheat, 51*s. 2d.*; Barley, 32*s.* 9*d.*; Oats, 24*s.* 7*d.* For the corresponding week in last year:—Wheat, 45*s. 1d.*; Barley, 34*s.* 5*d.*; Oats, 23*s.* 10*d.*

CATTLE.

At Copenhagen Fields on Monday the weather operated much against the beast trade; choicest qualities were not much lower, but they were with more difficulty disposed of. There was a large supply of sheep, and trade was dull; late prices, however, well maintained. The demand was good for choicest qualities. Calves continued scarce and dear. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.*, and 5*s.* 6*d.* to 6*s.*; calves, 5*s.* 8*d.* to 7*s.*; sheep, 5*s.* 6*d.* to 6*s.*, and 6*s.* 6*d.* to 7*s.* 4*d.*; pigs, 4*s.* 4*d.* to 5*s.* 4*d.*—On Thursday, the few cattle offering being mostly of the rough classes, which were not in request, quotations took a lower range. Sheep sold without much alteration. Prime calves were scarce, and sold at high prices, whilst inferior were very unsaleable.

HAY.

At the Whitechapel market on Tuesday trade was rather quiet. Prices were without change; prime Clover, being quoted at 100*s.* to 144*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 135*s.*; inferior, 70*s.* to 85*s.* and straw, 40*s.* to 55*s.* per load.—Thursday's market was scantily furnished with good dry qualities of provender, which were very firm. Quotations: — Clover, best, 100*s.* to 144*s.*; inferior, 85*s.* to 95*s.*; hay, best, 100*s.* to 135*s.*; inferior, 65*s.* to 75*s.*; and straw, 44*s.* to 54*s.* per load. — Cumberland Market quotations: — Superior meadow hay, 132*s.* to 140*s.*; inferior, 108*s.* to 120*s.*; superior Clover, 140*s.* to 147*s.*; inferior, 120*s.* to 132*s.*; and straw, 58*s.* to 63*s.* per load.

POTATOS.

The Borough and Spitalfields reports state that sound Potatos continue in request, while a dull trade prevails for other sorts. Quotations show no appreciable alteration from a week ago:—Kent Regents, 120*s.* to 140*s.* per ton; Essex do., 100*s.* to 130*s.*; rocks, 60*s.* to 90*s.*; flukes, 150*s.* to 180*s.*; and kidneys, 100*s.* to 120*s.*—Last week's imports into London comprised 2362 bags from Hamburg, 3589 bags 131 tons from Brussels, 1349 bags 110 tons from Louvain, 1056 bags 125 packages from Antwerp, 400 barrels 279 bags from Harlingen, and 173 bags from Rotterdam.

COALS.

In the market on Monday the best house coals were unchanged, but seconds advanced 6*d.* per ton. Wednesday's market was firm, and house coals advanced 6*d.* per ton on previous quotations, which were:—Bebside West Hartley, 10*s.* 9*d.*; West Hartley, 10*s.* 9*d.*; Walls End—Hetton, 19*s.*; Hetton Lyons, 16*s.* 9*d.*; Lambton, 18*s.* 6*d.*; Hartlepool, 18*s.*; Kelloe, 17*s.*; East Hartlepool, 18*s.* 9*d.*; Tees, 18*s.* 9*d.*; Trindon Grange, 17*s.* 6*d.*

To Purchasers of Large Quantities, Market GARDENERS and OTHERS.

SUTTON AND SONS can offer some stocks of the following Peas at very moderate prices:

SUTTON'S IMPROVED EARLY CHAMPION, the best and most productive in cultivation.

Sutton's Ringleader	Advancer
Daniel O'Rourke	Sutton's Racehorse
Fortyfold	Champion of England
Scimitar	Veitch's Perfection,

and other leading kinds.

SUTTON AND SONS, Seedsmen by Royal Command, Reading.

CHARLES NOBLE, Bagshot, can offer the following:—

ROSES, Dwarf, 42*s.* per dozen, 300*s.* per 100, 2100*s.* per 1000.
PEACHES and NECTARINES, dwarf-trained, 21*s.* per dozen, 150*s.* per 100.
RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1½ to 2 feet, 21*s.* per dozen, 150*s.* per 100.
,, ,, ,, for immediate effect, 2½ to 4 feet, and same through, 42*s.* per dozen, 300*s.* per 100.
,, Seedling, ½ to 1½ feet, 24*s.* per dozen, 200*s.* per 100.
,, PONTICUM, 1½ to 2 feet, bushy, 6*s.* per dozen, 35*s.* per 100.
KALMIA LATIFOLIA, 1 to 1½ foot, buds, for potting, 75*s.* and 100*s.* per 100.
ANDROMEDA FLORIBUNDA, buds, for potting, 75*s.* and 100*s.* per 100.

American Plants Without Peat.

WILLIAM MAULE AND SONS beg to offer the choicest hardy English and Continental RHODODENDRONS, with BELGIC and other AZALEAS, at 9*s.* per dozen, 60*s.* per 100.
The plants are grown in stiff loamy soil, on an exposed and elevated situation, and will thrive in almost any soil, free from iron, lime, or chalk.
Handsome standard RHODODENDRONS, with fine heads, well set with bloom, 10*s.* 6*d.*, 21*s.*, and 42*s.* each.
Large plants of CATESBÆI, CATAWBIENSE, and other common varieties, at 50*s.*, 75*s.*, 100*s.* per 100.
The Nurseries, Bristol.

CHARLES BUTLER, The Nurseries, Wellington, Salop, has to offer the following:—
LARCH, 2 to 3 feet, 30*s.* per 100: 3 to 4 feet, 45*s.* per 1000.
FIR, Spruce, 2 to 3 feet, 25*s.* per 1000.
Scotch, 2½ to 2 feet, 25*s.* per 1000.
BERBERIS AQUIFOLIA, 2 to 2½ feet, bushy, 80*s.* per 1000.
ASH, Mountain, 3 to 4 feet, 40*s.* per 1000.
SYCAMORE, 3 to 6 feet, 5*s.* per 100.
BEECH, 3 to 4 feet, 40*s.* per 1000.
PINE, Austrian, 2 to 2½ feet, 25*s.* per 100: 3 to 4 feet, 30*s.* per 100.
,, Corsican, 12 to 18 inches, 10*s.* per 100.
CUPRESSUS LAWSONIANA, 4 to 5 feet, 50*s.* per 100.
,, ,, well furnished, 5 to 6 feet, 100*s.* per 100.
YEWS, 1½ to 2 feet, well furnished plants, 40*s.* per 100.
,, 2 to 3 feet, 80*s.* per 100.
LAURELS, common, bushy, good plants, 2 to 2½ feet, 16*s.* per 100.
,, bushy plants, 2½ to 3 feet, 20*s.* per 100.

New Cauliflower.

DICKSON, BROWN, AND TAIT, SEED MERCHANTS, 43 and 45, Corporation Street, Manchester. DICKSON, BROWN, AND TAIT'S "ECLIPSE" CAULIFLOWER.—This new and perfectly distinct variety excels even the flattering reports of its usefulness given by many of our customers last season.
It comes into use about the time of Veitch's Autumn, but has this advantage over that well-known variety, that it is much more self-protecting, the heads larger, more white, and stands dry hot weather better than any other Cauliflower.
SHIRLEY HIBBERD, Esq., gives the following report in the *Gardeners' Magazine*, October 21, 1876:—"Dickson, Brown & Tait's Eclipse Cauliflower.—This is a superb variety for late supply, and is turning in well at the present time. It grows to a large size, but forms a fine close compact head in respect of appearance a first-rate variety for exhibition. It has the merit also of folding its leaves over the crown, so that it is not soon injured either by strong sunshine or sharp frost. The past season tried Cauliflowers severely, and Eclipse came through the trial so well that cultivators may be properly advised to give this variety a trial. Late Cauliflowers are of immense importance, and those that best bear extremes of weather must be made most of.—*S. H.*"
A CORRESPONDENT in *The Garden*, October 21, 1876, reports as follows:—"Eclipse Cauliflower.—After two years' trial against all other Cauliflowers I find this Cauliflower to be in every way excellent, and a most useful autumn vegetable. The flavour is sweet and delicate, and the 'flower' melting. Even averaged-sized heads are very large, and the compactness and colour are all that can be desired. Its foliage, too, is self-protecting. —*W. N.*"
Mr. W. B. URJONS, The Gardens, Worsley Hall.—"Another season's trial has convinced me that your Eclipse Cauliflower is one of the best varieties in cultivation. It is quick to grow, but is especially useful in the autumn, coming into use just when summer vegetables get scarce. Its fine white solid heads are much appreciated. We are using it yet, and expect to do so until Christmas."
In sealed packets for 2*s. 6d.* in postage stamps.
Our General Descriptive CATALOGUE of Vegetable and Flower Seeds is published, and may be had free on application.

AVENUE TREES.

PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 8 inches at 4 feet from the ground.
LIMES, 12 to 20 feet high, and girthing 6 to 10 inches at 4 feet from the ground.
POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 6 inches at 4 feet from the ground.

ANTHONY WATERER

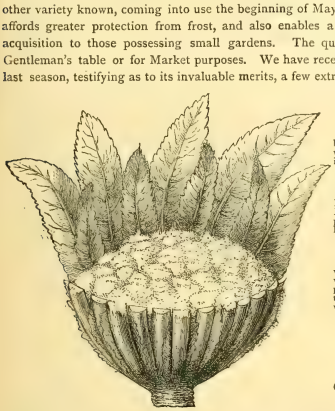
Has to offer many thousands of the above. They may be seen growing at Knap Hill. They are straight, handsome, and well rooted, and altogether the finest Trees of the kind to be found in any nursery in Europe.

KNAP HILL NURSERY, WOKING, SURREY.

HARRISON'S NEW DWARF LATE BROCCOLI,

A VALUABLE INTRODUCTION.

We have much pleasure in introducing our NEW DWARF LATE WHITE BROCCOLI, which is undoubtedly the best variety of its class. It is the hardiest Late White Broccoli extant. The heads are close, compact, and beautifully white, remaining longer fit for use than any other variety known, coming into use the beginning of May. The footstalk being so remarkably short (the heads almost resting on the ground), affords greater protection from frost, and also enables a much larger quantity to be grown on a given space of ground; thus proving a great acquisition to those possessing small gardens. The quality is excellent, and embraces everything to be desired in a Broccoli, either for a Gentleman's table or for Market purposes. We have received numerous flattering Testimonials from all parts of the kingdom, where it was grown last season, testifying as to its invaluable merits, a few extracts from which we subjoin :—



TESTIMONIALS.

From Mr. T. RABONE, *Gr. to the* Earl of Shrewsbury, *May* 10, 1876.

"Broccoli thus far north has not done well this season, but yours has done the best. Nice compact heads, very white and tender, and worthy of a place in every garden, as it takes so little room."

From Mr. G. BRIGHTON, *Gr. to* Earl Mount Edgcumbe, *May* 11, 1876.

"I have no hesitation in pronouncing your Dwarf Late Broccoli as being the best late Broccoli I have ever grown. I have had it planted with other late varieties, and it has proved infinitely superior to them all. At the present we have some splendid heads."

From Mr. J. SIMPSON, *Gr. to* Lord Wharncliff, *May* 5, 1876.

"We have been cutting your New Broccoli for the last week or ten days, and find it an excellent variety, and one which I shall add to my list in future. There is not a single plant of yours injured; it may, therefore, be put down as the hardiest. The heads are good sized, of a clear, creamy white colour, compact, and in flavour excellent."

From Mr. J. RENSHAW, *Gr. to the* Marquis of Anglesea, *May* 20, 1876.

"Your New Dwarf Late Broccoli is very good. Dwarf compact habit, with remarkably solid heads of medium size—just the thing for a gentleman's table."

From Mr. GRIMSDALE, *Gr. to the* Duke of Somerset, *May* 9, 1876.

"Your New Dwarf Broccoli is the best I ever had. I never saw anything to equal it. It is perfectly hardy, with fine flavour. I cannot speak too highly of it, and am thankful to get it. All that have seen it growing have greatly admired it, with many others."

From Mr. GEO. BEECH, *Gr. to the* Marquis of Northampton, *May* 5, 1876.

"I am now cutting your New Broccoli. It is a very late one. I have had it cooked, and pronounce the flavour all that can be desired in a Broccoli. The heads are very firm and of average size, quite hardy, and calculated to stand the winter well. The footstalk of the leaf is very short, it is exceedingly dwarf, and the most compact Broccoli I am acquainted with."

The Stock being limited, we would impress upon our Customers the necessity of sending in their Orders early to ensure a supply for this season.

Price, Retail, 1s. 6d. per Packet,

or may be had of HURST AND SON, 6, Leadenhall Street, E.C.

HARRISON & SONS, Seed Growers, LEICESTER.

T. H. P. DENNIS & COMPANY.

Motto, "Art with Economy" as applied to Conservatories.

HORTICULTURAL BUILDINGS OF ALL DESCRIPTIONS & HOT-WATER HEATING APPARATUS

ERECTED AND FITTED IN ALL PARTS OF THE KINGDOM. ESTIMATES GRATIS.

Show Rooms: MANSION HOUSE BUILDINGS, LONDON, E.C.,

where full-sized Specimens of Greenhouses, &c., and Hot-water Apparatus at work can be inspected.

Works: CHELMSFORD.

ESTABLISHED A CENTURY.

NOW READY,

WM. ROLLISSON & SONS'

NEW AND GENUINE

Flower Seeds, Vegetable Seeds, Farm Seeds,

CAREFULLY SELECTED FROM

THE BEST ENGLISH AND FOREIGN STOCKS.

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WELL GROWN STOVE, GREENHOUSE and HARDY PLANTS

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Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 4*s.* 6*d.* per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17*s.* per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5*s.* 6*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per sack.
WALKER AND CO., Farnborough Station, Hants.

COCOA-NUT FIBRE REFUSE, newly made.—Reduced price, 20 bushels, 6*s.* 8*d.*; 100, 20*s.*; or Truck-load, 40*s.* Delivered free to any rail in London.
J. STEVENS AND CO., Fibre Works, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE Protects from Cold, Frost, &c.—No Russia Mats needed. Use a layer of FIBRE REFUSE, 3*d.* per bushel, 100 for 20*s.*; truck, 40*s.*, free to any rail or wharf. As supplied to Messrs. Carter & Sons, Veitch & Sons, Bull, Wills, Ewing, Daniels Bros., Dixon & Co., Dickson & Sons, Herr Schmidt, Germany; Martin Muller, Strasburg, &c.
M. H. BENTOTE, Fibre Maker, Lausanne Road, Nunhead, London, S.E.

MANURE.—Composed of the blood, bone, &c., of animals, which are boiled down and carefully manufactured into a splendid manure on the premises of a large slaughterer. This now famous manure, possessing as it indisputably does all the properties essential to a first-class manure, has been used with the greatest success by upwards of 500 Florists, Nurserymen, Market Gardeners, and Farmers, as many testimonials can show. In stout bags free to rail or wharf, 11*s.* per cwt., 5*s.* per ton. Samples free.
M. H. BENTOTE, Lausanne Road, Nunhead (near Junction), London, S.E.

CLAY'S FERTILISER or PLANT FOOD, for Conservatory or Open Culture, is composed of the richest ingredients, and contains all the elements which enter into the composition of plants, in such proportions as are necessary for luxurious vegetation. It is extensively used and approved by the principal Florists, Nurserymen, and Gardeners, and is the most economical and reliable Manure for Flowers, Fruits, Vegetables, &c. Sold by Seedsmen, Nurserymen, and Florists, in packets, 1*s.*; and bags, 7*s. 6d.*, 12*s.*, and 20*s.*
Works: Temple Mill Lane, Stratford, London, E.

ODAMS' MANURES,
FOR ALL CROPS.
Manufactured by the NITRO-PHOSPHATE and ODAMS' CHEMICAL MANURE COMPANY (LIMITED), consisting of Tenants from those occupying upwards of 150,000 acres of Land.
Chairman—ROBERT LEEDS, Keswick Old Hall, Norwich.
Managing Director—JAMES ODAMS.
Sub-Manager and Secretary—C. T. MADDAM.
CHIEF OFFICE—109, Fenchurch Street, London, E.C.
WESTERN COUNTIES BRANCH—Queen Street, Exeter.
Particulars will be forwarded on application to the Secretary, or may be had of the Local Agents.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vine and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in Boxes, 1*s.*, 2*s.* 6*d.*, and 10*s.* 6*d.* Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6*s.*; per pint, 3*s.* 6*d.* Supplied to Seedsmen and Chemists.
Prepared by JOHN KILINER, Wortley, near Sheffield.

RUSSIA MAT MERCHANTS.—Seedsmen, Growers, and other large Buyers, can have the Wholesale Prices for ARCHANGEL and all kinds of PETERSBURG MATS, RAFFIA MATS, &c., on application to MARENDAZ AND FISHER, James Street, Covent Garden, London, W.C.

RUSSIA MATS, for Covering from Frost, from 30*s.* to 70*s.* per 100; packing from 20*s.* GUNNY BAGS, from 9*d.* each, delivered free to any Station in London.
SUTHERLAND, SON AND CO., 11, Fenchurch Buildings, Fenchurch Street, London, E.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post-free on application.
JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London, E.C.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60*s.* per 100; superior close-wove, 40*s.*, 50*s.* and 55*s.* per 100; Packing Mats at 20*s.*, 30*s.*, and 35*s.* per 100; and all other descriptions of Mats at equally low rates, at
J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

WOOD TRAINING STICKS and TALLIES, commended by Royal Horticultural Society. BAMBOO CANES, RAFFIA for tying, VIRGIN CORK, ARCHANGEL and other MATS, PACKING MATS, &c. Wholesale prices on application to
C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

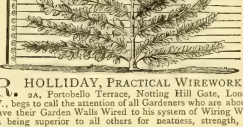
Metallic Hothouse Builder to Her Majesty.

HENRY HOPE
(late Clark & Hope, formerly Clark),
HOTHOUSE BUILDER and HOT-WATER APPARATUS ENGINEER.
55, Lionel Street, Birmingham. Established A.D. 1818.
BOOKS of DESIGNS, 5*s.* each.
☞ The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.

R. H. HAMPSON, Egerton Mills, Stockport, Manufacturer of HORTICULTURAL SHADINGS for protecting Wall Trees from Frost and Insects, &c. 54 and 60 inches wide, any length up to 100 yds. Prices on application.

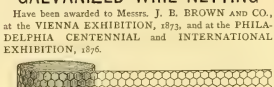
SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW AND CO., 29, Oxford Street, Manchester.

Garden Wall Wiring.



R. HOLLIDAY, PRACTICAL WIREWORKER, 9*a*, Portobello Terrace, Notting Hill Gate, London, W., begs to call the attention of all Gardeners who are about to have their Garden Walls Wired to his system of Wiring Walls, as being superior to all others for neatness, strength, and durability.
FOR NEATNESS—Because all the Wires are kept perfectly tight, without the use of the Raidisseur.
FOR STRENGTH—Because very much stronger Wire can be used, therefore not liable to be drawn out of the horizontal line by the branches of trees.
FOR DURABILITY—Because, being able to use the strong Wire, it is not so likely to be eaten through with the galvanism as the thin Wire, as used in the French system.
The above engraving is an Example of our system of Wiring Garden Walls. We have recently completed the Wiring of the New Garden Walls for the Marquis of Salisbury, Hatfield House. The Walls are 12 feet high and 753 yards long, wired on both sides; making a total length of 1506 yards—our system being chosen in preference to any other.
Illustrated Catalogues of Garden and Conservatory Wirework, Rabbit-proof Hurdle Fencing, &c., may be had on application as above.

The Sole International Prize Medals for GALVANIZED WIRE NETTING
Have been awarded to Messrs. J. B. BROWN and CO., at the VIENNA EXHIBITION, 1873, and at the PHILADELPHIA CENTENNIAL and INTERNATIONAL EXHIBITION, 1876.



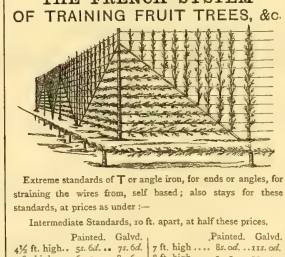
Prices per Lineal Yard, 24 inches high:—

Size of Mesh.	Mostly used for	Gauge, or Light.		Gauge, or Medium.		Gauge, or Strong.	
2 in.	Dogs or Poultry .	19	3¾*d.*	18	4½*d.*	17	5¼*d.*
1⅜ in.	Small Rabbits, &c.	19	4½*d.*	18	5¼*d.*	17	6¼*d.*
1½ in.	Smallest Rabbits.	19	5¼*d.*	18	6¼*d.*	17	8*d.*

** Price Lists, with further particulars of WIRE NETTING, IRON FENCING, POULTRY FENCES, DIAMOND and other TRELLIS WORK, on application.

J. B. BROWN & CO.,
Offices—90, CANNON STREET, LONDON.

THE FRENCH SYSTEM OF TRAINING FRUIT TREES, &c.



Extreme standards of T or angle iron, for ends or angles, for straining the wires from, self based; also stays for these standards, at prices as under:—

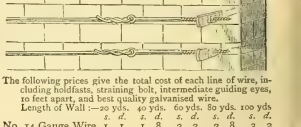
Intermediate Standards, 10 ft. apart, at half these prices.

	Painted.	Galvd.		Painted.	Galvd.
4½ ft. high..	5*s.* 6*d.* ..	7*s.* 6*d.*	7 ft. high	8*s.* 0*d.* ..	11*s.* 0*d.*
5 ft. high....	6 0 ..	8 6	8 ft. high	9 0 ..	12 0
6 ft. high....	6 9 ..	9 6	9 ft. high....	10 0 ..	13 0

RAIDISSEURS, for Tightening Wires, one to each wire, 2*s.* 6*d.* per doz. Key for winding, 4*d.* each.
SCREWS and NUTS, neater than Raidisseurs, 3*s.* 6*d.* per doz.
No. 13 WIRE, 10 inches apart, 2*s.* 6*d.* per 100 yards.
** Prices of Material for WIRING GARDEN WALLS on the FRENCH SYSTEM on application.

J. B. BROWN & CO.,
90, CANNON STREET, LONDON, E.C.

THOMAS'S
FITTINGS for WIRING WALLS.
NEW and IMPROVED SYSTEM.



The following prices give the total cost of each line of wire, including holdfasts, straining bolt, intermediate guiding eyes, 10 feet apart, and best quality galvanised wire.
Length of Wall:—20 yds. 40 yds. 60 yds. 80 yds. 100 yds

	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
No. 14 Gauge Wire	1 1	1 8	2 2	2 8	3 2
No. 13 ,, ,,	1 4	1 11	2 6	3 1	3 8

Illustrated Lists, with full particulars of the above, and Fittings for Espalier Trainers, on very economical principles, free on application.
Five per cent. discount allowed for prompt cash on orders amounting to 20*s.* and upwards.
Special quotations for larger quantities.

J. J. THOMAS & CO.,
PADDINGTON WIREWORKS,
285 and 362, EDGWARE ROAD, LONDON, W.

E. T. ARCHER'S "FRIGI DOMO."—Patronised by Her Majesty the Queen, for Windsor Castle and Frogmore Gardens, the late Sir. J. Paxton, and the late Professor Lindley, &c.
MADE of PREPARED HAIR and WOOL.
A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for Fits and Forcing Frames.
PROTECTION from COLD WINDS and MORNING FROSTS.
"FRIGI DOMO" NETTING, 2 yards wide, 1*s. 4d.* and 1*s. 10d.* per yard.
"FRIGI DOMO" CANVAS,
2 yards wide .. .. .. 1*s. 10d.* per yard run.
3 yards wide .. .. .. 2*s.* per yard.
4 yards wide .. .. .. 2*s. 10d.* per yard.
ELISHA T. ARCHER, only Maker of "Frigi Domo," Brockley Road, Forest Hill, London, S.E.; and of all Florists and Seedsmen. All goods carriage paid to London.
NOTICE—REMOVED from 3, CANNON STREET, CITY.

Established over a Quarter of a Century.

FRANCIS MORTON & Co's (LIMITED) LIVERPOOL NAYLOR STREET CABLE FENCING

Is in use over many thousand miles,
And has been awarded the Medals and highest Commendation of all the leading Agricultural Societies.
It is constructed with
POWERFUL WINDING STRAINING PILLARS,
RIGID INTERMEDIATE IRON POSTS,
STRONG and DURABLE WIRE CABLE STRANDS,
Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

Continuous Bar Iron Fencing.



With bars secured by F. J. M. & Co.'s Patent Self-locking Joints, which effectually prevent the uprights being pushed aside, and are independent of loose pins, wedges, or staples.

IRON ENTRANCE and FIELD GATES,
IN WROUGHT AND CAST IRON,
Designed for the Mansion, Villa, or Farm,
WICKET AND GARDEN GATES,
In Great Variety of Patterns.
Iron Hurdles, Railing, Tree Guards,
FRUIT ESPALIERS, WALL FRUIT TRAINERS, &c.
☞ *Illustrated and Described in F. M. & Co.'s New Catalogue, sent on application.*

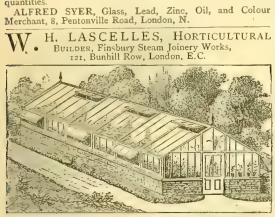
LONDON BRANCH—
1, DELAHAY ST., WESTMINSTER, S.W.

TOULOUSE GEESE.—Hon. Mrs. Colvile has several good Young GANDERS and GEESE to Dispose of, the same hatches as her prize and highly commended birds.
Hon. Mrs. COLVILE, Lullington, Burton-on-Trent.

SILVER-GREY DORKINGS for Sale.—Several good COCKERELS, from the same parents as those which took prizes at Derby and Islington, and the highly commended pullet at Birmingham.
Hon. Mrs. COLVILE, Lullington, Burton-on-Trent.

HORTICULTURAL WINDOW GLASS.—A large variety of sizes, 15 oz., 12s. 6d. per 100 feet. Large sizes, in Cases, for Cutting up, 15 oz. 4ths, 36s.; 3ds, 40s. per 300 feet. 21 oz. 4ths, 36s.; 3ds, 46s. per 200 feet. Prices forwarded for large and special quantities.
ALFRED SYER, Glass, Lead, Zinc, Oil, and Colour Merchant, 8, Pentonville Road, London, N.

W. H. LASCELLES, HORTICULTURAL BUILDER, Finsbury Steam Joinery Works, 121, Bunhill Row, London, E.C.



Estimates given on application for GREENHOUSES and CONSERVATORIES of all kinds, and to any design.

GARDEN EDGING TILES and LIGHTS. Each.
Portable Box with One Light, 6 feet by 4 feet, glazed, good 16-oz. sheet glass, painted four coats, and packed ready for use 35 0
Portable Box with Two Lights, as above, each light 6 feet by 4 feet 65 0

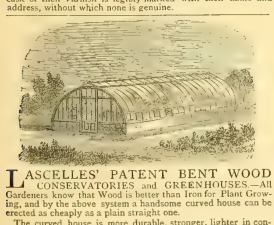
LIGHTS ONLY.
3 feet by 4 feet Light, not painted nor glazed 3 6
Ditto glazed, good 16-oz. sheet glass, and painted 4 coats 10 0
6 feet by 4 feet, not painted nor glazed 6 0
Ditto glazed and painted four coats 16 6

Oil Paint No Longer Necessary.



HILL AND SMITH'S BLACK VARNISH for Preserving Ironwork, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on replication.
Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED TESTIMONIAL.
Glanywilly, Llanybmphant, Carmarthen, Nov. 27, 1873.—"Mr. Lloyd Lloyd encloses cheque for £3 5s., amount due to Messrs. HILL & SMITH, and he considers the Black Varnish one of the most useful things he ever possessed."
Apply to HILL and SMITH, Briery Hill Ironworks, near Dudley; and 118, Queen Victoria Street, London, E.C., from whom only it can be obtained.
CAUTION.—Is having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, they would especially draw attention to the fact that every cask of their Varnish is legibly marked with their name and address, without which none is genuine.



LASCELLES' PATENT BENT WOOD CONSERVATORIES and GREENHOUSES.—All Gardeners know that Wood is better than Iron for Plant Growing, and by the above system a handsome curved house can be erected as cheaply as a plain straight one.
The curved house is more durable, stronger, lighter in construction, and no bent glass is required.
W. H. LASCELLES, 121, Bunhill Row, London, E.C., will supply Drawings and Estimates free of charge.

BELGIAN GLASS for GREENHOUSES, &c., Can be obtained in all sizes and qualities, of
BETHAM & SON,
9, LOWER THAMES STREET, LONDON, E.C.
B. & S. have always a large Stock in London of 20-in. by 12-in., 20-in. by 14 in., 20 in. by 16 in., in 16-oz. and 21-oz.

THE PATENT EXCELSIOR LAWN MOWER,
The simplest and best ever introduced.

Waite, Burnell, Huggins & Co.,
228, UPPER THAMES STREET, LONDON, E.C.,
Sole Consignees for Great Britain, Ireland and France, have pleasure in submitting the "Excelsior" as possessing the following advantages over other Mowers:—

It cuts longer grass,
Wet or dry.
The gearing is all
covered.
It cannot clog.
Its draft is lightest.
It needs less repairs.
Its adjustments are more
simple.
It rolls the ground.
It cuts the borders.
Is a perfect mower.

Has never been beaten in Competitive Trials.

PRICES:
(Including Collecting Boxes)

To cut 8 inches	£2 10 0	To cut 14 inches	£5 15 6
,, 10 inches	3 10 0	,, 16 inches	6 16 6
,, 12 inches	4 10 0	,, 18 inches	7 17 6

To cut 30 inches, £8 18s. 6d.
Larger Sizes for Pony and Horse Power.

Catalogues and Trade Terms on application to
WAITE, BURNELL, HUGGINS & CO.,
228, UPPER THAMES STREET, LONDON, E.C.

A PERFECT CURE for SMOKY CHIMNEYS—The REGISTERED COWL. Made by GEO. HALL, High Street, Worcester.

PATENT PORTABLE SMOKELESS STOVES and PATENT FUEL.
For Heating Conservatories, Greenhouses, Halls, Passages, and places without Chimneys, from 22s. 6d.
NASH'S BRONCHITIS KETTLE, 10s. 6d.
FRETWORK and CARVING FRAMES, SAWS, FILES, PATTERNS and PREPARED WOOD.
SWAN NASH, 253, Oxford Street, W.; and 4, Newgate Street, E.C. Prospectus free.

Hothouses, Hot-water Apparatus, &c.
HALLIDAY AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS. Estimates and Plans free. Construction! Best materials! Best workmanship! Catalogues free.
Offices, 22, Barton Arcade, MANCHESTER.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.
For particulars apply to JOHN FOWLER AND CO., 71, Cornhill, London, E.C., and Steam Plough Works, Leeds.

JAMES LYNE HANCOCK'S
Improved India-rubber Socket-rings
FOR THE
JOINTS of HOT-WATER PIPES.



Description of Sketch:—
A. The Rubber Ring as rolled into the Socket.
B. The Ring before inserted in the Pipe.
These Rings are made any size to order. All ordinary sizes are kept in stock.
Illustrated Price List on application.

J. L. HANCOCK,
VULCANISED INDIA-RUBBER WORKS,
266, GOSWELL ROAD, LONDON, E.C.



WRIGHT'S PATENT
ENDLESS-FLAME-IMPACT
HOT-WATER BOILER.

Awarded the only English Medal for the best Hot-water Apparatus at the United States Centennial Exhibition at Philadelphia.
For prices and full particulars please see our pamphlet, entitled "Our Boilers and Heating," which will be handed post-free on application.

WILLIAM WRIGHT & CO.,
HOT-WATER ENGINEERS, AIRDRIE, N.B.

STEVENS'
TRENTHAM GREENHOUSE BOILER.



After long experience, has proved the most SIMPLE ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved. For Illustrations, with full particulars, apply to the Sole Makers,

F. & J. SILVESTER,
HOT-WATER ENGINEERS, &c., &c.,
Castle Hill Works, Newcastle, Staffordshire.

☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

AN EXTRAORDINARY BOILER.—During the Great Boiler Contest at Birmingham, in 1872, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 100 feet of 4-inch pipes, and yet had more than 1 bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing! What a boon to Gardeners. This was THE CHAMPION, Deards' Patent Close Coil Boiler, for Drawings and Prices of which send two stamps to

Messrs. DEARDS, Boiler Works, Harlow,

who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

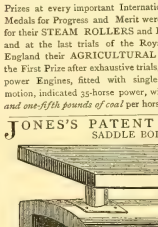
AGRICULTURAL LOCOMOTIVES,
STEAM PLOUGHING MACHINERY,
ROAD LOCOMOTIVES, TRAMWAY LOCOMOTIVES, STEAM ROAD ROLLERS.

For Prices, Description, and Reports of Working, apply to the Manufacturers,

AVELING & PORTER,
ROCHESTER, KENT; 72, CANNON ST., LONDON, E.C.; and 9, AVENUE MONTAIGNE, PARIS.

AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of *three and one-fifth pounds of coal* per horse-power per hour.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 in.	18 in.	300	7 0 0
20 ,,	18 ,,	24 ,,	400	8 0 0
20 ,,	18 ,,	30 ,,	500	9 0 0
24 ,,	24 ,,	24 ,,	700	12 0 0
24 ,,	24 ,,	30 ,,	850	14 0 0
24 ,,	24 ,,	36 ,,	1,000	16 0 0
24 ,,	24 ,,	48 ,,	1,400	20 0 0
28 ,,	28 ,,	60 ,,	1,800	25 0 0

Larger sizes if required.

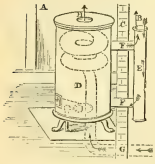
From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.
"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.
J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.
When ordering Boilers please refer to the above advertisement,

GEORGE'S PATENT CALORIGEN,

FOR

Warming and Ventilating Small Conservatories.



The only Gas Stove in which the product of combustion is entirely excluded from the Conservatory.

Made in Wrought Iron, £3 3s.

Made in Copper, £5. Height, 28 inches; diameter, 14 inches.

It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Conservatories, Offices, &c. Exhibited at the Exhibition of 1871 (Department of Scientific Inventions).

Illustrated Prospectuses and Testimonials on application.

J. F. FARWIG AND CO., 36, Queen Street, Cheapside, E.C.

This Stove introduces a strong current of warmed (not burnt) fresh air.

LIMEKILN HEATING.

This System of HEATING WINTER GARDENS, CONSERVATORIES, ORANGERIES, FERNERIES, VINERIES, FORCING HOUSES, PINERIES, CUCUMBER, MELON and MUSHROOM HOUSES, STOVES, PITS, &c.—also for WARMING MANSIONS, PUBLIC BUILDINGS, FACTORIES, &c., is steadily making progress in public estimation, effecting as it does

Great Economy of Fuel and Steadiness of Heating Power,

and rendering the hitherto onerous duties of Stoker comparatively light—no night stoking whatever being necessary.

List of Places where the System is in Operation, with full address in each case, will be sent post-free on application.

Gentlemen and Gardeners wishing to adopt this System will then be enabled to view the Apparatus nearest to their own Establishments, or write to the Gardener, and thus get independent testimony as to the value of this method of Heating.

Estimates will be submitted, on receipt of particulars, free of charge.

FULL PARTICULARS POST-FREE.

Cowan Patents Company (Limited),
21, WHITEHALL PLACE, LONDON, S.W.,
and The Vineyard, Garston, near Liverpool.

GREEN'S PATENT
Wrought-iron Hot-water Boilers,
With Shelves and Hollow Grate Bars.

Specially adapted for heating Greenhouses, Conservatories, Churches, Chapels, Schools, Public Buildings, Entrance Halls, Warehouses, Workshops, &c.

They are the neatest, cheapest, most effective, and durable of any extant.



FRONT ELEVATION LONGITUDINAL SECTION CROSS SECTION

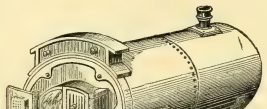
Descriptive Illustrated Priced LIST may be had free on application to

THOMAS GREEN AND SON, Smithfield Ironworks, Leeds; and 54 and 55, Blackfriars Road, London, S.E.

THE THAMES BANK IRON COMPANY,

Old Barge Wharf, Upper Ground Street, London,

HOT-WATER BOILERS. SURREY SIDE, BLACKFRIARS BRIDGE. PIPES, CONNECTIONS.



("TRENTHAM IMPROVED" BOILER.)



("GOLD MEDAL" BOILER.)

NEW PATENT "CLIMAX" BOILER (1874). See p. 666, 1874, *Gardeners' Chronicle.*

"GOLD MEDAL" BOILER (Birmingham, 1872).

PATENT "EXCELSIOR" BOILER (1871).

☞ *The largest and most complete Stock in the Trade; upwards of Twenty Thousand Pounds' worth to choose from.*

"WITLEY COURT" BOILER (Silver Medal 1872).

"TRENTHAM IMPROVED" BOILER, with Waterway End and Smoke Consumer.

"TUBULAR," and every other Boiler of known merit or excellence.

☞ *Prize Medal Awarded at the National Contest, Birmingham, 1874.*

MILL'S PATENT AUXILIARY FUEL ECONOMISER,

Which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boilers, Fire-Bars, and Furnace Fronts ever yet introduced to the public.

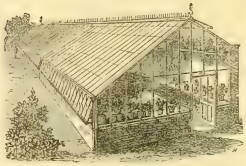
STAINTON'S NEW PATENT FROST DEFYING LIQUID (see "Gardeners' Chronicle," Aug. 19, 1876).

HOT-WATER APPARATUS ERECTED COMPLETE.

PRICE LIST on application; or, Six Stamps for DESCRIPTIVE CATALOGUE, 4th Edition.

W. C. SMITH & CO., HORTICULTURAL ENGINEERS,

Victoria Works, Bury St. Edmunds.



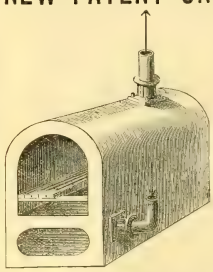


SOLE MANUFACTURERS of BEARD'S PATENT METALLIC NON-CONDUCTING GLASS-HOUSES.—The Glass is fixed between two layers of prepared felt. The Ventilators are worked by a simple mechanical contrivance, and the whole structure is screwed together so as to render it quite portable. HEATING APPARATUS IN ALL ITS BRANCHES.

ORNAMENTAL CONSERVATORIES and HORTICULTURAL BUILDINGS of EVERY DESCRIPTION.—For lightness, elegance and durability, these Houses cannot be surpassed. The best materials only are used in their construction. Great improvements have recently been made, to obviate the objections to iron houses. Very extensive works on this principle have been satisfactorily executed. *An Illustrated Catalogue forwarded post-free on application.*

NEW PATENT UNDER-FLUED SADDLE BOILER.

Positively the most Economical Boiler invented.



NO WASTE HEAT—Furnace and Flues within Boiler.

HEATING SURFACE VERY GREAT—Every part of it exposed to the direct action of the heat.

FLUE LEAVING BOILER *NO HOTTER* THAN *RETURN WATER* ENTERING IT—This unattainable with any other Boiler.

ILLUSTRATED PAMPHLET with PRICE LIST on application.

HOT-WATER PIPES, CONNECTIONS and BOILERS—Being manufacturers we can supply these at the lowest possible prices and of guaranteed quality.

HOT-WATER APPARATUS ERECTED COMPLETE in all parts of the country.

ANDREW McLAREN & CO.,
RONFOUNDERS, 174, UPPER THAMES STREET, LONDON, E.C.

GARDENERS' CHRONICLE SHEET ALMANAC.

With the Number for January 6 is issued (gratis) an ILLUSTRATED SHEET ALMANAC for 1877 (an entirely new and original design).

The Almanac may be had separately, mounted on rollers, price 6d., post-free.

Also on thick Cardboard, which must, however, be ordered through a News Agent, as it cannot go through the Post.

PUBLISHED BY

W. RICHARDS, 41, WELLINGTON STREET, STRAND, LONDON, W.C.



THE IMPROVED SELF-ACTING HYDRAULIC RAM.

This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to any height or distance, without cost for labour or motive power, where a few feet fall can be obtained, and is suited for supplying Public or Private Establishments, Farm Buildings, Railway Stations, &c.

No. 37. DEEP WELL PUMPS for Horse, Hand, Steam, or other Power.

No. 63. PORTABLE IRRIGATORS, with Double or Treble Barrels for Horse or Steam Power.

No. 45*a*. IMPROVED DOUBLE ACTION PUMPS on BARROW for Watering (Gardens, &c.

No. 49*a*. GALVANISED SWING WATER CARRIERS, for Garden use.

No. 50 and 54*a*. FARM and MANSION FIRE ENGINES of every description.

No. 38. PORTABLE LIQUID MANURE PUMPS, on Legs, with Flexible Suction.

No. 49. GARDEN ENGINES, of all sizes, in Oak or Galvanised Iron Tubs.

No. 54*b*. THE CASSIOBURY FIRE EXTINGUISHER, as designed for the Right Hon. the Earl of Essex.

No. 44. WROUGHT-IRON PORTABLE PUMPS of all sizes.

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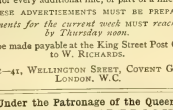
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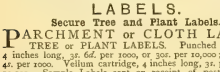
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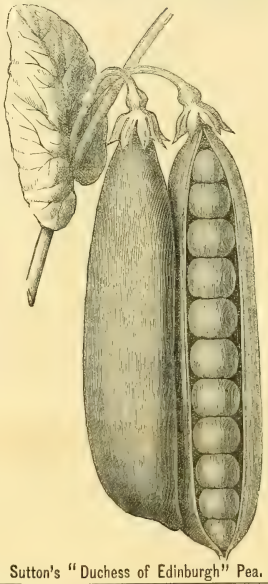
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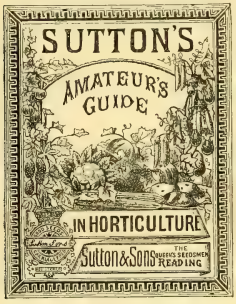
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WM. CUTBUSH AND SON have a few hundreds of their splendid HYACINTHS left, which they can offer by the 100, very cheap for cash. Price on application. Highgate Nurseries, London, N.

To the Trade.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Clifton, Bristol, have to offer—
PEACHES and NECTARINES, standard maiden, in leading varieties, clean and well grown, 24s. per dozen.
FILBERTS, best variety, good, 30s. per 100.
CURRANTS, Black, strong and clean grown, 6s. per 100.

VERBENAS, VERBENAS, VERBENAS.—Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6s. per 100, 50s. per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, for 8s. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

PALMS for TABLE DECORATION.—Twelve distinct choice sorts, ready to pot on into 5-inch pots, 21s. Established in that size about 2 feet high, fit for immediate decoration, 42s. and 63s., according to sorts. A large and valuable collection of exhibition specimens, from 21s. each. Packages gratis for cash with orders.
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LARGE TREE BOX and EVERGREEN HOLLY.—Handsome, bushy, and well-rooted, will transplant and grow freely, 3 feet high, 8 feet high. Tree Box lives under trees better than any other Evergreen tree. An inspection invited. Price on application to
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To the Seed Trade.

OUR WHOLESALE CATALOGUE is now ready, and may be had on application. A copy has been posted to all our Customers, if not received an early intimation to us.
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Seeds, Seeds, Seeds, 1877.

VEGETABLE and FLOWER SEEDS, of Superior Quality, free. Priced and Illustrated Descriptive CATALOGUE free by post on application.
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PEAR STOCKS.—The Subscribers have a few thousand Pear Stocks left on hand, at once, and beg to offer them at the following very low prices:—
3-yr. transplanted, fine, 25s. per 1000.
2-yr. seedlings, fine, 6s. per 1000.
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To the Trade.

PEACHES, CHERRIES, APPLES, and PEARS, splendid dwarf-trained; finer plants cannot be desired.
QUICKS, 500,000 fine, strong, transplanted.
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To the Trade.

MESSRS. LEVAVASSEUR AND SON, Nurserymen, Ussy, Calvados, France, have an immense stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted. Priced CATALOGUES may be had of
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TWELVE BEAUTIFUL ORCHIDS, 42s., established plants of fine sorts, as Cattleya citrina, Lælia autumnalis, Lælia albida, Oncidium Lanceanum, Dendrobium, and upwards of fifty other sorts. They have all made fine growth this season.
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Established 1727.
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CAMELLIAS, 500, from 2½ to 5 feet, of all the leading kinds, in fine bushy, healthy, well-grown stuff, to be offered at very moderate prices as the room is required for other things. Also 1000 Camellia planting canes, of all the leading kinds, well ripened, 30s. per dozen. LISTS on application.
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To the Trade.

OSBORN AND SONS can still supply dwarf maiden PEACHES, NECTARINES, and APRICOTS of the leading kinds, and a few Standards. Also Dwarf and Standard APPLES, PEARS, PLUMS, and CHERRIES.
Fulham Nurseries, London, S.W.

From Paris.—Roses, Pæonies, Camellias.

LÉVÊQUE AND SON, Nurserymen 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand strong, healthy Flowering BULBS of GLADIOLI. The Seedling Bulbs are particularly recommended—their flowers equal to the named sorts (seeds have been taken from the best sorts of the collection). GLADIOLI, Seedlings, 8s. per 100, £3 per 1000, £26 per 10,000; mixed white, red, pink. Separate colours, 12s. to 20s. per 100; yellow, 24s. per 100. Named sorts per 100, 10 sorts, 10s.; 25 sorts, 20s.; 50 or 100 sorts (the best), from 25s. to £6, less or more, according to the novelty, &c. Good flowering bulbs. English Cheques on London, or Post-office Orders on Paris, accepted in payment.

The Best Scarlet-fleshed Melon.

SUTTON'S HERO OF BATH.
—*From* Mr. W. Wildsmith, *Gr. to* the Right Hon. Viscount Eversley.—"I consider your Hero of Bath the best scarlet-fleshed Melon yet in commerce, being A 1 in quality, appearance, and productiveness. His Lordship, who previously had a prejudice against scarlet-fleshed Melons, pronounces this variety superb."
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Price 2s. 6d. per packet.
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These Nurseries comprise about 50 Acres of well-grown and a most useful assortment of STANDARD, ORNAMENTAL, FOREST, FRUIT, and ROSES, and SHRUBS, all of which are in a most healthy and fit condition for removal. A personal inspection invited. CATALOGUES free on application.
The Nurseries are within a few minutes' walk of the Clapham Junction and Wandsworth Common Railway Stations.

New Catalogue of Hexaceous and Alpine Plants.

JAMES BACKHOUSE AND SON, York.—This is now in the printer's hands, and will be issued shortly. It will be found to contain many choice novelties; among these are a new Primula (probably the finest of all), a red-chequered Golden Fritillary, three new Crocuses, a first-class dwarf Campanula, Polygala Chamæbuxus purpurea, Iberis pinnata, &c. Will be sent on application as soon as published.

Shallot Seed.

DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild; with ordinary treatment bulbs have been grown to 21 inches in circumference—by far the best method of growing the Shallot. Treatment same as Onions. Price 1s. per packet. May be had of principal Seedsmen in town and Wholesale of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C., or
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AVENUE TREES.

Chestnut, 2 kinds, 8 to 12 feet.	Poplars, 3 kinds, 8 to 12 feet.
Elms, 6 kinds, 8 to 12 feet.	Sycamores, 3 kinds, 8 to 12 feet.
Oaks, 3 kinds, 8 to 12 feet.	Sorbus, 3 kinds, 8 to 12 feet.
Laburnum, 2 kinds, 8 to 12 ft.	Limes, 8 to 12 feet.
	Tulip Trees, 8 to 12 feet.

All the above are very fine and very cheap.
CHARLES NOBLE, Bagshot.

NEW DRACÆNAS.—Twelve of the finest in cultivation for 21s., well established young plants, growing freely, and potted on now will do finely potted in the autumn—D. Baptisti, D. Youngii, D. Imperialis, &c., included. Packages gratis for cash with order.
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WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

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ROBERT AND GEORGE NEAL have the above to offer in large or small quantities, 1-yr., 2-yr., and 3-yr. old:—
1-yr. old, 30s. per 1000.
2-yr. old, 35s. per 1000.
3-yr. old, 35s. per 1000.
Price to the Trade on application.
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VINES, strong planting and fruiting Canes of Black Hamburgh, Black Alicante, Lady Downe's, Gros Colman, Foster's Seedling, Muscat of Alexandria, Madresfield Court, Mrs. Pince, Dr. Hogg, Waltham Cross, 2s. 6d., 3s., 3s. 6d., and 5s. each; Veros Black Muscat and Veros Golden Queen, 7s. 6d. to 12s. 6d. each.
ROSES, dwarf hybrid perpetual, best sorts, 7s. per dozen, 50s. per 100.
APPLES, PEARS, PLUMS, and CHERRIES, pyramids, 12s. and 18s. per dozen; dwarf-trained, 30s. per dozen.
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WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

The Best Medium and Late Kidney Potato in CULTIVATION.

SUTTON'S MAGNUM BONUM.
A remarkably good cooking Potato.
An enormous cropper.
Almost entirely free from disease.
Indispensable for show purposes.

From Mr. J. P. BELLISS, *Gr. to* Major Thoyts, *Sulhampstead, Nov.* 15, 1876.

"I bought of you in March, 1876, 1 lb. of Magnum Bonum Potatos, cut them into 50 sets, and planted them 3 feet apart. The haulm covered every foot of ground, and I am convinced that 3 feet square will be more room than was necessary, being a strong growing variety. I lifted the crop in October, and from two sets I dug 21 lb., and altogether 196 lb. of good sound Potatos."

Price 5*s.* per peck, 17*s.* 6*d.* per bushel.

SUTTON'S DESCRIPTIVE LIST of choice Seed Potatos gratis and post free.

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H. CANNELL begs to announce that he has a splendid stock of the following, established in 60's, just ready for shifting :—

CALCEOLARIAS, *2s. 6d.* per dozen.
PRIMULAS, *2s. 6d.* per dozen.
CINERARIAS, *2s. 6d.* per dozen.

Smaller, 12. per dozen less, and post-free. Special prices per 100 or 1000.

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WILLIAM HOLMES has to offer the following :—

JASMINUM NUDIFLORUM, in pots, strong, 50*s.* per 100.
,, common White, in pots, strong, 50*s.* per 100.
IVIES, Irish, in 32's, extra fine, 100*s.* per 100.
,, from ground, fine, 25*s.* per 100.
CLOVES, old English, true, 20*s.* per 100 pairs.
,, And in the spring :—
ALTERNANTHERA AMŒNA, 12*s.* per 100.
,, PERONYCHOIDES, 8*s.* per 100.
,, MAGNIFICA, 5*s.* per 100.

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VINES, strong, 36*s.* per dozen.
ERICAS, vestrocina and hybrida, in 48-pots, at 12*s.* per dozen, 80*s.* per 100.
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EDWARD TAYLOR, NURSERYMAN, Malton, Yorkshire, will be glad to quote special prices for the following on application :—

CHESTNUTS, Horse, 7 to 8 feet,
FIR, Larch, transplanted, 1 to 1½, 1½ to 2, and 2 to 3 ft.
,, Scotch, 6 to 9 inches.
YEWS, English, 9 to 2½ and 2½ to 3½ feet.
GOOSEBERRIES, 100 choice sorts.
CURRANTS, Red and Black, in sorts.
PRIVET, Evergreen, 1½ to 2 feet.
LIMES, very fine, 7 to 8 feet,
QUICKWOOD, various sizes. [trained.
PEACHES, NECTARINES, and APRICOTS, dwarf-
TRITOMA UVARIA and GRANDIFLORA.

CATALOGUES gratis and post-free.

CHARLES NOBLE, Bagshot, can offer the following :—

ROSES, Dwarf, 4*s.* per dozen, 25*s.* per 100, 210*s.* per 1000.
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RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1½ to 2 feet, 21*s.* per dozen, 150*s.* per 100.
,, ,, ,, for immediate effect, 2½ to 4 feet, and same through, 42*s.* per dozen, 300*s.* per 100.
,, Seedling, ½ to 1½ feet, 24*s.* per dozen, 200*s.* per 100.
,, PONTICUM, 1½ to 2 feet, bushy, 6*s.* per dozen, 35*s.* per 100.
KALMIA LATIFOLIA, 1 to 1½ foot, buds, for potting, 75*s.* and 100*s.* per 100.
ANDROMEDA FLORIBUNDA, buds, for potting, 75*s.* and 100*s.* per 100.
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SOFT-WOODED and OTHER PLANTS, of good quality, true to name, and very cheap.

Begonias, tuberous, to name, 9*s.* per dozen ; B. Frobelli, 2*s.* 6*d.* each ; Begonias, fine bedding, 6*d.* sorts, Abutilons of sorts, 4*s.* per dozen ; Fuchsias, twelve sorts, 3*s.* ; Chrysanthemums, twelve sorts, 3*s.* ; Coleus, twelve sorts, 3*s.* ; Pentstemons, twelve sorts, 3*s.* ; Verbenas, twelve sorts, 3*s.* ; Heliotropes in variety, 2*s.* 6*d.* per dozen ; Ageratums, 2*s.* per dozen ; Lantanas, in sorts, 3*s.* per dozen : Salvias, in sorts, 3*s.* per dozen ; Carnations and Picotees, 6*s.* per dozen : Show Pinks and Pansies, 4*s.* per dozen ; Mimulus, in variety, 3*s.* per dozen ; Saxifragas and Sedums in variety, 3*s.* ; Tropæolums, in variety, 3*s.* per dozen ; Peonies, Delphiniums and Potentillas, 9*s.* per dozen ; Pyrethrums, 6*s.* per dozen.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

CHARLES LEE AND SON (Successors to Messrs. John & Charles Lee), of the Royal Vineyard Nursery, Hammersmith, W., beg to announce that in consequence of the retirement of Mr. John Lee from the business they have TAKEN OVER the ENTIRE NURSERY and SEED TRADE so successfully carried on for many years by the late Firm, and they trust the same liberal patronage so long given to Messrs. John & Charles Lee will be continued to the New Firm.

Charles Lee & Son pledge themselves to devote all their energy to raising First-class Stock in every department, which the long resources at their command will enable them to supply with considerable advantage to the Public both as regards quality and price. With a view to a more extensive production of Stove and Greenhouse Plants of the best quality they intend to almost entirely rebuild their extensive ranges of Glass on a new site, a portion of the old Nursery being taken up for building purposes. All orders to be addressed to

CHARLES LEE AND SON, Royal Vineyard Nursery, Hammersmith, W., where the general business of the Nursery and Seed Trade will be carried on ; or to

Mr. DIXON, Feltham Nursery ; Mr. CANNON, Ealing Nursery ; Mr. WEBB, Arboretum, and Mr. MARSLEN, Wood Lane, Isleworth.

NEW SEED CATALOGUE

For SPRING, 1877.

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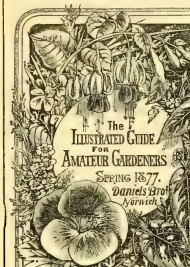
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The Illustrated Guide for Amateur Gardeners, Spring, 1877,

Contains 112 pages of beautifully illustrated Letterpress, with two superbly finished Coloured Plates, Original Articles on the Rearing and Cultivation of various Garden Crops and Flowers, and complete Instructions for the successful Management of the Kitchen and Flower Gardens throughout the year, together with a Select List of choice Kitchen Garden and Flower Seeds, Seed Potatos, &c.

The most practical and comprehensive Guide for the Amateur yet issued, and should be read by every one having a garden.



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"This is the most tasteful and best executed thing of the kind that we ever remember having seen, and would be an ornament to any room."—*The Country.*

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The Royal Norfolk Seed Establishment,
NORWICH.

SPECIMEN AZALEAS (Winter flowers).—An abundance of splendid flowers can be had in a week or two, or at once, by purchasing a few Specimen Azaleas, now opening flower. The plants are from 2 to 3 feet over, perfect shape, some hundreds of flowers and buds, which will last for months at this time of the year. All new and valuable sorts. 21*s.*, 31*s.* 6*d.*, and 42*s.* each, according to size and sorts. Eighteen plants only are for Sale. They are all worth double the money. Packages gratis for cash with order.

JOHN H. LEY, Royal Nursery, Croydon.

LILIUM AURATUM.—Fine Bulbs of this "Queen of Lilies" can now be supplied at 6*d.*, 9*d.*, 12*s.*, and 15*s.* 6*d.* each ; splendid English-grown Bulbs, 12*s.*, 21*s.* 6*d.*, 25*s.* and 30*s.* 6*d.* each. Sample of two bulbs, postage 6*d.* extra ; more cannot be sent by post. Good and varied selection of Lilies 12*s.*, 24*s.*, and 30*s.* per dozen. Price List on application. Post-office orders payable at Fenchurch Street, E.C.

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THE following SPECIMEN PLANTS, in fine health and condition, from the plant-houses of a Gentleman relinquishing their growth for the cultivation of Grapes, will be Sold cheap. Height and widths given in feet, tr. for 12*s.* or trellis :—

Anthurium crystallinum, strong, in 10-inch pot	Livistona australis, 4½ by 5½
Bougainvillea speciosa, 2½ by 2 tr.	Livistona rotundifolia, 2½ by 4
Clerodendron Balfourianum speciosum, 2½ by 2	Latania borbonica, 4 by 3
Chamærops excelsa, 2½ by 2½	Pychosperma Cunninghamii, 1½ foot stem, 3 — 3 feet fronds
Cissus amazonica, 2 by 1½	Phœnix dactylifera, 3 feet
Cissus discolor, 2½ by 2	Rondeletia speciosa major, stands 4 feet
Euphorbia splendens, 2½ by	Stephanotis floribunda, 2½
Ficus Parcellii, 2 by 3	by 1½ tr., and 3½ by 2 tr.
Hoya carnosa, 3 by 1½ tr.	Thunbergia laurifolia, 1½ by
Jasminum Sambac, 2½ by 2	1½ tr.

STEPHEN BROWN, Seed and Plant Establishment, Weston-super-Mare.

STEPHANOTIS FLORIBUNDA.—Strong specimen plants of a very free-flowering variety, 10*s.* 6*d.* each ; smaller, but fine half specimens, which will produce abundance of flower early, the buds just appearing on some, 7*s.* 6*d.* each, 63*s.* per dozen ; in 48-pots (flowered last summer), 30*s.* per dozen. This offer is for six weeks only, to make room, the plants being worth double the money.

JOHN H. LEY, Royal Nursery, Croydon.

To the Trade.—Sandringham Early Kidney Potato.

H. AND F. SHARPE have secured a fine stock of the above excellent POTATO, which is pronounced to be not only the earliest, but the most prolific, and the finest quality in cultivation. Being very short in the haulm it is peculiarly adapted for forcing purposes. Price and further particulars may be had on application.

Seed Growing Establishment, Wisbech.

To Purchasers of Large Quantities, Market GARDENERS and OTHERS.

SUTTON AND SONS can offer true stocks of the following Peas at very moderate prices :—

SUTTON'S IMPROVED EARLY CHAMPION, the best and most productive in cultivation.

Sutton's Ringleader	Advancer
Daniel O'Rourke	Sutton's Racehorse
Fortyfold	Champion of England
Scimitar	Veitch's Perfection,

and other leading kinds.

SUTTON AND SONS, Seed Growers, Reading.

Rhododendrons.

J. MATTHEWS AND SON, Milton Nurseries, Stoke-on-Trent, Staffordshire, have to offer the following :—

RHODODENDRONS, 100,000, fine bushy plants, thinly grown and well-rooted.
,, SPLENDIDUM, 10,000, white, 1 to 1½ foot, 37*s.* 6*d.* per 100.
,, CAUCASICUM PICTUM, 20,000, light scarlet, 1 to 1½ foot, 50*s.* per 100.
,, JACKSONII, scarlet, 1 foot, 40*s.* per 100 ; 1 to 1½ foot, bushy, 65*s.* per 100.
,, HYBRIDS, from all the choicest named varieties, 1 foot, bushy, 20*s.* per 100 ; 1 to 1½ foot, 30*s.* per 100 ; 1½ to 2 feet, 40*s.* per 100.
,, PONTICUM, 10 to 12 inches, 50*s.* per 1000 : 12 to 15 inches, 80*s.* per 100 ; 15 to 18 inches, 15*s.* per 100 ; 18 to 21 inches, 20*s.* per 100 ; 2 to 3 feet, 30*s.* per 100 ; 3 to 3½ feet, bushy, 80*s.* per 100.

YEWS, English, clean, well-grown plants, 6 to 9 inches, 40*s.* per 1000 ; 9 inches to 1 foot, 50*s.* per 1000 ; 1 to 1½ foot, 30*s.* per 100.

CUPRESSUS LAWSONIANA, fine Ornamental tree for Lawns or Wood Planting as shelter for Game, also for Garden Fencing, 2 to 3 feet, 30*s.* per 100 ; 3 to 4 feet, 50*s.* per 100.

ASH, Mountain, 2½ to 3½ feet, 25*s.* per 1000.

BOX, Tree, 1 to 1½ foot, 12*s.* 6*d.* per 100 ; 1½ to 2 feet, 20*s.* per 100.

CURRANTS, quantity of extra strong Black Grape, 10*s.* per 100.

CATALOGUES of all other Nursery Stock free on application.

SURPLUS STOCK.

CUPRESSUS LAWSONIANA, green and well-rooted, 6 feet, 10*s.* per dozen, 75*s.* per 100.

THUJOPSIS BOREALIS, transplanted last spring, 2 to 2½ feet, 7*s.* per dozen, 50*s.* per 100.

YEWS, common, 2 feet, 30*s.* per 100.

LIMES, straight, stout, and well-rooted, 6 feet, 4*s.* per dozen, 25*s.* per 100.

HOLLIES, Green, bushy, and well-rooted, 1½ to 2 feet, 25*s.* per 100.

SKIMMIA JAPONICA, extra transplanted, nice bushes, 10 inches high, with flower-buds, 4*s.* per dozen, 25*s.* per 100.

RHODODENDRON PRÆCOX, bushes, covered with flower-buds, 18*s.* per dozen.

AZALEA MOLLIS, seedlings, about 6 inches, very bushy, 6*s.* per dozen, 42*s.* per 100.

RHUBARB, Victoria, large roots, for forcing, 25*s.* per 100.

GREENHOUSE AZALEAS, small, 72*s.* per dozen ; fine flowering plants (including many novelties), 15*s.* to 24*s.* per dozen.

DAPHNE INDICA RUBRA, with flowers, 15*s.* per dozen.

ISAAC DAVIES, Nurseryman, Ormskirk.

TO THE TRADE.

HURST & SON,

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Beg to announce that they have again secured the ENTIRE STOCK of SEED of the PRIZE QUILLED ASTERS, so successfully exhibited for several years past by Mr. G. WHEELER, Warminster, and now offer the same in Collections of 12, 18, and 24 varieties. For Prices see Addenda to CATALOGUE, which will be forwarded to our Customers. Those whom it may not reach will oblige by applying for a copy.

The *Gardeners' Chronicle* of September 4, 1875, remarking on the Royal Horticultural Society's Exhibition, says:—

"Amongst the Asters nothing was shown equal to the samples staged by Mr. G. Wheeler, of Warminster, which were grandly finished flowers. He took the First Prizes easily in the Classes for 24 French and 24 German or Quilled varieties."

HURST & SON,
6, LEADENHALL STREET, LONDON, E.C.

Complete Liberal Collections of

CHOICE VEGETABLE SEEDS, 15s., 21s., 42s., 63s., and 105s. each, carriage paid. As my new and choice seeds are now in large demand, please order early. SPECIALITIES:—
CAULIFLOWER, Veitch's Autumn Giant, true, 1s. 6d. per packet.
LETTUCE, Alexandra Cos, true, 1s. per packet.
ONION, Cantello's Prize, true, 1s. per packet.
BROCCOLI, Leamington, finest late, 1s. 6d. per packet.
CABBAGE, Alpha, fine, large, and early, 1s. per packet.
CATALOGUE of New and Choice Seeds on application.
R. B. M'COMBIE, Grower of Choice Seeds, &c., Christchurch, Hants.

Yeovil Nursery.—Late E. Pierce.

B. R. DAVIS, having taken this Nursery, offers the following:—Extra fine, well-rooted BEECH, 3 to 4 and 4 to 5 feet; LIMES, CHESTNUTS, ELMS, &c., 10 to 12 feet; MAGNOLIA GRANDIFLORA, Exmouth variety; BOX, Minorca, Tree, and variegated, 3½ to 5 feet; FIR, Spruce, 2½ to 3½ feet. Prices and particulars on application to
R. B. DAVIS (late E. PIERCE), Yeovil Nursery and Seed Warehouse, Yeovil.

A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands, has to offer the following:—
YUCCA ANGUSTIFOLIA, strong plants, 1 foot high, £2 per dozen, £12 per 100. In my nursery this beautiful new Yucca withstood, without the slightest protection, the severe winter of 1875.
APPLES, strong 2-yr. Palmettes and Pyramids, 42s. per 100, £8 15s. per 1000.
HARDY AQUATICS at the lowest prices.

MESSRS. JNO. STANDISH AND CO.'S CATALOGUE for Autumn, 1876, and Spring, 1877, is now ready, and may be had, post-free, on application.

It contains the following:—

Plants of Recent Introduction.	Conifers.
Stove and Greenhouse Plants.	Hardy Climbers, Clematis, &c.
Plants for Winter Forcing.	Rhododendrons, Azaleas,
Azalea indica and Camellias.	Kalmias, &c.
Tree Carnations and Ericas.	Roses, Standards and Dwarfs,
Ferns and Lycopods.	also in pots.
Hardy Trees and Shrubs.	Fruit Trees.
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Dutch Bulbs,	Flower Roots, &c.
Royal Nurseries, Ascot, Berks.	

Superb Ridge Cucumber.

CUCUMBER, Foster's X.L. Superb Ridge. —This variety is a remarkably fine hardy, long, dark green Cucumber, and one that can be recommended with the greatest confidence. It is very prolific, and keeps its colour to the last; all who have seen it growing are satisfied that it cannot be surpassed, and those who have tried its flavour are convinced of its excellent quality: length, 12 to 18 inches. Price 6d. and 1s. per packet; price to the Trade on application.
EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden.—"Gee's superior Bedfordshire-grown Plants and Seeds have attained much celebrity."—*Vide Bedford Mercury*, July 29, 1876. "The soils of the district offer facilities enjoyed at few places for bringing sawny plants, &c., and under the skill and experience of Mr. F. Gee they are turned to good account."—*Vide Agricultural Gazette*, July 31, 1876. See other opinions of the Press, also a Treatise on the Cabbage. CATALOGUES, lowest prices, &c., on application to FREDERICK GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

Public Notice.

For Information upon the Planting, Pruning, and general Management of Fruit Trees, see
SCOTT'S ORCHARDIST, free, 3s. 6d.
At the Royal Nurseries, Merriott, Somerset, every description of Nursery Stock is grown largely, and at Scott's Royal Seed Stores, Yeovil, choice Seeds, Bulbs, and every kind of Garden Requisite may be obtained.

Monro's Duke of Edinburgh Cucumber.

J. MONRO begs to inform the Trade, &c., that he has SOLD the ENTIRE STOCK of Seed of the above-named Cucumber to
Messrs CARTER AND CO., The Queen's Seedsmen, 237 and 238, High Holborn, London, W.C.; and as no other Cucumber is grown by J. Monro, those having it from the above-named Firm are bound to have it true.
Potter's Bar, January 8, 1877.

Special Offer of

SEED POTATOS, until the Present Stocks are Sold.

Name.	Subject to being sold out. Per lb.	Per 14 lb.	Per Sack of 16 Stones.
	s. d.	s. d.	s. d.
Alpha	0 9	..	..
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Snowflake	..	3 0	42 0
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Rivers' Royal Ashleaf Kidney	..	2 0	..
Veitch's Ashtop	..	2 6	..
Mona's Pride Ashtop ..	..	2 0	28 0
Myatt's Prolific	..	1 6	21 0
Thorburn's Early Paragon ..	..	3 0	..
Oneida	..	3 6	..
Extra Early Vermont..	..	1 9	24 0
Brownell's Beauty ..	..	1 9	24 0
Hundredfold Flukes ..	..	1 9	..
Round Fluke	..	1 9	..
Fluke Kidney	..	1 9	..
Red-skinned Flourball ..	..	1 6	20 0
Bresee's King of the Earlies..	..	2 0	..
Bresee's Prolific ..	..	1 6	..
Bresee's Climax	..	1 6	20 0
Early Fortyfold	..	1 9	..
Paterson's Victoria ..	..	1 6	..
Walker's Early Regent ..	..	1 3	16 0
Regents	..	1 0	14 0
Nonsuch..	..	1 6	..
Lapstone Kidneys	..	1 6	22 0

GIANT ASPARAGUS SEED, 4d. per oz., 2s. 6d. per lb.: CONOVER'S COLOSSAL, 6d. per oz., 4s. per lb., nett growth of 1876.
Peck bags, 3d. each; 2, 4, and 8 peck bags, 6d. each. New 4 lb. 4 bushel sacks, 1s. 3d. each.
Orders taken in rotation. Remittances to accompany all orders.
TANNED GARDEN NETTING, 1d. per square yard, 7s. 6d. per 100 do., 35s. per 500 do., 65s. per 1000 do. Carriage paid to any station on the Great Northern, London and North-Western, Midland, and Great Western Railways, for orders of 1000 yards and upwards. Wholesale Price LIST on receipt of Card.
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THE NURSERIES, WEST DULWICH, S.E.,
Offer from a large Stock strong well-grown fruiting and planting Canes, at low prices.
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T. EVES, Gravesend Nurseries.—Established 1820.

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,, green curled	1	,,
BRUSSELS SPROUTS	1	,,
BROCCOLI, Adams' Early	1	oz.
,, Snow's Winter White	1	,,
,, Purple Sprouting	1	,,
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CABBAGE, Early Nonpareil	1	oz.
,, Enfield Market	1	,,
,, Worcester Incomparable	1	,,
,, Red Pickling	1	,,
CARROT, Early Horn	1	oz.
,, James Intermediate	1	,,
,, Improved Altringham	1	,,
CAULIFLOWER	1	pkt.
CELERY, fine Red	1	,,
,, fine White	1	,,
CRESS, Broad-leaved	2	oz.
,, Curled	1	pkt.
,, Australian	1	pkt.
CUCUMBER	2	pkts.
ENDIVE, Moss Curled	1	pkt.
LEEK, Musselburgh	1	oz.
LETTUCE, Paris White Cos	1	,,
,, Drumhead	1	,,
,, Worcester Cabbage	1	,,
MUSTARD	1	oz.
MELON	1	pkt.
ONION, White Spanish	2	oz.
,, James' Keeping	1	,,
PARSLEY, Extra Curled	1	pkt.
PARSNIP, Hollow-crowned	1	oz.
RADISH, Wood's Early Frame	1	,,
,, Long Scarlet	1	,,
,, Red Turnip	1	,,
,, White Turnip	1	,,
SAVOY, Green Curled	1	pkt.
SPINACH, Round	1	oz.
,, Prickly	2	,,
TURNIP, Early Snowball..	1	,,
,, Early Red-top	1	,,
TOMATO, Large Red	1	pkt.
VEGETABLE MARROW	1	,,
SWEET BASIL	1	,,
SWEET MARJORAM	1	,,

SEED WAREHOUSE, 61, HIGH STREET, WORCESTER.

SEEDS OF SUPERIOR QUALITY.

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(Successor to the late A. Paul & Son—Established 1806),
PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, N.,
BEG TO ANNOUNCE THAT THEIR
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SELECT VEGETABLE AND FLOWER SEEDS, &c.,
Will be ready shortly, and will be forwarded, post-free, on application.

Many sorts are home-grown, and all are selected with the utmost care from the most celebrated stocks at home and abroad, in order to secure for their Customers the best quality that can be obtained.

IMPORTANT—Observe the Christian Name,
WM. PAUL & SON, WALTHAM CROSS, N.

SPEED'S VINE AND ROSE MILDEW ANNIHILATOR.

JAMES VEITCH & SONS,

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.,

Have much pleasure in offering this excellent preparation for the destruction of Mildew. It proves to be perfectly harmless to the Grape Vine, the Rose, and the Peach when applied to the youngest and most tender foliage, and the fruit itself may be dressed with perfect impunity in any state, even before the thinning period, and there are few things more sensitive than the cuticle of young Grapes in the early stage of their growth.

It kills the Mildew instantaneously, and can be rinsed off within a few minutes of being applied, leaving no smell or sediment, or other traces of its application.

It is not poisonous to Animals, although it is instant death to all Fungi.

Experiments were made on a piece of Mushroom spawn, and one puff of the spray distributor on its little active thread-like mycelium shrivelled it up as if charred. As it kills the fungus in a resting state as well as in an active state, there is every reason to hope that it may be found useful in checking diseases of the Potato, the Hollyhock, &c., that are caused by Fungi.

The following Testimonials have been received:—

From ROBERT HOGG, Esq., LL.D., F.L.S., &c., *Pomological Director of the Royal Horticultural Society.*

"I have great pleasure in bearing my testimony to the magical effect which your mixture has upon the Mildew of the Vine. When I was at Chatsworth a few months ago, the application of the mixture, through a spray distributor, on the foliage of the Vine, was so destructive and so instantaneous as to leave no doubt on my mind as to its perfect efficacy in destroying the Mildew. On examining the foliage with a magnifying glass after the application, I could find no trace of the disease."

From Mr. WILLIAM THOMSON, *Tweed Vineyard, Cornelands.*

"I tested Mr. Speed's remedy for Mildew this last summer, when staying for a few weeks at Chatsworth, and in my life I never saw a more radical remedy for any such pest. One puff of the spray distributor cleared the leaf of a Vine badly affected with Mildew, doing the leaf no harm, and I believe it can be safely applied to the most tender plant, as well as the fruit of the Vine. I believe it will completely supersede the use of sulphur for destroying Mildew on Peaches, Roses, Heaths, and all other plants liable to attack by Mildew, and that it will prove a great boon to horticulture."

From Mr. STEVENS, *Gardener to* His Grace the Duke of Sutherland, *Trentham.*

"I have much pleasure in bearing testimony to the efficacy of your liquid for destroying Mildew upon Vines. I saw the liquid applied with a spray distributor, in one of the vineries at Chatsworth, to some badly infested leaves, and upon examining them early the following morning they were perfectly free from Mildew. If the liquid will destroy Mildew on Roses, Hops, &c., as completely as in this instance, it will be a most valuable article of commerce."

From Mr. HARRISON, *Knowsley Gardens.*

"Your Mildew mixture seems effectually to prevent the spread of Mildew. It is also very cleanly in use, being almost without smell, and leaving little or no sediment behind it unless used very strong, and even then it is easily rinsed off with a little clean water."

From Mr. JAMES ANDERSON, *Nurseryman, Meadowbank.*

"The solution prepared by Mr. Speed is the most effective that has come under my cognisance. By simply blowing the spray through a pipe on any leaf affected with Mildew the destruction of the fungus is complete, without the slightest injury to the most tender leaf. For the Stove, Greenhouse, Orchard-house, Vinery, or Peach-house, or even for the Rosary out-of-doors, this solution will undoubtedly prove invaluable, till that season necessary to guard against is that the leaves operated upon should be as dry as possible."

Sold in Bottles, at 2*s.*, 3*s.* 6*d.*, 6*s.*, *and* 10*s. each; to make* 1 *Quart,* ½*-Gallon,* 1 *Gallon, or* 2 *Gallons, ready for use.*

Price to the Trade on application to J. VEITCH & SONS, Sole Wholesale Agents.

GARDEN AND FLOWER SEEDS.

THOMAS METHVEN & SONS

BEG TO INTIMATE THAT THEIR DESCRIPTIVE PRICED

CATALOGUE of KITCHEN GARDEN and FLOWER SEEDS, IMPLEMENTS, &c., for 1877,

Is now ready, and may be had post-free on application.

EAST LOTHIAN INTERMEDIATE STOCK (true), in three colours. In packets, 1*s.*, 2*s. 6d.*, and 5*s.* each colour.

SNOW-WHITE WALL-LEAVED EAST LOTHIAN INTERMEDIATE STOCK. This is a sterling novelty. The purity of the white shows up well upon the grassy green foliage, and it bears the large truss of the East Lothian varieties. In packets, 1*s.*, 2*s. 6d.* and 5*s.* each.

SEED WAREHOUSES:
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THE HUNTINGDON NURSERIES.

WOOD & INGRAM'S

CATALOGUE OF SEEDS FOR THIS SEASON

Is now ready, and will be forwarded free on application.

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So successfully conducted for a number of years by the late Mr. JOHN INGRAM, will be continued to be carried on in its various branches, as heretofore, by his Widow and Two Sons, in the name of WOOD AND INGRAM, who respectfully solicit a continuance of the kind and liberal patronage which has been given for a lengthened period to their Establishment.

THE NURSERIES, HUNTINGDON.—January, 1877.

Dissolution of Copartnery of Peter S. Robertson & Co., Seed Merchants.

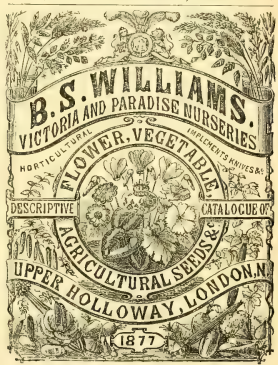
WILLIAM THOMSON,

For many years connected with the Seed Establishments of Messrs. Peter Lawson & Son, Edinburgh and London, and latterly Managing Partner of the Firm of Peter S. Robertson and Co., Seed Merchants, begs to intimate that he has secured commodious premises, No. 16, Saint Giles Street, where he will carry on the business of Seedsman and Nurseryman, under the Firm of WILLIAM THOMSON & CO., and he respectfully solicits a share of the patronage of his friends and the public.

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No. 16, SAINT GILES STREET, EDINBURGH.



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PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 8 inches at 4 feet from the ground.

LIMES, 12 to 20 feet high, and girthing 6 to 10 inches at 4 feet from the ground.

POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 6 inches at 4 feet from the ground.

ANTHONY WATERER

Has to offer many thousands of the above. They may be seen growing at Knap Hill. They are straight, handsome, and well rooted, and altogether the finest Trees of the kind to be found in any nursery in Europe.

KNAP HILL NURSERY, WOKING, SURREY.

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NEAPOLITAN ONION SEEDS:

NEW QUEEN, GIANT FLAT RED TRIPOLI,
MARZAJOLA, EARLY WHITE TRIPOLI,
GIANT ROCCA, LATE WHITE TRIPOLI.

G. V. DE LUCA, Nephew of the late Mr. Domenico Piccirillo, begs to inform the Trade that the usual annual consignments of the above selected varieties of these justly celebrated Seeds are now in his possession, and comprise the entire Crop of this Season. Being at present under no engagement with any London Firm, he can deal direct with Buyers for these noted specialities.

The NEW QUEEN ONION was first introduced by G. V. DE LUCA, on behalf of the estate of the late Mr. D. Piccirillo (see *Gardeners' Chronicle*, November 21, 1874), since which time he has spared no pains to improve the Stock, with marked success; and he can most confidently recommend these Seeds as being the true varieties.

Prices on application (stating Quantities required) to

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NAPLES—VILLA VOLPICELLA.

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FLOWER AND VEGETABLE SEEDS FOR 1877.

	Per packet.—*s. d.*
BALSAM, Williams' Superb Strain .. *2s. 6d.* and	1 6
BEGONIA FREBELII	2 6
BEGONIA SEDENI SEMI-PLENA, per packet	2 6
BEGONIA, Hybrid, finest mixed..	2 6
CYCLAMEN PERSICUM GIGANTEUM.—This is a great improvement on the old type, the flowers being thrown well above the foliage, each flower measuring from 2 to 2½ inches in length; pure white, with a fine bold violet-purple eye .. *5s.* and	2 6
CYCLAMEN PERSICUM, Williams' Superb Strain, *5s., 3s. 6d., 2s. 6d.*, and	1 6
CELOSIA PYRAMIDALIS PLUMOSA	1 0
CALCEOLARIA, Williams' Superb Strain, *5s., 3s. 6d., 2s. 6d.*, and	1 6
CINERARIA, Weatherill's Extra Choice Strain, *5s., 3s. 6d., 2s. 6d.*, and	1 6
GLOXINIA, Finest Drooping Varieties	1 6
Finest Erect Varieties	1 6
PRIMULA, Williams' Superb Strain, Red, White, or Mixed .. *5s., 3s. 6d., 2s. 6d.*, and	1 6
PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance	5 0
PYRETHRUM GOLDEN GEM	1 0
SOLANUM, Williams' Improved Hybrids	1 0
STOCK, Williams' Improved Giant Scarlet Brompton	1 6
WALLFLOWER, Harbinger, Autumn and Winter flowering	1 0

Packets of Flower Seeds, excepting heavy kinds, Free by Post.



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	Per packet.—*s. d.*
BEANS, Williams' Early Prolific Dwarf French—per qt.	3 0
BRUSSELS SPROUTS, Welch's Giant, one of the finest in cultivation .. .. .. per packet	1 0
CUCUMBER, Walker's Hero (New)	2 6
Osmaston Manor	2 6
ENDIVE, Williams' Gloria Mundi	1 0
MELON, Osmaston Manor Hybrid	2 6
,, Laura's Beauty, (New)	2 6
,, Surprise (New)	2 6
ONION, Williams' Magnum Bonum	1 6
PEA, Williams' Emperor of the Marrows .. per quart	2 6
TOMATO, The 100 Days .. .. .. per packet	1 6

*** *All seeds amounting to* 20*s. will be delivered free of carriage to any Railway Station in England.*

☞ ILLUSTRATED SEED CATALOGUE gratis and post-free to all applicants.

VICTORIA & PARADISE NURSERIES

UPPER HOLLOWAY, LONDON, N.

SATURDAY, JANUARY 20, 1877.

THE SWILCAR LAWN OAK.

LEAVING the train last autumn at Sudbury, and passing from the fertile valley of the Dove to the high ground of Needwood Forest, we soon observed the towering head of the Swilcar Lawn Oak on some high ground 2 miles distant. This venerable old tree is the patriarch of the forest. Strutt says, in his *Portraits of Forest Trees*, 1824, that this tree measured 19 feet in circumference, at 6 feet from the ground, fifty-four years previously, and that it then measured 21 feet 4 inches at the same height from the ground. It could not now be measured fairly at the same part of the trunk in consequence of an excrescence, which has been many years growing, and has now attained large dimensions; but at 5 feet from the ground it now measures 27 feet. The trunk runs up to a great height, and still carries an imposing top and some widespread lateral limbs.

A lover of trees cannot but feel emotion on finding himself for the first time beneath this towering specimen, the grandest in the forest. Its gigantic size reminds me that some Oaks, as well as some men, must be predestined to distinction. You may stumble over a future Lord Chancellor in a village-boy at marbles with his companions, and there are inherent qualities conferring marked individuality on trees as well as men. At first it may seem extravagant to compare even the most wooden men with timber trees, but it will be found on examination that they have much in common. For example, they are both built up by food, and that is a substantial similarity. On the other hand, there are differences. A young fellow hovered about a park-keeper's lodge on an errand connected with a young domestic residing there; the bloodhounds were loosed, and he was brought to bay in a Holly tree. Here is an example of the wear and tear of life in the higher class of animals, and of hereditary tendencies. The Oak is without a nervous system, but it possesses life and hereditary tendencies, and its growth is not purely mechanical. There are both Oaks and men in Needwood Forest possessing unusual vitality, size, and strength of fibre. There was an old deer-stealer, who could throw a fat buck over his shoulders, and who lived to the age of 100. His son mowed the grass around the Swilcar Lawn Oak at eighty-eight, and died at ninety of an epidemic. There is a grandson who closely resembles the portraits of the deer-stealer, and seems likely to live as long. This, then, is a tough and long-lived breed of men. Some Oaks may be constitutionally tough, too, beyond the average. Gardeners have frequent opportunities of observing the individuality of plants under cultivation, whose reproductive organs are subjected to special disturbance owing to the artificial circumstances of their growth. The Oak is not subjected to the same disturbing causes as garden flowers and fruits, yet every acorn buried in the ground has its family disposition planted with it, and it may turn out a Swilcar or prove a pigmy by comparison, even with equal opportunities. There is an old Oak growing near the Swilcar Lawn Oak, on the same yellow clay, and differing from it in size, toughness of fibre, and other respects. Both are English Oaks, and both are of the same variety, with stalked Acorns, their differences being merely individual peculiarities, such as the offspring of two Apple pips might

exhibit if sown side by side. Mr. Jesse mentions the anomaly of an English Oak in Windsor Park producing sweet fruit, closely resembling the acorns of the sweet fruited Oaks of Spain and Arcadia. Climate may have rendered our acorns bitter, but it may be that our Oaks are derived from the same primæval parents as the sweet-fruited species of Spain and Greece, and in Mr. Jesse's specimen we may suspect the reproduction of an ancestral characteristic. The Swilcar Oak has small round acorns, those of its near neighbour are more than an inch long. Not far off, in Bagot's Park, there is a variegated Oak called the White Tree, and producing leaves marked with white and occasionally blotched like those of the Aucuba. The effect of such foliage on a large tree in a park devoted to the growth of the English Oak is very striking. The whiteness of the leaf seems a peculiarity rather than a disease. Perhaps this ornament of the leaf may be another example of a quality latent in the seed.

From our present point of view, it does not appear irrelevant to speak of the inherited tendencies of men in connection with our subject. It has often been remarked that the courage of the Plantagenets has descended to the Queen, and a courtly Dean discovered, by examination of a mural painting in Westminster Abbey, that a singular graciousness of aspect in the handsome face of Richard II. had reappeared in a remarkable degree in one of the Queen's children. Such inherited tendencies certainly exist in royal and other families, and also in Oaks. In many woods Quercus Robur exhibits its two varieties with acorns of several shapes and sizes, and with long stalks and short stalks or none, and with leaves whose foot-stalks present similar variations. The fibre, too, differs in texture in the same varieties of the tree. And these differences are inherent, and their causes untraceable; they are individual peculiarities, as size and longevity are to some extent. We are dealing, however, with exceptions, which only prove the rule that "like produces like." Oaks may be improved, no doubt, and rendered more uniform by selection, and therefore Lord Bagot, whose breed of Oaks is a good one, and similar to that of the Swilcar Lawn Oak, is a benefactor in the distribution of good Oak seed from his famous woods amongst his friends.

The Swilcar Lawn Oak was poetically named the "Chief Mourner," on the occasion of the destruction of Needwood Forest. On that occasion it was protected by being enclosed with a pale fence, and a few years since the man who set up the first post of this fence was still living. It is a satire of the small sort on human affairs that this person who assisted in the enclosure of the forest was one of the most notorious deer-stealers who ever walked its paths by moonlight with a flint-and-steel gun. Several acres of Needwood have been preserved around the old tree, and immediately around it is a screen of the greenest Holly, which was encouraged here for the winter feeding of the deer, and kept bushy and vigorous by constant chopping. A poet of Needwood sings pleasantly of a "green robed nymph with a buskined leg and a bosom bare," who was accustomed to linger in this spot. Her name was Zephyr, and she still breathes among the branches of the patriarch, faithful to him as in his youth, and sweeps the grass-plot on which he stands. So sings the poet in old-fashioned verse, just a little too long, his buskined maiden in the *déegagé* attire still lingering to pause and breath, and so forth, till you fear a fainting fit or worse. The classical names and notions imported so unnecessarily into English poetry in the last century are not so popular as they were. Fashions alter, ideas only are immortal—even Oaks change from day to day. *H. Evershed.*

New Garden Plants.

ACER VAN VOLXEMII.*

It is unquestionably a rather unsafe proceeding to establish a new species of Maple with such imperfect material as we have yet been able to obtain. Nevertheless its discoverer, M. Van Volxem, who knows trees well, asserts its complete distinctness, and we have been quite unable to refer his specimens to any living plant in the nurseries, or in the arboretum at Kew, nor have we been more successful in identifying it with any of the specimens described in books or contained in the herbarium at Kew, nor with specimens obligingly forwarded for the purpose by M. Boissier. On these facts, coupled with the fact that whether a seedling variety of the Sycamore, A. Pseudo-Platanus, or entitled to specific honours, it is amply deserving a separate name for garden purposes, we have named it in honour of its discoverer. It is evidently a handsome quick growing tree, the light green upper surface and silvery under surface of the leaves being very effective. It will be well to give the history of the tree as far as we know it, in M. Van Volxem's words:—

"A few years ago I discovered in the Caucasus (and imported) a Maple entirely different from any in the collection of more than eighty species and varieties of hardy Maples in my collection. I think, that in the first autumn, I sent a plant of it to Kew last year or in 1873 under the name of 'Acer spec. nova de Kakhétie (Georgie, Caucase).' I found the tree on the southern slope of the Caucasus, in the valley of the Jora, or Yora, a tributary stream of the Cyrus (or Kura), above the military station of Lagodechi. It climbs up the slope till the forest ends. It is a very large tree, very distinct from A. Pseudo-Platanus, which grows intermixed with it, in its larger size and its pale green colour, by which it is recognisable hundreds of yards away. The winged fruits are also smaller. It grows intermixed with A. Pseudo-Platanus in the same forests, with no intermediate form. Hence it is not a local form, nor would a mere variety remain distinct in its wild state. It does not grow at so great a height on the slopes of the Caucasus by at least 1000 or 1500 feet, so far as I was able to observe. The form of the tree is more columnar. The light green colour of the leaves makes the difference between the two conspicuous and unmistakable. The colour of the bark and the shape of the buds are different, even in the winter time.

"The country around Lagodechi is very interesting. Near the place is a very large forest of Juglans regia, certainly wild there. Near the river are extensive swamps, where I saw M. Pterocarya caucasica, growing sometimes as an enormous tree, and sometimes as a large shrubby bush. The two forms are intermixed with each other; so that no condition of soil or exposure can explain the form; and there is, so far as I saw, no intermediate form, and I could not detect any difference between the two forms except as to their habits and size."

So far M. Van Volxem. We find the leaves differ in shape from all the forms of Acer Pseudo-Platanus, being more oblong in outline, with shallower oblong-lanceolate lobes, and very acute wedge-shaped sinuses between the lobes. The margins are very coarsely toothed, the texture thin, the colour light green above, silvery and quite glabrous beneath. In all the forms of A. Pseudo-Platanus the leaves are much more pronounced heartshaped than in this plant, and always more or less hairy towards the base. In this plant the under surface is perfectly glabrous. Acer insigne of Boissier, of which, thanks to the courtesy of M. Boissier, we have seen the type specimen, is also quite different. We shall await the flowering of M. Van Volxem's tree with much interest, and in the meantime commend it as a distinct and valuable addition to the arboretum. (See fig. 10, p. 73)

DENDROBIUM (DENDROCORYNE) TIPULIFERUM, *n. sp.*†

Until now we had only one single truly Pleurothalloid Dendrobe, Dendrobium longicolle, Lindl., from Sincapore. Our species, however, has a much narrower leaf, on a very long, slender, shining stem. The spider-like flower, whose sepals and petals end in long bristles, is purplish in lieu of being straw-coloured, with the points only purplish, as in D. longicolle. The lip, too, is much more broken up in long side laciniæ. It is nothing to excite the wonder of Orchidists, but botanically speaking it is very curious. It was discovered in the Fiji Islands by their latest explorer, Mr. Peter Veitch, who sent it to Messrs. Veitch, Royal Exotic Nursery. *H. G. Rchb. f.*

SOBRALIA CATTLEYA, *n. sp.**

All travellers in tropical America are unanimous in praising the charms of the Sobralias and the large Ellesmius (Evelynas). I have heard the same glowing description from Humboldt and Pöppig as from Linden, Roezl, Warscewicz, Wallis, Wagener, Bruchmüller, and others. The Sobralias are accused of having too fugacious flowers, of being bad travellers, and bad exhibition plants. This may all be true for the species generally grown, but I remember that in 1874, at Florence, an exhibitor, I think Prince Demidoff, sent two or more magnificent masses of Sobralia macrantha in competition for the highest prize for specimens of flowering Orchids. The buds had not opened at the moment of judgment, owing to the cold and dry air, and the majority of the jurors (who had declared themselves to be able to judge Orchids) did not even take notice of these plants, which were probably unrivalled in Europe.

There are, however, Sobralias with flowers of a firm, fleshy texture, like those of Cattleyas. I have only met with one species of that kind, the true Sobralia ligustrum, at the late Mr. Rucker's, at Wandsworth, who was very proud of it. Yet even this is not so firm as one would like it to be, and as they are in strong Cattleyas or Vandas. The species long known to me, but only now published, has very strong, thick flowers, which ought to last a good while. The stout stem has shining oblong acuminate plaited leaves, and bears several lateral slightly flexuose inflorescences with splendid Cattleya-like flowers. All my herbarium specimens are described as bearing purplish-brown sepals and petals and a beautifully purplish lip. I have now at hand a sketch made by Mr. Shuttleworth from the living plant, which shows the same colours with a white column and three yellow lines over the centre of the lip. No doubt the gold parts are the raised crested keels. The lip appears to form a sharp angle by its lateral lobes overlapping the column, so that it may be compared to a roof. It is represented three times in the same very unusual manner.

It may well be compared to S. Roezlii, a species I published with some doubt, but which I now regard as a very distinct, beautiful thing, quite worthy to bear M. Roezl's name. This species has five to seven fully developed keels over the lip, and no small prickly crests on the sides, such as are to be seen in quantities in S. Cattleya. The present plant comes from the revolutionised States of Columbia, and was collected by Messrs. Carder and Shuttleworth, as Mr. Bull, the possessor of the stock, informs me. Now there is an opportunity of trying a species which, in its wild state, bears a profusion of large, nicely coloured, long-lasting flowers. Since its nearest allies have a powerful, agreeable smell of Wallflowers, probably this one will not prove odourless.

Good drainage and no end of water during the season of full growth will prove essential conditions to success. *H. G. Rchb. f.*

THE NEW PLANTS OF 1876.

WE resume from p. 43 our brief sketch of the more important of the New Plants which were introduced to the notice of the public during the past year.

ORCHIDS.

Orchids received some good accessions, irrespective of the many interesting forms of Masdevallia which have rewarded the search of the collectors, and of which one of the most remarkable is the long-tailed M. macrura described and figured at p. 13, the tails of which are fully 6 inches in length. The species now, however, require to be separated into at least two categories—the ornamental and the curious, and a large proportion of those now known must be relegated to the latter. Amongst Odontoglossums, O. cirrhosum, with its handsome white purple-spotted flowers; O. Chestertonii, with its green-coloured flowers, marked on the sepals and lip with rich brown; and the beautiful yellow-lipped O. Londesboroughianum, are all charming additions to this deservedly popular genus. Bollea cœlestis, from tropical South America, with its blue, white-tipped,

* *Acer Van Volxemii*, Mast.—Arbor excelsa, folios (synanthis) palmato 3—5 lobis subtus argenteo-glaucis omnino glabris nervis patum prominentibus, sinubus inter lobos parum profundos oblongo-lanceolatos grosse dentatis basi acutis; fructibus in cymas paniculiformes laxas dispositis, alis glabris subdivergentibus; floribus adhuc non visis.—Hab. in silvis ad Kakhétie in Georgia Caucaso ubi legit cl. Van Volxem. Ab Acere Pseudo-Platani differt statura altiore, folios subtus argenteo-glaucis omnino glabris nec secus nervos subtus hirsutos, nervisque minus prominentibus.

† *Dendrobium (Dendrocoryne) tipuliferum*.—Aff. D. longicolli, Lindl. caule spithameo tereti nitido; basi opaco-vaginato; folio lineari-ngulato basi cuneato apice minute bidentato erecto; vagina falcata brevi; floribus paucissimis aggregatis hysteranthus; mento angulato obtuso ovario pedicellato quater brevori; sepalis lineari-lanceis lunge caudatis; tepalis multo angustioribus; labello trifido, lacinia postica semiovatis antice serratis parvis, lacinia media linciri acuta porrecta; sepala dimidia attingente utrinque petitato lacero antice tantum serrato denticulato. Flores purpurei.—Viti, F. Veitch.

* *Sobralia (Brassilia) Cattleya*, n. sp.—Foliis oblongo-ligulatis acuminatis; racemis paucifloris lateralibus; bracteis triangulis parvis; floribus coriaceis; sepalis cuneato-oblongis acutis; tepalis subæqualibus obtusioribus; labello trilobo, lobis lateralibus obtusangulis, magnis supra columnam sub angulo acuto volutis, lobo antico lobulato crispo oblongo emarginato transverso; carinis per medium una seu ternis obscuris, antice cristatis, cristulis paucis lateralibus minutis; papulis muricatis circumstantibus numerosis; columnæ falcibus latis.—Nova Granata. *H. G. Rchb. f.*

yellow-lipped flowers, is said to be very distinct and of considerable beauty; while Pescatorea Roezlii, with its large white flowers tipped with blue, affords another distinct and charming type of a meritorious character. Some fine varieties of established species have been added to our lists, as the purple-tipped Dendrobium Devonianum var. Elliottianum; the thick-stemmed D. Wardianum var. Lowii; a fine form of having the fronds glaucous beneath; the latter a very distinct bipinnate thick-leaved Fern, with Blechnoid fructification. From New Caledonia M. Linden has introduced Lomaria gigantea and L. neo-caledonica (two large-growing arborescent forms of the L. gibba type), together with Dicksonia Delplanchei, Cyathea nigra, and Marattia attenuata. Mr. B. S. Williams has imported from New Guinea a distinct Adiantum Williams, who both hold stocks of it. An Australasian plant, introduced under the name of Davallia Youngii, proves to be a larger growing variety of a well-known species, the Dennstædtia davallioides, *alias* Dicksonia davallioides; it is a noble-looking plant for bold rockwork in greenhouses, and extremely elegant, though of large growth. As a garden sport, we have had introduced a Gymnogramma Allstoni, one of



FIG. 10.—ACER VAN VOLXEMII. (SEE P. 72.

D. densiflorum which M. Linden calls Guiberti; and Phalænopsis intermedia Brymeriana. Not the least interesting of these plants are the fine novelties in the shape of hybrids amongst the Cypripediums and Cattleyas, for which we are chiefly indebted to the Messrs. Veitch & Sons.

FERNS.

Amongst Ferns we have to add the Sandwich Island Cibotium pruinatum and Sadleria cyatheoides, the former a plant closely allied to C. Menziesii, but of the æthiopicum type, which has been named A. neoguineense (see p. 12), and is remarkable for its broadly triangular outline and its roundly-lobed pinnules. The name of Adiantum palmatum has also been recently given to the Andean plant associated by some botanists with A. speciosum, but which proves to be quite distinct when the two are seen growing together, and also different entirely from the A. digitatum of Presl, under which name they had been thrown together. The A. palmatum is in the collections of Messrs. Veitch & Sons and Mr. B. S. the golden-backed series, the peculiarity of which is that the tips of the pinnules are uniformly recurved, so that the gold colour shows on the upper surface. A still more curious sport is the Pteris serrulata Leyi, in which the ends of all the segments are converted into elongate leafless tails.

GREENHOUSE PLANTS.

Of greenhouse plants we have usually but a limited number to record, and though the term is expansive enough, our list of subjects still remains small. The

hard-wooded section yields us a beautiful highly-coloured species in the Australian Boronia elatior brought out by Messrs. Veitch, which has narrow pinnate leaves, and abundant blossoms of a deep purplish rose; it is doubtless a little inclined to grow tall, but our cultivators will know how to grapple with this peculiarity. Then Grevillea Preissii, shown by Messrs. Rollisson & Sons, another Australian shrub, if not exactly showy, is exceedingly neat and pretty, being of dense bushy habit, with narrowly cut bipinnate leaves, and very abundant racemes of rosy-scarlet flowers. Mr. Bull's double-flowered Epacris onosmæflora (flore-pleno), with its little button-like white flowers crowding up the elongated branches, will probably become one of the most useful amongst greenhouse decorative evergreen shrubs of slender habit. Araucaria Goldieana, introduced by Mr. B. S. Williams, is likely to prove a fine conservatory plant, and may be described as intermediate between A. elegans and A. Rulei, the branches being pendulous. Bomarea Caideri (see p. 793, vol. v.), from Columbia, is a very handsome greenhouse climber of the tuberous-rooted section, from Mr. Bull's collection; its pendulous umbels of numerous bell-shaped rose-coloured flowers are very beautiful. We gain a dwarf but exceedingly striking greenhouse perennial in the Peruvian Begonia Davisii, which has short-stalked radical leaves of the usual oblique type, and small cymes of brilliant crimson-scarlet flowers on slender scapes taller than the leaves; while in the hybrids of this tuberous-rooted race we have some of the most attractive of summer flowering plants for the greenhouse. Finally, we regain a greenhouse bulb of considerable beauty in the Brazilian Crinum ornatum rubro-vittatum, the flowers of which are white with a crimson band down each of their six segments.

Hardy Perennials.

Amongst hardy perennials, including with them the hardy bulbous plants, by far the finest object we have seen is the Lilium auratum cruentum, a splendid form of that most splendid of all Lilies, in which the golden band is obliterated by a band of crimson extending from the apex to the very base of each segment, and increasing in intensity from the point downwards, the base being a blackish blood-crimson, which suggested to us the name. Lilium neilgherrense (see p. 332, vol. vi.) is another fine Lily of the longiflorum type, and a decided acquisition, as it blooms latter than most other sorts. The Californian Fritillaria recurva is a beautiful dwarfish-growing hardy bulb, with sessile linear leaves, and bell-shaped scarlet flowers, having reflexed segments spotted inside with scarlet, "the red being as bright as that of a Lily." Fritillaria aurea from the Cilician Taurus, is another dwarf species, with yellow flowers minutely tessellated with black spots, and is very distinct from anything previously known in gardens. In Meconopsis Wallichii we have a wonderfully handsome Poppy, with pure sky-blue flowers—a plant known to botanists, but not previously generally accessible. Mr. Bull has now offered it. Monardella macrantha, a herbaceous perennial of the labiate order, from California, introduced by Messrs. Veitch, is a charming acquisition, having leafy tufted stems, with small ovate leaves, and terminating in capitate heads of scarlet tubular flowers—a "very beautiful, and highly aromatic" plant, according to Dr. Hooker, who states that it flowers in October. Another "strikingly beautiful" Californian plant, introduced by Mr. W. Thompson, is the Mirabilis multiflora, which has large panicles of flowers, with broad, flat, bright rosy-purple corollas, having a darker ring round the throat. The Himalayan Androsace sarmentosa will be a welcome addition to hardy spring flowers, and forms a pretty object with its rosulate tufts of obovate-lanceolate leaves, its red-stalked runners, by which it is freely propagated, and its heads of pale bright rose-coloured flowers, which are decorated by a yellow throat surrounded by a deep rosy ring. To these as a possibly hardy, possibly half-hardy plant, may be added the beautiful striped-leaved grass which has appeared at some of our shows under the name of Eulalia japonica variegata—a plant large enough to be effective, and yet without a touch of coarseness.

Annuals.

At present there seems to be a dearth of newly-introduced annuals, and we have nothing of very special importance to enter to the credit of the past year. The Chinese Moricandia sonchifolia, from its early flowering habit (March), and its large Stock-like single deep purple cruciferous flowers, something like those of a single Rocket, may be useful for spring gardening; it grows from 1 to 2 feet high, and flowers in racemes. Helianthus cucumerifolius, from Texas, is a novelty of some merit; it is of large growth, from 3 to 5 feet high, but freely branched, and altogether devoid of coarseness; the flower-heads are yellow, 3 to 4 inches in diameter, with a black disc. The new seminal form of Godetia named Lady Albemarle is so exceptionally fine, both in its magenta colour and its stocky floriferous habit, that we cannot refrain from mentioning it in this place; while Zinnia Darwinii, a hybrid between elegans and Haageana, is likely to be a useful decorative plant.

Hardy Trees.

One of the most striking of hardy trees which has lately been made known in Europe is the sapindaceous Xanthoceras sorbifolia, a faithful representation of which will be found at p. 564 of our vol. v., new series. Populus canadensis aurea Van Geertii, as a robust-growing deciduous tree, and Weigela amabilis Looymansii, as a deciduous shrub, are both remarkable for the pure and bright golden hue of their summer foliage, and will consequently be effective objects in plantations and shrubberies. The Hydrangea Hortensia Thomas Hogg (alba), if accurately described, must be a fine hardy shrub, and at the same time invaluable for decorative purposes as a pot plant, since a white Hydrangea would afford a fine contrast with the more usual colours, pink and blue. Last, but far beyond all these in point of merit, is Mr. Waterer's Abies Menziesii Parryana, mentioned at p. 48, and referred to under this name by M. André in the last part of *L'Illustration Horticole*, a Colorado Spruce Fir, of hardy character, with the foliage as blue as a thick glaucous covering can make it—as blue as that of the glaucous Echeveria, and even of a brighter blue than Picea magnifica, and a habit as symmetrical as that of Picea Pinsapo. *T. Moore.*

RECENT CONTRIBUTIONS TO THE FLORA OF ICELAND.

By W. Lauder Lindsay, M.D., F.R.S.E., F.L.S.

Since I visited Iceland (in 1860) and published a *Flora of Iceland** (in 1861), several small collections of flowering plants and Ferns—made mostly in the south-west of that island—have been sent to me from time to time. These collections came directly from Reykjavik, from my worthy friend and correspondent Jón Arnason, inspector of the College there.† He had much official influence to induce various of the students of the said College to make, during their summer holidays, and in their own districts, botanical collections, in order to their transmission through him to me. The collections that reached me prior to 1870 were placed in the hands of Professor Charles C. Babington, of Cambridge. The names of the plants of which they were made up were no doubt included by him in his *Revision of the Flora of Iceland* ‡ (published in 1871), but other collections have been made and sent since 1870, have been deposited in the national Herbarium at Kew, and have recently been examined by Professor Oliver and J. G. Baker, F.L.S.

To these gentlemen I am indebted for a list of the aforesaid most recent plant collections made in Iceland by the Icelanders themselves. It appears to me desirable to publish the short list, in order to the encouragement of botanical students in Iceland itself. The fact that their gatherings are duly appreciated and utilised in this country will no doubt stimulate to further gatherings of a more valuable kind. For one of the purposes of this preface is to show (1) that certain Icelandic plants are common and others rare; (2) that certain districts have been sufficiently explored botanically, while others have not; (3) that certain classes of plants have hitherto received all the attention of botanical collectors and botanists, while others have received little or none; and (4) that, in short, much remains to be done in the collection and study of certain classes of plants from all parts of Iceland, or from particular districts thereof, otherwise that there remains much to deserve and repay special collection and examination.

In the first place, then, the following catalogue may be held to represent simply the commoner flowering plants, Ferns and Horsetails, of the south-western districts of Iceland—those within a radius of perhaps 50 miles of Reykjavik, the capital. The list contains no plant not mentioned by Professor Babington in his *Revision*, with three exceptions, that are not given by him as separate species, viz., Potentilla aurea, Plantago maritima, and Equisetum pratense. There are several instances, however, in which, though the plant would appear to be more or less common, Professor Babington has seen it from only one locality, or has found it recorded as having been by others only so found. Moreover, the list now given enumerates only 105 species, while my own *Flora* in 1861 gave 455 of Phænogams, Ferns, Lycopods, and Horsetails; and Professor Babington, in 1871, 467;* so that the present catalogue of recent collections does not represent one fourth of the higher flora of Iceland.

In the second place, while the south-western districts have been pretty well examined as to flowering plants, Ferns, Lycopods, and Horsetails, there are certain other parts of the island of whose flora, whether Phænogamic or Cryptogamic, we know comparatively little. These botanically unexplored districts include especially:—1, the little visited portions of the north-western, northern, eastern, and southern districts; 2, the volcanic deserts of the interior; 3, the snow mountain regions as a whole, and particularly the yet almost unexplored great Jökul regions.

At present the flora of Iceland may be said to be very much a flora of certain inhabited portions of the coast and its comparatively fertile plains and valleys; of the desert and alpine flora we have yet to learn a great deal.

In the third place, the attention of travellers or collectors, botanical or non-botanical, has been hitherto almost exclusively confined to Phænogams; to these and their allies Professor Babington's *Revision* confines itself; and though in my own *Flora* I have given a list of all the Cryptogams known to occur in Iceland up to 1860, there is avowedly much yet to be accomplished, especially as regards the more minute, mostly microscopical lichens and fungi, as well as algæ, particularly freshwater ones, such as the Diatomaceæ and Desmidiaceæ. In my *Flora* the desmids are represented by a single species, the diatoms not at all, the fungi by thirteen—numbers that serve to show how absurdly meagre is, or at least was in 1860,† our knowledge of the microscopic flora of Iceland.‡

In the last place, the value of all such collections, made by persons not themselves practised botanists, is seriously detracted from by the failure of the collector to label each plant or group of plants with the name of the exact locality in which it or they were found. Thus in September, 1873, in sending me one of his Icelandic plant collections, Jón Arnason wrote me that the plants were gathered in three localities very different in their character, viz.:—1, very high on Mount Esja; 2, at Thingvalla; and 3, in the neighbourhood of Reykjavik. Unfortunately, however, we are left to guess which was found in each locality, and in the case of duplicates the same species may have occurred, so far as we know, in all three localities. In another letter, of date November, 1872, he referred to a collection made "in the small islands of the Breidifjord (broad firth or bay) in the west." In March, 1871, he mentioned some plants "almost all gathered in the South of Iceland (the

* In the *Edinburgh New Philosophical Journal* for July, 1861.

† This gentlemen is one of the most distinguished living Icelandic *litterateurs*—an indefatigable collector and transcriber of the grand old sagas of his native land: but best known on the Continent of Europe and in England by his two large volumes of *Icelandic Folk-lore*, published at Leipsic in 1862 and 1864. Selections from these tales or traditions were given in an English dress, in two volumes, in 1864 and 1866, under the title of *Icelandic Legends*, collected by Jón Arnason, and translated by George E. J. Orwell and Ewiker Magnusson.

‡ In the *Journal of the Linnean Society* (Botany), vol. xi., 1871, pp. 282-348.

* Dr. Trimen, of the British Museum, informs me (*in litt.*, October, 1876) that the latest and best Flora of Iceland is Grönlund's, in the *Botanisk Tidsskrift*, of Copenhagen, for 1872-3, noticed in the *Journal of Botany* for 1875, p. 210.

† He eliminates several of Babington's species, but adds about ten others to the Phanerogamic flora as given by Babington; so that the total remains very much the same as given by me in 1861 and Babington in 1871, so far as concerns the mere number of species.

‡ I have not myself seen Grönlund's *Flora* of 1875, and am not aware, therefore, whether it or others subsequent to 1860 give lists of the lower Cryptogams.

§ Subsequent to the date of my *Flora* I published certain papers—1, "Contributions to the Lichen-Flora of Northern Europe," including Iceland—*Journal of the Linnean Society*, vol. ix. (Botany), 1867: 2, "The Arctic Cladoniæ," including those of Iceland—*Transactions of the Botanical Society of Edinburgh*, vol. ix., 1868: 3, "The Protophyta of Iceland," being remarks on its Diatomaceæ, Desmidiaceæ, and microscopic Algæ.—*Quarterly Journal of Microscopical Science* for 1867.

Rángárvallhjsler), though a very few were from the east (Mislaijsler). I had asked the gatherers to take only the most rare plants, but I thought, when I saw them, that some of them were rather common." In August, 1871, he sent a few plants, "all of which were gathered in the district of Borgarfjord, north of Reykjavik; only one, a creeping Ranunculus, was from a hot spring here, not far from Reykjavik." In November of the same year he wrote:—"I fear it will be in vain to promise you some plants from the north, west, and east, and especially from the mountain districts, as few people go there who interest themselves in botany. . . . I think there are very few new plants in this collection, though I know there is one very rare in Iceland, which we call Eyarós. I have been told that it is found only in two, or, at most, three places, in my country." In our college we have two residents who specially interest themselves in botany. . . . But both of them live here in the south of Iceland, and are not likely to go either to the west, north, or east of their country, and least of all to the central deserts, where few people go except those who drive a train of ponies loaded with dried fish, and who will not stop for the gathering of plants."

These explanations were offered in reply to certain suggestions of mine as to the localities most deserving of botanical exploration, and most likely to yield the greatest botanical novelties.

The apparent hopelessness of getting the Icelanders themselves to make a thorough botanical exploration of their own island, and the inaccessibility of its desert, snow, and alpine regions from the difficulties of overland travel, lead me to repeat more emphatically a recommendation I made in 1860,† that Iceland should be visited by a yacht party of British naturalists for exploratory purposes. The whole summer months might be spent in visiting at least the less known parts of the coasts or fjords that give readiest access to the deserts or alps of the interior. The yacht would always answer as a floating hotel, on the one hand,‡ and as headquarters for natural history apparatus and collections on the other. It could be made to anchor for any length of time at a given spot, and it could be ordered to any point to wait the arrival of a party travelling overland.

KALOSANTHES.

THESE are showy, sweet-scented, succulent-leaved greenhouse plants, which bloom from June to August, just at a time when hard-wooded greenhouse plants, the majority of Pelargoniums, Azaleas, &c., are over—a time when a great and sudden dearth of flowering plants for the conservatory is frequently, I had almost said always, felt; they help to fill a gap which without their aid would sometimes be a gap indeed. In the first place, the soil I use grown them best in has been loam, peat, and cowdung, rotted to mould in equal parts; any well rotted dung will do, but I prefer cowdung if it is to be had. The cuttings should be put singly into 60-pots, and either the few shoots which do not show flower in the spring may be used, or the stems which have flowered may be cut into lengths of about 4 inches, stripped of leaves half their length, and each inserted to the remaining leaves in the compost named, with a little sharp sand added. They do perfectly well out-of-doors if the weather is not wet; as good a place as any is a frame where they may be shaded a little for the first week after being put in and kept from heavy rains. The tops of the non-blooming shoots which are used for cuttings should be broken out, in order that the cuttings may break three or four shoots. The soil is in a moderately moist state when the cuttings are put in they will not need water for a few days, but after they receive water they should be kept fairly moist. They will soon root and throw out three or four shoots each, and on the approach of winter should be put on a shelf where they will just escape frost and be in the light. As early in the spring as the points of the shoots can be fairly got at, so as to leave the shoots themselves 3 inches long, pinch them out; and as soon as the plants can be trusted without danger in a cold pit shift them into 32-size pots: the soil for this shift will not need sand; they will then start away with from six to ten good shoots. When all danger of morning frosts is past, let them have all the sun and air out-of-doors. See that they stand on a good bottom impervious to worms, for if worms get possession of the pot, though it is easy to expel them, it is not so easy to fill up the channels they leave; and it is sometimes troublesome to get a plant which requires keeping dry at any particular season, when worms have invaded the soil, wet again, without soaking the ball in a tub or trough. As the shoots elongate it will be advisable to put four sticks round the edge of the pot, and pass one or two strong strips of matting round to keep the wind from breaking them.

Should a few specimen plants be needed it will be a good plan to select some of the thinnest plants of the batch and cut them down in good time for them to break nicely before winter. The tops taken off them may be used as cuttings, and if three or four of them are cut to the length of 6 inches, leaving the top of the shoot intact, and put in a group in the middle of a 48-size pot and looped up to a stick placed in the middle of the group, these will, if put in a semi-shady place, root and make useful stuff for vases and other uses where those in 32's would be too large. These may all be wintered in a similar situation to that recommended for the previous winter, giving them only sufficient water to keep them from shrivelling. As the spring advances nearly every shoot on the plants in the 32-sized pots will set for bloom, when more water and room will be necessary for them. Those which were cut down, should be potted on as soon as proper space can be found for them. If these are required to bloom the next season they must not be stopped after March. Having potted them and got them established, they must have all the sun and air an open situation will afford, and be carefully attended to in the matter of water; they must also be properly secured from breakage by the wind. If larger specimens are required they had better not be allowed to flower, but the tops of the shoots may be put in, in a group as before directed, or potted singly, if small plants with a single truss of flowers are likely to be useful. Those that have been cut down to grow larger will fill 16-inch pots in the spring, and will make plants as large as are manageable, particularly those of K. coccinea, which is a large grower. One thing I have tried to inculcate, but which for fear of misapprehension I will put into plain words, is, that to insure a good and regular head of bloom one clear season's growth without stopping is imperative.

There are several kinds of these plants. One small-growing recumbent species has white flowers—I regret I never have been able to get a plant of it when I have been growing them—it is named K. albiflora, I believe. The best kinds I have grown are, K. coccinea, crimson scarlet, with white eye, the largest grower; Madame Celeste Winans, rosy-dink; Madame Truphemus, rosy scarlet; Phœnix, deep scarlet.

The only insect which troubles the Kalosanthes is the aphis or green-fly, which is easily removed by fumigation or syringing. They sometimes are affected with a kind of mildew which takes the form of black spots, generally in the points; it is caused by dampness with cold: a little sulphur dusted on it checks it, but a dryer and warmer atmosphere is the only cure, as far as I know. *John Bester.*

THE PHYLLOXERA AND INSECTICIDES.

SOME time ago we published in our columns a short account of the results of the investigations of various scientific men in France into the nature of the Phylloxera—that terrible scourge which is committing such wide-spread ravages among the French vineyards. Latterly we have received some reports communicated to the French Academy of Sciences dealing with the attempts which have been made during the last three or four years to arrest the mischief done by the insect, and ultimately to destroy it altogether, by means of some potent drug. It is obvious that the remedy to be employed must possess two qualities at starting, viz., it must destroy the insect, and it must not damage to any great extent the Vine. But, further, it is not sufficient that when put in close contact with the roots of a plant—as in a pot—it should prove fatal to the insect, it is necessary, if the remedy is to be of real practical value, that it should reach and destroy the Phylloxera on all the parts attacked by it in Vines which are planted out in the open ground. This is a real difficulty to overcome, as the remedy, be it in the form of solution or of vapour, cannot easily permeate the soil, sometimes clayey, sometimes sandy, on which the Vine is growing, so as to reach and act upon the smaller root branches whose nutrition the Phylloxera diverts into itself.

M. Mouillefert, a Professor at the School of Agriculture at Grignon, was the gentleman delegated by the Academy of Sciences to make the necessary experiments for the purpose of determining what agent was the most practically applicable to the destruction of the Phylloxera, and the account of the numerous substances employed by him with varying results fills no less than 200 pages of a memoir presented to the Academy of Sciences. It is not our intention here to do more than give a brief *résumé* of the results at which he arrived.

He divides the substances used by him into seven groups, the first of which was composed of manures of various kinds, such as guano, superphosphates, farm-muck, &c.; the second of neutral substances, as water, soot, and sand; the third of alkalies, as ammonia and soda; the fourth of saline products, amongst which were the sulphates of iron, copper, zinc, potassium, and ammonia, alum, and sea-salt; the fifth of vegetable essences and products, as decoctions of hemp, datura, absinthe, valerian, and tobacco; the sixth of empyreumatic products; and the seventh of sulphur compounds. It was only with some of the substances contained in this last group that really satisfactory results were obtained, and it is to M. Dumas, the permanent secretary of the French Academy of Sciences, that the credit is due for suggesting the employment of the alkaline sulpho-carbonates of potassium and sodium and those of barium and calcium. All the other classes of remedies mentioned above were either without effect on the Phylloxera, or, in destroying it, also destroyed or damaged the Vine.

The sulpho-carbonates, which were carefully studied by the great Swedish chemist Berzelius, are obtained by combining the alkaline mono-sulphides with the bisulphide of carbon, are either liquid or solid, and emit a powerful odour of sulphuretted hydrogen and bisulphide of carbon.

The alkaline sulpho-carbonates in the solid state are of a beautiful reddish yellow colour and deliquescent, but are not easily obtainable in that condition; the sulpho-carbonate of barium can be easily procured, however, in a solid state, and presents the appearance of a yellow powder, but little soluble in water. The sulpho-carbonates decompose under the influence of carbonic acid, forming a carbonate, and evolving sulphuretted hydrogen and bisulphide of carbon. These two latter substances are gradually liberated, and, as they have a very powerful effect on the Phylloxera, one can understand that the sulpho-carbonate, placed in the ground, may prove, by its slow decomposition, a powerful insecticide. In the case of the sulpho-carbonate of potassium, over and above its toxic effect, it has a direct invigorating influence upon the Vine, as the carbonate of potassium is an excellent manure.

The employment of the sulpho-carbonates as a means for the destruction of the Phylloxera was suggested to M. Dumas by the clearly-recognised need that there was of some substance that would evaporate less quickly than the bisulphide of carbon; he saw that it was desirable to apply the insecticides in some combination which would fix them and only allow them to evaporate gradually, so that their action might continue long enough in any one place to infect with their vapours all the surrounding soil.

But the task of eradicating the Phylloxera has by no means been accomplished by the mere discovery of the value for the purpose of these substances; there is the further difficulty of applying them to the Vine in cultivation. One thing seems very certain, that in order to render the sulpho-carbonates practically efficacious in killing the insect, it is necessary to use water as the vehicle by which they may be brought to all the underground parts of the plant, and that the best time of year for their application is the winter or early spring, when the earth is still moist and the quantity of water necessary to be brought on to the ground by artificial means is consequently less. Mixed with lime in the proportion of 2 to 1, these sulpho-carbonates give a powder which can be spread over the ground before the heavy rains, that is, between October and

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I do not find any such name as "Eyarós" among the native names of Icelandic plants given in my *Flora*. Nor does it appear to have been attached, by way of label, to any of the specimens sent to me, so that I have no means of identifying the plant in question.

† I, *Iceland, a New Field for Tourists*, August, 1860: 2, "Contributions to the Natural History of Volcanic Phenomena and Products in Iceland."—*Proceedings of the Royal Society of Edinburgh* for 1860.

‡ When I visited Iceland there was no such thing as a hotel in the island; but I was most fortunate in procuring quarters in the private residence of one of the leading merchants of Reykjavik.

March, and which will probably prove itself very efficacious.

The conclusion at which M. Mouillefert arrives at the end of his report is that the efficacy of the sulphocarbonates is proved, and all that is necessary is to bring to perfection their employment in agriculture, which can only be accomplished by the intelligence and practical knowledge of the Vine grower, who is well able to discover the economic processes of culture which are conducive to their successful application.

He ends by saying that "Science has accomplished its mission, and it remains for Agriculture to fulfil it part" in the eradication of the Phylloxera from the vineyards of France. *Nature.*

BOTTOM-HEAT: ITS USE AND ABUSE.

I QUITE agree with most of what your correspondent, Mr. D. T. Fish, has so ably said, at p. 11, in favour of bottom-heat, and believe that, when applied at the right time and in moderation, it is one of the most powerful aids to successful cultivation a gardener can make use of. That it is highly injurious to Vines during the early stages of their growth I have long since found from experience, and for years have discontinued it altegether, substituting a thin coating of dry leaves or bracken, covered with shutters or old lights, just to keep out frost and wet from the border. The roots of Vines respond so readily to heat when applied to them that they pump up sap much faster than the slow swelling of the buds require, and the fluid, once started and finding no natural outlet, is forced into other channels, and effects its escape possibly by some of the very roots through which it was taken up, thus keeping up a continuous circulation in that manner till the Vines are exhausted.

Those who have attempted to stop a Vine from bleeding after it has once started to do so, will have some idea of the irrepressible force of sap after it is once fairly set in motion, and with what energy it pursues its course along the various channels allotted. Heat applied to the roots propels it at a quicker rate, and causes it to expand much in the same manner as does water; and I am strongly of opinion that the sap of Vines thus set actively moving travels up the stem and returns again to the border, where it is discharged in the soil. If this is the case, as close observation has led me to believe, it is no wonder that Vines subjected to such treatment should start but feebly, and only make progress after they have got fairly into leaf, when any downward current that had previously been set going, would have ceased and taken its proper course. The fact of Vines starting stronger at the extreme end of the border, where they do not feel the influence of heat, shows clearly and unmistakably the evil of piling a mass of fermenting material on their roots, and if those who have been in the habit of so using it will only test the thing for themselves, by covering a portion of their early border, and simply protecting the remainder, I am convinced that they will soon abandon the practice.

It is not many years since that elaborate and costly works were undertaken in several gardens to heat Vine borders by means of hot water, but excepting the fine Muscat Grapes produced under the system by Mr. Drewett many years since, I have not seen anything to warrant the practice being adopted. As to pot Vines doing better with bottom-heat than without it, it should be borne in mind that it is generally applied to them when they are making their growth and have leaves, which is a very different matter to piling it on an outside border or plunging the pots in a mass of fermenting material to start them to fruit. That some do this I am well aware, and they will continue to do so till they are convinced of their error; but if I remember rightly, one of our best gardeners (I think Mr. Gilbert, of Burghley) stated some year or two ago that he found they started much stronger and better without it. If pot Vines suffer less than those in a border, it is because the soil is very much drier, in which case the effect of heat would not tell so injuriously on them. I note that Mr. Wildsmith, in his paper relating to the subject of bottom-heat to Vines, says that he lays no claim to originality in discovering that they do not make fresh feeding roots till the buds are expanded. That they and all other deciduous plants do so, is a fact known to most people, or if it were not so what is the use of transplanting such things at the time of year at which all operations of that kind take place? Vine borders are generally overhauled in the autumn, many of them not being interfered with till after the leaves have fallen; and does Mr. W. suppose that the old mutilated roots remain in that condition till the buds start again in the spring, before forming fresh fibres?

There are few gardeners who have not had something to do with renovating old Vine borders, and in doing so they must have observed numbers of rootlets to all appearance as active as at any time of the year. It is one of Nature's laws that roots are ever elongating and ever at work, although no doubt in a much less degree during the winter than at any other time; but that they are at work then is beyond all question, for if it were not so, how is it possible that any deciduous plants could exist? In the act of transplanting, or during any interference with a Vine border for the purpose of renewing the soil, most of the main roots are broken or damaged; this involves the loss of the principal feeders, but the plant immediately sets to work to repair the loss by forming others, without which it would live but a very short time. I know there are many who think that because they see trees leafless, they are entirely at rest, and that there is no movement going on either above or below, but this is one of the most erroneous ideas ever entertained. If the roots were not at work, sending up sap to replace that carried off by drying winds, and to nourish the incipient buds during their slow process of swelling, trees would cease to exist. Nature is never at rest, but goes on unceasingly in all her various departments, and there can be no doubt that as regards root formation she is never at fault, but that the process is ever going on in a greater or less degree so long as there is life in the plant. With Vines I take it that it is not the formation of fresh feeders that does the mischief, as their increase would be highly beneficial, but that the sap is put in rapid circulation, and instead of finding its natural outlet it returns to the soil, thus keeping up simply a flow and return, to the great detriment of the swelling buds, as they would thus be in a measure starved.

With plants in leaf, or with such as have had their feeding-roots disturbed or injured, the effect of bottom-heat would be very different, as it would greatly aid the formation of fresh fibres to take the place of those destroyed, and thus enable them to get quicker to work to repair the injury; indeed, with many plants that have been shaken out and partly disrooted bottom-heat is absolutely necessary. There are many stove subjects that will do in from 10° to 20° less top-heat if they can have their roots in a hotbed, and although they may not be so serviceable for the decoration of houses or exhibition purposes as when grown without it, most of them do best when they have it supplied. What, for instance, should we do without it in the case of Melons and Cucumbers? and do they not always succeed in a more satisfactory manner when the bottom-heat is greatly in excess of the top? And so with many other plants. Mr. Andrew Knight and others tried to do without it for Fine-apples, but the attempt was so much a failure that all who cultivate them now have returned to the old system.

As of all good things, it is an easy matter to have too much of bottom-heat, and to use it for a wrong purpose, as is the case when it is applied to the roots of leafless Vines, where the only effect it has is to cause them to pump themselves dry. *S. W.*

LOCKINGE, WANTAGE.

THIS extremely picturesque domain, the residence of Colonel Loyd-Lindsay, M.P., is situated about 2 miles eastward of Wantage, in the midst of a purely agricultural district. The roadway runs through the village of Lockinge, which is immediately contiguous to the park grounds, and Lockinge Church is almost close to the mansion, the main road being almost within a stone's-throw of it. It is one of those places in which the park grounds melt almost imperceptibly into the fields beyond them, and village and park alike have the appearance of being blended in one community bound together by a common bond of mutual interests. As the visitor drives up to the gardener's residence at the top of the village he has the park grounds on the left hand of the hill, and on the right a line of semi-detached labourers' cottages, quite picturesque in appearance, in an elevated position, with charming flower-gardens in front and good vegetable gardens behind; and their appearance testifies to the desire of Colonel Loyd-Lindsay that the abodes of his labourers should be examples of domestic convenience and sanitary arrangements. Prizes are annually offered for the best-kept flower and kitchen gardens, and some of the former, on a gentle slope towards the roadway, are excellent illustrations of taste and skill in the arrangement.

Lockinge is a place of great antiquity. The old Saxon name was "Laking," which at the Norman Conquest was corrupted into "Lachinges." In the ninth century Laking was granted, by charter of Queen Adelsinth, to the Abbey of Abingdon, and for some centuries this estate continued vested in the abbey, until its dissolution in 1538, when it was placed at the disposal of the Crown. Clarke's *Parochial Topography of the Hundred of Lockinge* gives full details of the successive holdings of the property until it became the property of Mr. J. P. Bastard, M.P. for Devonshire, and was sold by his successor to its present respected owner.

The mansion occupies a low position, and the manor-house as it was called was built about the year 1740. Since it came into the possession of Colonel Loyd-Lindsay the grounds have been considered improved, and these are constantly being carried out under the superintendence of Mr. James Atkins, the able gardener at Lockinge.

The view of the mansion (fig. 12, p. 81) is taken from the rising ground near to the roadway, and it has been admirably executed by the artist. The church is situated on the right-hand of the mansion, but is hidden from view by the group of trees and shrubs in the foreground. There is a pleasant terrace flower garden along the front and at the sides of the mansion, the principal entrance or carriage drive being on that side of the residence farthest from view. The rising ground and slopes about the residence, and the stretch of park away beyond, are all modern, and there are to be found some splendid examples of Beech, Elms, Sycamore, Limes, &c., also of Yew, Box, Thujas, Wellingtonias, Picea Pinsapo, many kinds of Berberis, Laurustinus, Aucubas, &c. Many choice shrubs are but newly planted, but they are all doing well. Some of the Yews are of handsome pyramid shape, and 18 feet in height.

The grounds are remarkable for the air of repose about them; they seem to be so entirely removed from the busy haunts of men—forming a place in which to seek rest and quiet from the cares of business, the heat of party warfare, and the incessant requirements of modern social life to dwellers in the metropolis. There are extremely pleasant winding walks about the slopes, with here and there artfully constructed pieces of rockwork and waterfalls that look as if they had been fashioned by the hand of Nature; and at the lowest point a winding stream and rustic bridges, the banks clothed with Primroses and other flowers in spring, and in summer with Ferns, Periwinkle, &c. At almost every point some charming feature is introduced, appropriate groups of plants and shrubs, patches of bright flowers, &c. In one spot which the visitor comes upon suddenly—for it is artfully surrounded by a bed of shrubs and trees—there is a small circular flower garden, which at this time of the year is bedded with spring flowers of different kinds, such as Daisies, Arabis, Polyanthus, Aubrietia, Wallflowers, Pansies, Forget-me-nots, &c. In summer-time a charming display is obtained here by means of ordinary flowering and foliaged plants, admirably arranged, and conspicuous among the subjects were some very charming beds of Lantanas, which were a most pleasing feature.

In addition to the terrace garden, in which the beds are similarly filled as above during spring and summer, there is also what is termed the saloon garden, which is situated in front of the smoking saloon leading to the large conservatory. Here small shrubs are intermingled with Hyacinths and Tulips at this season of the year, and the stone vases, filled with flowering plants in summer, have Yuccas, &c., as their occupants.

There are eight plant and forcing houses in addition to a spacious conservatory, all of which are filled with the usual occupants in excellent condition. Lockinge is not a plant-growing place, but there are many admirably grown specimens of great value for house decoration. A new road, 600 yards in length, leads from the mansion to the new walled-in kitchen garden, which occupies an open, elevated, and somewhat exposed spot. The new kitchen garden was

commenced by Mr. Burr, Mr. Atkins' predecessor in the management of the gardens, in 1871, and was completed under Mr. Atkins. It is about 6 acres in extent, with substantial walls and a range of vineries and Peach-houses. The kitchen garden is on the chalk, and originally there was not more than 6 inches of natural soil resting on the chalk bed, but it has been made up to the depth of 30 inches by means of soil brought in from the great stretch of downs immediately contiguous, which was mingled with the natural soil. The wall trees are all in a concrete bottom, 5 feet in width. The Peaches that do best outside are Early Grosse Mignonne, Dr. Hogg, Téton de Venus, Early Silver, Noblesse, Royal George, and Princess of Wales. It may be remarked that all the trees are comparatively young and in process of being established, and during last summer bore good crops of fruit. To ensure a due supply, water is laid on to all parts of the kitchen garden by means of eighteen branch pipes from the waterworks on the estate.

The six vineries are planted as follows:—No. 1, with Madresfield Court and Foster's Seedling'; No. 2, with Muscat of Alexandria; No. 3 is a mixed house; No. 4, with Black Hamburgh; No. 5, with Alicante and Lady Downe's; No. 6, with Hamburgh and Foster's Seedling. Mr. Atkins has been very successful in showing that it is possible to have the Madresfield Court Grape fine in berry, in bunch, and without the trace of a crack, as shown at p. 367 of the last volume of the *Gardeners' Chronicle*. In the two Peach-houses are Noblesse, Royal George, Stirling Castle, Ward's Late, and Barrington; of Nectarines, Albert Victor, very fine, and Elruge; and there is a capital Fig-house also.

The kitchen garden paths are spacious, a centre path being 14 feet in width, and all the other paths 10 feet in width, to admit of carts going round with manure, &c.; and on either side of the main path there is a mixed flower border, which admits of many flowers being grown that are invaluable for cut purposes.

Mr. Atkins is well known at various exhibitions as a successful cultivator and exhibitor of fruit and vegetables, and the improvements that are going on at Lockinge serve to give him a wider scope for the display of his energy and practical skill. *R. D.*

BOURNEMOUTH.

CLOSE to the beautiful estuary known as Poole Harbour, not far from Studland and Swanage, with their fine coast scenery and almost inexhaustible points of interest for the geologist and naturalist, lies the town of Bournemouth. Situated on a sandy coast, and well sheltered by hills thickly clothed with Pinasters and other Conifers, this comparatively new town possesses almost unrivalled advantages as a health resort. To its other attractions has lately been added a winter garden and conservatory, a representation of which is given below (fig. 11), and which was opened on Tuesday last.

The winter garden is situated near the centre of Bournemouth, and within easy walking distance of the pier and the public pleasure grounds, and bids fair to become a fashionable and attractive lounge. A quantity of Palms and other ornamental plants has been placed within the wing of the building which has been specially erected for their reception, the corresponding wing being intended for a concert-room. The building has been designed by the contractors, Messrs. Fletcher, Lowndes & Co., of Great George Street, Westminster, and the erection has been superintended by Messrs. Tuck & Cumber, of Bournemouth. The building consists of the quadrangle, which is 100 feet square, with galleries approached by staircases, and running round three sides; an upper structure, or dome, 42 feet square, with external balcony; a vestibule, within the main entrance; and the two wings, each 50 feet long by 70 feet wide, and 27 feet high. The roofs are curvilinear, and are constructed on Messrs. Fletcher, Lowndes & Co.'s system, with their patent iron tubular ribs, and supported by cast iron columns.

The building is approached from the Exeter road by a carriage drive, and the principal entrance consists of a flat glazed roof, over the carriage-way, projecting from the vestibule. There are similar entrances at each end and at the back of the building, those at the wings consisting of vestibules projecting 10 feet, and being 10 feet in width. The principal entrances are paved with Carter & Co.'s tiles from the Poole Pottery. The heating apparatus is sufficient to raise the temperature as required from 32° to 65° Fahrenheit, throughout the building, a portion of the cast-iron piping being covered with ornamental iron continuous grating. The ventilation is carried out on Taylor's system applied to a portion of the hot-water pipes, the fresh air being conducted by means of zinc piping and covers over the pipe troughs, and communicating with the outer air, thus giving a continuous supply of warmed and vapourised fresh air throughout the building. Additional summer ventilation is provided.

The quadrangle is lighted by a fringe of gas jets round the inner side of the gallery, and the wings, *i.e.*, the concert-room and the tropical department, are lighted by starlights. Water is laid on, and drainage, as well as protection from lightning, is also provided for. The height from the floor to the centre of the roof is about 70 feet, and there is a floor surface of 21,000 square feet. The extreme length of the building is 220 feet, and at its widest part it is 125 feet. The views obtained from the outer balcony, running round the upper structure, are very fine, embracing the Needles and great portions of the Isle of Wight, the Solent, the English Channel, &c.

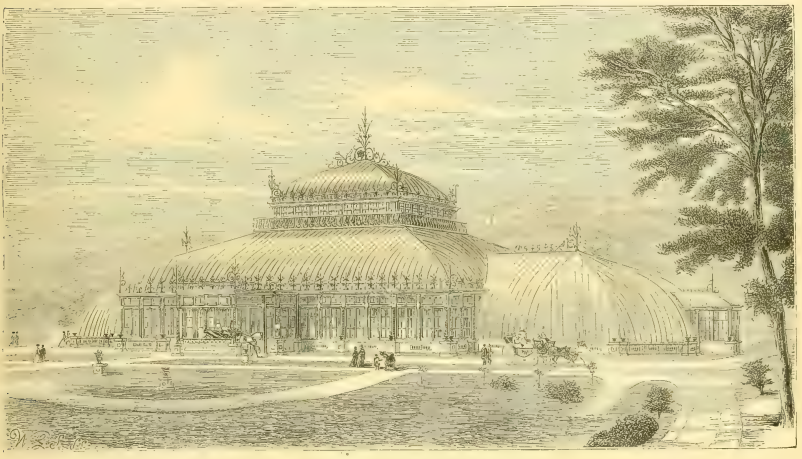


FIG. 11.—THE NEW WINTER GARDEN AT BOURNEMOUTH.

Florists' Flowers.

MESSRS. DOWNIE & LAIRD'S NURSERY AT PINKHILL is situated about two miles west of "Auld Reekie," on the Glasgow Road. The Pinkhill Nursery is a branch of the West Coates establishment, where the firm a few years ago built a fine winter garden, now recognised as one of the sights of Edinburgh. Pinkhill has always played the part of a feeler to West Coates, and does so still, but to a greater extent, insomuch that since Mr. John Downie, the senior partner, has taken up his residence there, Pinkhill has become emphatically the home of the various types of florists' flowers, in the culture of which for so many years the firm has achieved a well-merited success; and now that the crossing and propagation of the various flowers is carried on under the watchful eye of Mr. Downie, one of the keenest of florists and most genial of men, we may expect to see many more fine garden flowers added to the already long list sent out by the firm.

PENTSTEMONS.—At the time of our visit one of the grandest of sights in the floral world was to be seen in

two large beds of Pentstemons, the one composed entirely of named sorts, and the other of seedlings flowering for the first time. Which of the beds pleased us most we were at the time, and still are, unable to say, so abundant were the charms of each. The batch of named sorts included all the varieties catalogued by the firm, while the bed of seedlings contained a great number of their prototypes—in fact, as was remarked by a well-known nurseryman, if all the named Pentstemons were lost they could almost be replaced out of this bed of seedlings. In the improvement of the Pentstemon this firm has taken the lead. Indeed it is to Mr. Downie that the credit is mainly due of bringing the flower to its present high standard of excellence, and as he was kind enough to tell us how in a great measure this was brought about, it may as well be recorded. It seems that, some years ago, a variety named perfoliatus was introduced, —by whom we did not learn ; but at all events it was a very fine introduction, and distinguished from the ordinary varieties in cultivation in those days by its lengthy spike and thickly set whorls of short-tubed flowers. Well, this particular variety was planted amongst the other named sorts—and the bees, who are particularly partial to Pentstemons, carried the pollen of perfoliatus from flower to flower, and so started the improvement which has resulted in a complete change in the character of the plants, which are distinguished now from the old lengthy type of Pentstemon by their much more lengthy spikes and more thickly placed flowers. A batch of seedling Pentstemons has been raised annually at Pinkhill for some years past, and from these have generally been selected about a dozen of the very best to send out. When we saw them last autumn some ten varieties had been so selected, and these were named Countess of Tarbat, a very fine variety, with flowers of a deep shade of rose, the throat being white and pencilled with puce ; Mrs. Kinghorn, a fine round flower of a rich dark rose, with a white throat, pencilled with rose ; John M'Nab, which had a very fine spike of rosy scarlet flowers and a pure white throat ; Dr. Masters, a very large flower, crimson scarlet, and pure white throat ; Lady Houston Boswell, a large and well-formed flower, in colour a curious combination of white and rose ; Octoroon, a dark rosy-crimson flower, with a fine bold throat ; Mrs. A. F. Barron, a pretty and very distinct flower, light rose shaded with violet ; Lennie Barron, a shaded French-white and carmine pencilled throat ; William Fowles, a white crimson-shaded flower, of fine size ; and Percy Wynne, dark crimson, and white throat veined with rose. Two of these, Mrs. A. F. Barron and Octoroon, were figured in the *Floral Magazine* for December last.

Turning now to the named sorts already distributed we noted as the best of the new varieties sent out last year Mrs. Sutherland Walker, bright scarlet, white throat ; David P. Laird, crimson, with a white throat, pencilled with a deeper shade of crimson ; Mrs. Wills, pale crimson, with a white throat ; pyramidalis, crimson scarlet, with a deep crimson blotched white throat ; Lady Dundas, white, shaded with purple ; Captain Boyton, purplish maroon, with a white, crimson-striped throat ; and Emma Marsh, dark rose, with fine white throat. The whole of these are distinguished for their fine lengthy spikes, and bold even flowers. Out of the dozen sent out in 1875 we noted eight varieties that proved to possess a high degree of merit, viz., Beauty, light purple, with white throat ; Duke of Sutherland, bright scarlet, with white throat, very fine ; James Watt, rosy crimson, throat blotched and striped with deep claret, the upper lobe white ; Mrs. Macfie, purplish crimson, with a white throat ; David Thomson, rosy crimson, throat white veined with crimson ; Andrew Kemp, ruby-red, white throat heavily veined with crimson ; and Dr. Gray, a blueish shade of purple, with a white throat, striped with claret.

The Pentstemon is one of the hardiest of florists' flowers, but in ordinary gardens it is better known as a very showy and useful border plant. Somewhat outside the pale of exhibition flowers in the South, though more favoured in the North, it yet has points of excellence that make it well worthy the attention of the florist, and the many fine named sorts now in cultivation attest that that attention has not been wanting, especially among the Northern growers. Partaking even more largely than the Wallflower or the Antirrhinum of a perennial habit, it is yet best treated as a biennial, or, at the most, as a triennial, because it is apt to get ragged and shapeless after that period of growth has been passed. Still farther, new plants are so easily raised from seed that it is but necessary to sow a pinch of seed each recurring season to secure a constant supply of robust young plants. It is also an excellent characteristic of the Pentstemon, as seen in the Pinkhill seedlings, that it very fairly reproduces by means of seed all the best features of the parent. The better the parents the better will be the stock of seedlings produced, and a selection from the best flowers is a matter of the greatest ease to any grower. Probably a knowledge of this fact accounts for the general non-appearance of named varieties in our gardens, although it by no means accounts for the too common absence of the Pentstemon from garden borders altogether. It may be that the fine qualities of the Pentstemon are not sufficiently understood in the South, and it is less doubtful that if understood they would ensure for the plant a much more general cultivation than it at present enjoys.

Why the Pentstemon should not receive as much encouragement amongst us for exhibition purposes as does the Stock or the Antirrhinum is one of those things that can only be explained by the compilers of floral schedules. Good spikes of flower are more showy than either of these are, quite as easily grown, and admit of the skill of the florist being more fully displayed in adjudging of their merits than do either of the flowers mentioned. Arrangement of flowers on the spike, size and shape of tube, colour, and markings, all call alike for accuracy of judgment, and therefore it is from no intrinsic defects in the Pentstemon that it is, so far, shut out of the pale of exhibition flowers.

An interesting fact in connection with the Pentstemon is the extraordinary fondness of the bees for its flowers. What there is about the flowers that the bees so much appreciate we are unable to say, but the fact remains, that while bees were generally very scarce everywhere last year, as pointed out recently by Mr. Darwin, they might have been counted by hundreds amongst the flowers of the Pentstemons at any time of the day when the weather was fine. We have no recollection of having seen the Pentstemon recommended to be grown as a bee flower, but that bees are remarkably fond of the flower there can be doubt, and this furnishes another reason why this beautiful flower should come into greater favour.

ANTIRRHINUMS.—Another interesting feature in the Pinkhill nursery was a fine border of Antirrhinums in full bloom—a brilliant display of richly hued blossoms. A batch of seedling Antirrhinums is also raised here every year, but a great number have to be grown to secure one good flower distinct enough to name. It is a singular characteristic of this plant that its continued cultivation develops so little improvement in the way of colour. The shape and size of the spikes and flowers have undergone immense improvement ; but as regards new shades of colour, such as are so freely produced by the Pentstemon, the advancement of the Antirrhinum may be said to have stood still. There are three or four permanent colours, on which the variations or changes are rung, but from which the flower does not seem to be able to break away.

PHLOXES.—The raising of new varieties of Phloxes of the autumn-flowering section is also being vigorously carried on. The seeds will not ripen out-of-doors so far North, but when grown in pots and flowered under glass they ripen very well. There was a fine batch of seedlings just coming into flower at the time of our visit, and we have heard since that their flowering has given great satisfaction, and several fine varieties have been saved to bloom again this year.

PANSIES.—Next to the Pentstemons, the glories of Pinkhill lay in a large bed of Pansies and Violas planted on a gentle slope facing due south, and which was literally one sheet of blossoms. Long before mid-summer the Violas with us were completely burned up, and it was indeed a treat to see such a display at the time. As a bedding plant the Viola stands pre-eminent in Scotland, where the less glaring sunshine and longer dewy nights suit it so much better than our hotter and drier summer weather. The Viola has been largely improved by the Southern growers, and so it has in the North, where our familiar names are seldom met with, the Scottish fanciers sticking more to their own productions. Amongst the fine varieties growing in front of Mr. Downie's residence we particularly admired Viola Duchess of Sutherland, of a pale Cambridge-blue shade of colour, free-growing, and very floriferous, an improvement on Dean's Prince Teck, from which it is a seedling ; Mrs. Henry Pease, a pure white flower, dwarf and compact in habit, and very free-flowering ; Max Kolb, a fine purple flower ; Pinkhill Beauty, a fine shade of purple-plum colour with a dark centre, and fine in form ; and King of Bedders, a variety sent out last year, and in the same way as the last-named.

—— It will interest lovers of Pelargoniums to know that Dr. Denny's new varieties will be distributed this spring by Messrs Veitch.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS. — The tying and staking of these plants should be pushed on with, so as to finish it as soon as it can conveniently be got through. The bloom-buds of many things will now begin to increase in size, and if training is delayed too long there is danger of their getting knocked off in the operation. Large plants that are only wanted for home decoration will not need as much tying as they would if intended for exhibiting as well. The material that shows the least is black carpet thread, indeed it has to be nearly looked for to be seen ; in its use it is necessary to be careful not to tie the shoots too tight, as it will not stretch. Always have neat sticks, for even if those used last year seem sound they will before the season is over decay, and then, when the plants are moved about, they are in danger of the collar being injured. Soil of the various descriptions necessary—loam, peat, leaf-mould, and sand—should immediately be got under cover and spread out in open sheds to dry, so as to be in proper condition by the time for potting ; and empty flower-pots should be well washed and crocks broken, so that all may be in readiness.

HEATHS.—With these also let the tying be completed as soon after this time as possible, by so doing the plants will when in bloom have a better appearance, as when tying is done a good while before the flowers open the points of the shoots and the leaves have time to assume their proper position. It is well now to make a calculation as to the time it is desirable to have the plants in bloom ; this applies equally to those for home decoration as well as to any that may be wanted for exhibition purposes. As soon as we get any sun they should be put in positions to keep back and push on their flowering according as may be necessary. Any that may be placed in the north or retarding house must have a good situation where they will get plenty of light, for Heaths cannot bear being in badly ventilated or dark houses. Putting them at the coolest or warmest end of the house they are grown in will cause two or three weeks' difference in the time of their blooming. Early flowered plants of the Hyemalis section that have been in conservatories or other places where a higher temperature is kept up, and where they may also not have had enough light and air, should as they go out of bloom be put where they will gradually receive treatment better suited to their wants. Do not let them be exposed to cold draughts of air, but give them abundance of light and the requisite ventilation, and encourage them to begin growing.

SOFT-WOODED GREENHOUSE PLANTS.—Lilies, if wintered under plant stages, or such-like places, must on no account be allowed to suffer for want of water. If from any cause they were not potted at the proper time last year, they should at once be attended to, getting the soil in the pots above the bulbs carefully away without disturbing the roots, and replacing it with good loam, to which has been added rotten dung, a little sand, and some leaf-mould, giving just enough water to keep the soil in a healthy state. Let Primulas have a position as near the glass as possible, and if in a night temperature of 48° they may have plenty of water to their roots, as the light and extra warmth will make them not liable to their greatest enemy, damp. Cuttings of show Pelargoniums struck in the autumn should, when they have filled their little pots with roots, be moved into larger ; from 4 to 6 inches, according to their size and the nature of the variety, will be big enough for them this first season. Give them good loam well enriched with rotten manure, to which add a little sand. Those that have not been stopped should have their points pinched out to cause them to break. Cinerarias that were sown late and are in small pots, if they do not show signs of blooming, will be benefited by being moved into larger ones. These will come in late, and be of service when the earlier bloomed plants are over. If they have commenced to push up their flower-stems do not repot, as all that can then be done to help them is giving them liquid manure. To manage Primula japonica in a satisfactory manner it wants treating well, not stinting it for pot-room, and giving it soil consisting of good loam with the addition of a fair sprinkling of sand and a fifth of leaf-mould and rotten

dung in equal proportions. Any plants that need it should now have a liberal shift; they will flower strong and late. Those that are intended to bloom early ought to be well fed with manure-water. Campanula pyramidalis, both the white and blue varieties, are very useful decorative subjects, and deserving of being more generally grown than they are if sown in good time in the spring and well done they make fine blooming plants in about sixteen months. Give plants either grown on from suckers or sown last spring a good light position, and never let them get stunted through an insufficiency of pot-room. *T. Baines.*

ORCHIDS.—Advantage should now be taken, whilst there is a comparative slackness of work in the other departments, to carefully go over the collection, and give every plant a thorough cleaning. This matter of sponging will be necessary during almost the whole of the season more or less, for dust will be sure to follow the leaves, and insects to get upon them also; but just now it will be better that a more persistent course be adopted, and the plants carefully gone over. The different forms of scale that attack these plants, whether the soft mealy one that is found chiefly on Cattleyas and Lælias, or those that affect more particularly the Aerides, Vandas, and Saccolabiums, or again that small hard one that we meet with chiefly on Cœlogyne cristata, are all imported with the plants, and as soon as we have the plants under cultivation the insects appear to thrive and increase immensely. Get a small brush or a pointed stick for the removal of these, and with a piece of sponge carefully go over the leaves and bulbs, and thus give a fresh and glossy appearance to the whole. Dipping is always better to use, one to a little soft soap in the water, and if a few drops of turpentine are added it helps to kill the smaller scale, whilst it is quite safe and will not hurt the tenderest leaves. Only those should be trusted to perform this duty who have previously had experience in the cleaning of plants, for no costly, else if one who is new to the work is set to it, and due oversight is not given, the number of cracked and split leaves and scratched bulbs will soon show signs of inexperience and want of care, and in a few hours the results of years of careful skill may be completely spoilt, and what should give pleasure and satisfaction will then only bring disgust and disappointment. Let a sufficient quantity of sphagnum moss and carefully assorted peat be got under cover, and on wet days, or when time can be spared, give the moss a good picking over, so as to get all grass and weeds that will be sure to be amongst it, so that when required for potting it will be ready and fit for use. Pots and crocks should also be washed, and placed under cover, and some charcoal obtained, so as to be at hand when needed. The Odontoglossum-house will now begin to wear a cheerful aspect, and from the time the first flowers of Alexandræ expand we may look forward to a continuance of bloom. One of the pleasures in connection with this class of plants, more especially those that are purchased as soon as imported, is the fact that it has often happened that where a number have been obtained for Alexandræ, and grown on for a year or two under that impression, when the flowers have opened they have proved to be triumphans, and in some cases the even more rare and choice Andersonianum; where such is the case a single plant will be worth much more than is often given for the lot. It may be said, however, that sometimes the results are the other way, and that a worse thing turns out amongst what were expected to be all very fine: this is true in a measure, but the chances now-a-days are much more in favour of the buyer than when this class of plants was first introduced. Again the different, and, at the same time, beautiful varieties of Alexandræ and Pescatorei are such, that where convenience can be given these should be grown by scores or by the hundred, and when established and in flower there are very few sights that can be compared to a stage in the Odontoglossum-house with the spikes of these spreading and drooping over dark green healthy foliage. When the first flowers of Alexandræ were seen some twelve years ago, it was directly looked upon as one of the most desirable and useful that had ever been sent over, and each year, though it has been imported by thousands, and gladdened the heart and pleased the eye of numberless spectators, it is now sought for as eagerly as at first, and is in higher estimation than ever. *W. Swan, Falkenfield.*

FRUIT HOUSES.

PEACHES AND NECTARINES.—When the time of flowering of these subjects takes place under the variable external aspects which usually prevail during the present month, it may reasonably be considered a somewhat critical time for the process of fertilisation; the most suitable artificial means should therefore be adopted to effect the object perfectly. At times, however, when this peculiar function fails, the cause is too readily ascribed to it alone, without duly considering other primary reasons which are inseparably connected therewith; for example, such as would naturally arise from an unmatured state of the wood by reason of over-exuberant growth being allowed to go unrestricted, or by suffering the borders about the roots to become exceedingly dry before the buds are perfectly developed. To these may be added other matters of detail in management, to which failure in this particular way may therefore with justness be associated and not solely limited to the conditions which are existent in the house at the period in question, for cases occur where excellent sets of fruit are secured, even under very ordinary circumstances. We invariably pursue a definite course of keeping up a moderate equable temperature of from 50° to 55° at night and from 55° to 60° in the day-time by fire-heat if it be necessary; and under the influence of sunshine range it from 65° to 75°, at this time admitting a free course of air through the house; on other occasions ventilating and closing the house at from 57° to 60°; and at times when severe pressure exists externally we are content with 5° less both by night and in the day-time. As the flowers expand, and when the pollen is dry, brush these over with a camel's-hair pencil, or a jar of the bells by the aid of a hot sunny day. A similar course of sprinkling is likewise adhered to throughout the whole process, and the trees are lightly syringed every morning and early in the afternoon every day, providing the moisture from the former syringing has dispersed. The temperature is maintained in the successional-house may, with an increased amount of light, be kept identical with that of the earlier started house. No time should be lost in completing whatever remains to be done in this department in the way of pruning, clearing, and training, as the flower-buds are already considerably advanced, and we hopefully, with sunshine and favourable conditions, expand, and render such operations injurious. *Geo. Thos. Miles, Wycombe Abbey.*

CUCUMBERS.—A very important item in the management of winter Cucumbers is cleanliness. Every portion of the house should be kept sweet and free from decaying matter; free ingress of light should be provided for by frequently washing the glass. If green or black fly put in an appearance dress with Pooley's Tobacco Powder. Destroy red-spider by the removal of old leaves, a few at a time, and careful sponging of the remainder with tepid soapy water—a tedious process many will say, but if taken in time a house of plants may soon be gone over. Smoking at this season, particularly after a mild dull weather, is dangerous, as the foliage being exceedingly soft and tender. The steaming of pipes or other heated surfaces should also be avoided for the present, as plenty of moisture may be obtained by damping the paths and walls. If severe weather sets in, blinds, mats, or other non-conducting materials must be used for covering with at night. Maintain a night temperature of 68° to 70°, with a rise of 10° to 15° by day. Pay constant attention to the preparation of materials for frame Cucumbers by frequent turnings and protection from heavy rain. Make further sowings of seeds of the most approved kinds for succession, placing single seeds in small pots. Shift on young plants as they require more pot-room, and keep them near the glass.

ORCHARD-HOUSE.—In large places, where an early forcing orchard-house has been provided to save the hard forcing of old-established trees, a selection of the best early kinds should be used for this purpose. One of the very best is Hales' Early, a fine, large, richly-flavoured Peach; Early York, Early Grosse Mignonne, and Abec, equally large and good, although a little later than Beatrice and Louise, are really presentable when well-grown in pots; indeed, these four kinds form the cream of the early varieties. To answer their purpose properly these trees should now be going out of flower, and treated liberally. The fruits will swell rapidly under frequent syringings with tepid water, and a temperature of 50° to 55° at night, with a rise of 10° by day.

In the orchard-house proper—*i.e.*, the cool house—the mild weather is bringing the buds very forward. When fire can be applied in severe or wet weather this is of little consequence, but where the house is unheated every door and window should be thrown open night and day to keep vegetation in check. All pruning, dressing, and cleaning should be finished, the trees gradually watered, until every particle of soil is brought into a growing state, when the final top-dressing may be applied. Trees established in houses like a hard border to grow in; good turfy loam, not too light, with a fair sprinkling of old lime rubble, suits them well. The drainage, too, must be good, as size of fruit depends so much upon feeding and the amount of healthy foliage the trees are allowed to carry. Trees intended to come in late may now be pruned and kept out-of-doors under a north or west wall until the blossoms begin to show colour, when they must be taken under glass. If well managed through the past summer, but little cutting will be required at this season; but where it is necessary to shorten-back, care must be taken that the cut is made in front of a triple bud. *W. Coleman, Eastnor Castle.*

KITCHEN GARDEN.

With the advance of the season renewed vigilance must be exercised in order to keep pace with the different requirements in this department, one of the principal of which is to see that a constant succession of Seakale is regularly put to work at such intervals as the supply required renders necessary. The ordinary method of covering with pots and fermenting materials is useful and good in its way, but cannot always be thoroughly depended upon for supply; it may with very great advantage be supplemented by taking advantage of the splendid roots for forcing which have been so largely cultivated of late years for that express purpose. Our practice is to put from seven to nine large roots in 10-inch pots, water them thoroughly, and invert a pot of the same size over them, and place them on the top of the brick-work over a large boiler which heats several houses, covering them with a good thickness of old mats to exclude light. The soil must not be allowed to get dry, and about fourteen days is the average time required to have it ready for table; if pushed faster it comes weak. Another batch of Asparagus crowns should be put to work, care being taken to avoid overheating, of which it is very impatient. A few roots of early sorts of Rhubarb may have cement barrels, with the heads forced out, placed over them, and these well covered with stable litter which has not been too much fermented. In a season like the present, when Apples are so scarce, well forced early Rhubarb cannot fail to be appreciated. Another batch of French Beans should be put to work for succession; where convenience serve it is better to get in smaller batches at shorter intervals than a great number all at once; much, however, may be done in the way of succession by sowing half the batch of a later sort. Some time in the last week in the month a good bed of prepared fermenting materials should be ready for the sowing of early Carrots the first week in February. This is often done in movable frames with very good success, but it does not economise material. For some years we have devoted a small brick pit a little over 4 feet deep and half sunk in the ground to this especial purpose, and have never failed of a satisfactory result: we usually sow two-thirds Early French Forcing and the other Early Horn, thus securing a succession to bring in the same two sorts in the open quarter. We take advantage of the heat for a sprinkling of Wood's Early Frame Radish, which is away before it can harm the Carrots. Early Potatoes required for planting in frames next month should be at once laid out on the floor of any erection where there is a constant heat; the advantage to be derived from this practice, both for framework and early planting in the open, is very great, because sets will either not sprout at all or so late that they would be useless in frames, where every plant is expected to tell; and for the open border it is always a great advantage to be able to select such sets as will ensure a certain growth. When the sprouts have advanced an inch they are ready for planting. If the weather is open at the end of the month, and the ground in such a state that trenching may be carried on, all vacant plots should be attended to at once, and where new plantations of Horse Radish are required now is the best time to plant, or as early after this as the weather will permit: this crop requires deep trenching and plenty of manure.

Now is a good time to decide upon the various plots to be occupied by the forthcoming crops, and proceed with the work of preparation in the order required. One of the first as a general crop will be that of Parsnips, which should be sown next month, the Hollow-Crowned and Student are two good sorts; take care to have new seed, as seed even two years old is very uncertain. Look well to the sowing of small salading in heat, and see that Chicory and Witloof are put in heat to blanch for succession, and to help out the supply of Endive from the winter stores. *John Cox, Redleaf.*

—— The Rev. F. Simcox Lea, writing from Worcester to the *Times*, remarks that "Mr. Darwin's statement (quoted in the *Times* of the 11th inst. from our columns) that the Holly is a dicecious plant explains a difficulty which the older writers on botany do not solve. Neither Withering nor Sowerby (original editions) gives the Holly as dicecious, while in common experience the trees which are full of flower in the spring, and which never bear berries are familiar. A peculiarity noticed during 1876 in this district was that the abundant berries of the Holly of 1875 remained on the trees all the year, and in my own garden I had the berry of 1875 at the Christmas of 1876. The berry of 1876 was very rare, but the year was remarkable here for a generally deficient fruit crop, the stone fruit and Apples having alike failed. The Portugal Laurel, however, ripened its berries in unusual plenty. This, I believe, is a monœcious plant, but the Yew, which is dicecious, had also an abundant yield of berry."

THE

Gardeners' Chronicle.

SATURDAY, JANUARY 20, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, Jan. 24 { Sale of Fruit Trees, Roses, Shrubs, Bulbs, &c., at Stevens' Rooms.
THURSDAY, Jan. 25 — Sale of Lilies, at Stevens' Rooms.
SATURDAY, Jan. 27 { Sale of Hardy Plants and Bulbs, at Stevens' Rooms.

SOMEWHAT to the astonishment we suspect of those who thought they had really seen the last of the ROYAL HORTICULTURAL SOCIETY, a large and interesting display of miscellaneous plants was collected in the Council-room on Wednesday last, thanks to the exertions and good feeling of such exhibitors as Messrs. VEITCH, WILLIAMS, LEE, Sir HENRY PEEK, and others. We must refer to another column for the details of what was really a large and interesting meeting, though but thinly attended by the general public.

It was gratifying also to hear a long list of new Fellows proposed. All these signs should encourage the Council. It scarcely admits of doubt that a large accession of new Fellows would accrue if the Society could only get clear of its entanglements to the debenture-holders and the Commissioners. To be saddled with the gardens one day longer than is absolutely necessary will, be believe, be fatal to the rejuvenation of the Society. All that is wanted is an official meeting place for the committees, with space enough for shows, if desired. Any attempt to conciliate the fashion of the town by bands, and such non-horticultural things, will simply be to pursue the same fatal policy which has so well nigh wrecked the Society. Let the Society stick to its own work, and that only. If any considerable section of the Society want bands and promenade-gardens let they pay for them themselves, but let not a penny of money that ought to be spent upon horticultural objects be again frittered away upon unproductive matters of this kind. Every effort should also be made to conciliate and bring in the country Fellows and the real horticulturists of the country. The butterflies will come if the flowers are provided.

AN answer which was given in our columns a week or two ago relating to the COURSE OF THE SAP has elicited a paper from Mr. ANDREW MURRAY, which was read before the Scientific Committee on Wednesday last, and which, at his desire, we reproduce. In our reply, to which Mr. MURRAY takes exception, we gave what we believe to be a substantially correct answer according to the present state of science, but one which it was necessary to compress into as few words as possible. There are three principal theories, which, disregarding modifications, may be thus briefly summarised:—1. The old theory of a regular continuous ascent in the season, and an equally regular descent later on. This seems to be the view of a correspondent at p. 76 of our present issue, but it is one to which we cannot assent. 2. The more modern theory, according to which the descent is not absolutely denied, but whereby it is supposed to be limited by the requirements of the plant at the time; and, lastly, there is the theory broached by Mr. MURRAY himself. There are numerous modifications of these several notions, but it is not our intention to speak of them now. Any text-book may be consulted with reference to them, and hence we prefer to let Mr. MURRAY speak for himself, and to solicit the attention of our readers to the subject, that they may favour us with their views. Only, as the subject is essentially a practical one, we trust they will not rely on their imaginations, but base their statements upon trustworthy facts.

"A great revolution has of late years taken place in the ideas of vegetable physiologists regarding the course of the sap; and, what is very unusual, it has taken place silently, and with scarcely any discussion. One regrettable consequence of this has been that those who are out of the current of scientific unwritten opinion remain in ignorance of the change that has been coming over men's minds; and even those who are in the midst of it are sometimes in doubt what the real verdict of the scientific world is. That this is so will be admitted by those who attended the Botanical Congress at Brussels in May last, where this question formed one of the subjects selected for discussion, and elicited much diversity of opinion; and that a like uncertainty still prevails here may be seen from a reply to a correspondent in the *Gardeners' Chronicle*, January 6, 1877:—

"'It is not affirmed by any one that we know of that the elaborated sap does not descend; the modern notion is simply that it may and does ascend, go horizontally, or in any other direction, as well as descend, according to time, circumstances, and the need of the plant. Suppose, for instance, starch is to be stored in a Potato tuber, or wood to be formed in a Vine rod, the matter out of which that starch or that wood is formed must in a great measure pass through the leaves, and therefore it must descend to reach its destination. But starch is likewise stored up in the grain of Wheat; in this case, then, it is obvious that the nutrient and store-containing, or store-forming sap, must ascend from the leaves, and the same holds true of fruits and stones (seeds) placed above the leaves.'

"This is not at all what I understand to be the modern view of the subject; neither is it the view which was come to by the Congress at Brussels. It is neither more nor less than the old theory, with scarcely any qualification. That theory was that the sap described two courses, viz., an ascending and a descending course; the ascending course *to* the leaves, where it was submitted to certain influences which fit it for the nutrition of the plant; the descending one *from* the leaves, in a condition fitted for that purpose. The modern view, as I understand it, is that the sap describes only one course, viz., that from the root to the leaves, being drawn up by the power of the sun and other concurreat influences. In its course it is like a great river, which while steadily flowing to the sea, turns to the right or left, as obstacles present themselves or opportunities occur, and when in the delta near the termination of its course, which may be compared to the arrival of the sap at the leaves, it flows in any direction, now dividing to the right and to the left, and again even regurgitating and flowing in a backward direction, but all these anastomose together, and end by emptying into the ocean, which for the sap is the atmosphere, into which it watery vapour is drawn by evaporation from the surface of the leaves.

"It is ten years since Mr. HERBERT SPENCER's paper on circulation and formation of wood in plants (*Linnean Society's Transactions*, vol. xxv.) proved to demonstration that the sap ascended in the branches, and that while of course he could not prove a negative he at least showed that in none of his experiments could he get the sap to descend; he moreover gave a simple explanation of the deposit of wood by the sap oozing through the vessels on its way up and, depositing woody fibre around them. A few years later Professor W. R. M'NAB repeated and extended Mr. HERBERT SPENCER's experiments, with the same results, and, if my memory serves me right (for I have mislaid his paper), showed that the sap ascended both by the vessels supposed to be appropriated to its ascent and by those appropriated to its descent. I have been under the impression that these experiments, coupled with other facts well known (such as that the bark and wood on the under side of a cut on a tree swells, while that on the upper side does not), had convinced the scientific world that the notion of the descent of the sap was an error. It has never had a particle of proof offered in its support. The only thing I can recollect of that I ever heard urged in favour of it was the experiment of tying a ligature round a branch, when the branch swells above it instead of below it. But it is only by a misapprehension of the phenomenon that this can be likened to a dam keeping back a descending stream. It is the case of a stream expanding itself when it finds space after its passage through a narrow channel. Any stream, after being released from a narrow gully, behaves in this way.

"Seeing, then, that on this important physiological question doubt still exists, I have thought it might be desirable to elicit an expression of opinion from this committee on the subject. I know how difficult it is to supplant old opinions, what an exertion of magnanimity is required to acknowledge that we have been in the wrong. I remember, with sympathetic distress, the almost piteous remonstrance of a learned Professor at the Congress at Brussels, who, when interrupted in his argument about the descent of the sap by cries of '*Il n'y a pas de sève descendante*,' exclaimed, 'There must be a descent of the sap. I have been teaching it for thirty years. What am I now to say to my students if there is no descent of the sap?' But the greater the difficulty the more the necessity for conquering such feelings, and putting the question on its right basis.

"I am not at all blind to the consequences of adopting the view that I take. I know that if descent of the sap goes, the elaboration of the sap by the leaves must follow. If it is not to descend of what use to elaborate i in them, and why elaborate it by the leaves rather than by the roots or any other part? The storing-up of material will also have to go, both of which are gratuitous assumptions without a particle of proof. The nutrition of carnivorous plants will become still more difficult to comprehend, and other more remote corrections or received ideas dependent on them must follow I do not now concern myself with these: my present subject is the descent of the sap, and I respectfully suggest to the committee that they could not be more usefully or appropriately employed than in giving an authoritative expression of their opinion upon it. I do not ask, and indeed I would rather deprecate a hasty, offhand judgment on the spur of the moment, which in any view could only be regarded as the expression of individual opinion. What I would like to get is a deliberate, well-considered opinion after mutual consultation by the most eminent physiologists of our body."

—— THE following is a list of the persons recommended by the Council of the ROYAL HORTICULTURAL SOCIETY to be appointed to the offices of the President, Treasurer, Secretary, committee-men of the Expenses Committee, and Auditors of the Society, at the annual meeting on February 13, 1877:—*President*, Rt. Hon. Lord ABERDARE; *Treasurer*, HENRY WEBB; *Secretary*, ROBERT HOGG; *Expenses Committee-men*, F. CAMPION, HENRY WEBB, WILLIAM HAUGHTON; *Auditors*, JOHN LEE, CHARLES EDMONDS, JAMES F. WEST.

—— We have received from a corresponden a piece of the stem of a TOMATO PLANT, which measures 4 inches in circumference. The plant is stated to have produced heavy crops of fruit for over two years, and would have lasted another year, notwithstanding that the stems are beginning to decay in the centre. The plant was raised from a cutting, and planted two years last September in a Pine bed, in the old tan and leaves used for forcing.

—— We find that the association of OMPHALODES and DOUBLE WHITE PRIMROSES, alluded to at p. 59 as a happy but accidental hit in plant grouping, occurred at the Knap Hill Nursery, and not, as there stated, in America.

—— According to the *Journal de la Société Royale Agricole de l'est de la Belgique* the loss in the Potato crop from disease has been very heavy in many parts of Belgium. When the crop was dug the tubers were healthy, but during the succeeding fortnight it is estimated that from a quarter to a third became rotten.

—— Dr. WITTMACK, of Berlin, has been conducting some comparative experiments to ascertain the DEVELOPMENT OF CEREALS and other plants from NORTHERN SEEDS, by the side of home-saved seed in the South. The general result was, notwithstanding some exceptions, that seeds of cereals and other plants from the North develope at first more slowly in Central Europe, but in the end overtake and pass the indigenous seeds.

—— Some idea of the extent to which PLANT CULTURE IN POTS is carried on in this country may be gleaned from the fact that in one pottery alone—that of Mr. JOHN MATTHEWS, of Weston-super-Mare—1,282,000 pots, varying in size from 1½ to 30 inches in diameter, were manufactured last year.

—— The CHAIR OF BOTANY AT ABERDEEN is likely to be vacant shortly. Among the candidates are mentioned the names of Dr. J. B. BALFOUR, Rev. Dr. BROWN, Dr. W. R. M'NAB, and Dr. TRAILL.

—— According to the *Illustration Horticole* an AGRICULTURAL INSTITUTE has been established in PARIS, with M. BOUSSINGAULT as Director, M. PRINGSHEIM as Botanical Professor, and M. DU BREUIL as

Professor of Horticulture, &c. It would have been scarcely possible to select three more appropriate persons.

—— In an account of a HAILSTORM AT EMU CREEK, QUEENSLAND, on October 23 and 24 last, given in the *Sydney Morning Herald* just to hand, it is stated that many of the hailstones were as much as 6 inches in circumference, and some that were weighed were over 1 lb. in weight. Holes were knocked through the roofs of houses and barns, and

ANDRÉ'S researches in Columbia. We shall hereafter allude in the ordinary course to M. ANDRÉ'S plants, which, like those of Messrs. WALLIS, CARDER, SHUTTLEWORTH, BRUCHMÜLLER, and other collectors, will have special interest from the fact that the country is now desolated by civil war, which may prevent further explorations for some time to come. The country is described as so rich in plants that, large as is the number of fine things already received, there are many more yet to be introduced. Considering the melancholy fate of thousands of Orchids

BATA in the same house will shortly be covered with wreaths of golden bloom, forming with the silvery Fern-like foliage a beautiful association. The magnificence of this species is shown only by large specimens of free growth, and this example is one worth inspection.

—— Mr. DICK, gardener to Sir IVOR B. GUEST, Bart., Canford Manor, Dorset has been appointed bailiff or manager of Phœnix Park, Dublin, in the place of Mr. C. MCDONALD, who retires. This is

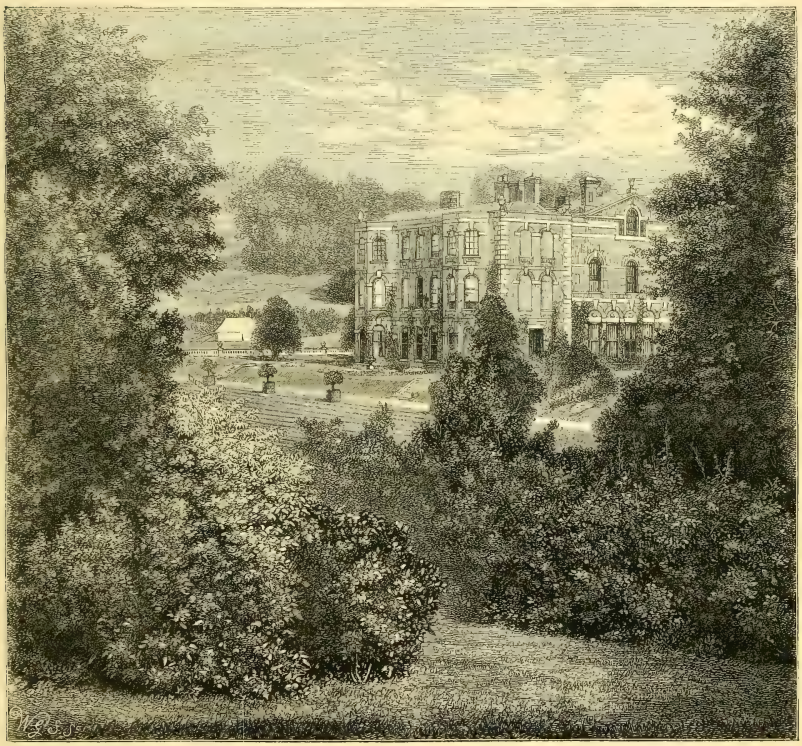


FIG. 12.—LOCKINGE, THE RESIDENCE OF COLONEL LOYD LINDSAY, M.P. (SEE P. 76.)

the standing corn was in many places 'struck' down and destroyed.

—— Mr. WILLIAM THOMSON, for many years connected with the seed establishment of Messrs. PETER LAWSON & SON, and lately a partner in the firm of PETER ROBERTSON & Co., has commenced business under the style and title of WILLIAM THOMSON & Co., as a seed merchant and nurseryman on his own account, at 16, St. Giles Street, Edinburgh.

—— The current number of the *Illustration Horticole*, which has just reached us, has a special interest from containing the first instalment of M.

torn from the trees to die on the journey to this country, we can but feel that the civil war will have some compensations in affording a fallow time to the Orchids, which otherwise would run a fair chance of extirpation, if there be not some of them extirpated already.

—— SERICOGRAPHIS GHIESBREGHTII, an old plant not often seen, is one of the most valuable of the cultivated Acanthaceæ. Its scarlet tubular flowers are extremely showy at this season, and occurring in graceful sprays are useful for cut purposes. It is now very ornamental in the temperate-house at Kew. A large specimen of ACACIA DEAL-

one of the best public appointments open to the profession.

—— Mr. RUST, of Eridge Castle Gardens, writing in the *Florist and Pomologist* of the NEGRO LARGO FIG, remarks that "Of all the Figs which grow in the garden, this is, to my mind, the most desirable, being fruitful to a degree, and the flavour being the finest I ever tasted. My experience of its good qualities is as grown under glass, and I do verily believe it will yield fruit continuously for eight months out of the twelve. In the early part of December the flavour was as good as it was in June. No fruit trees are more improved by root-pruning than the Fig; they

are thus kept within bounds, and made to produce fruit at an earlier period, while those on the open wall should have a double net over them during April and May, to guard them from the frost."

—— Twenty or thirty species of FLOWERING PLANTS were found by the members of the late ARCTIC EXPEDITION between 82° and 83° N., including, says Dr. HOOKER, the beautiful Hesperis Pallasii, Saxifraga flagellaris, and Vesicaria arctica.

—— At the annual meeting of guarantors and life members of the YORKSHIRE GALA, held recently, Mr. Alderman TERRY presiding, the Lord Mayor (Mr. Alderman MELROSE) was appointed President for the ensuing year, and Mr. Alderman TERRY, who was vice-chairman last year, was elected Chairman in the place of the late Mr. Alderman STEWARD. Mr. Alderman ROOKE was appointed vice-chairman, and the Town Clerk and Mr. J. WILSON were respectively reappointed treasurer and secretary. The following vote of condolence and sympathy with Miss STEWARD and family was unanimously adopted :—

"That this meeting desires to record the great loss the Society has sustained in the death of its deeply-lamented Chairman, Mr. Alderman STEWARD, who was connected with it almost from its formation, and whose extensive knowledge of floriculture, and his assiduous attention to the numerous and arduous duties attached his office, enabled him to render great service to the Society, whilst his genial disposition and adaptability caused its various meetings to be of a most pleasurable character. This meeting also offers its sincere sympathy with Miss STEWARD and the other members of the family in their great and sorrowful bereavement."

Mr. WILSON, the secretary, announced that he had received, in answer to various applications he had made to nurserymen to give special prizes for amateurs and gentlemen's gardeners, which would tend to improve floriculture, benefit the nurserymen indirectly, and also improve the show, promises of donations from the Chairman of £5; Messrs. BACKHOUSE & SON, York, five guineas, for a collection of fruit, to be confined to growers in the six northern counties of England; Mr. MAY, of Bedale, £6, for Roses in pots; Messrs. PAUL & SONS, the Old Nurseries, Cheshunt, £5, for cut Roses; Messrs. CRANSTON & MAYOS, of Hereford, two guineas, for Tea-scented Roses; Messrs. LAZENBY & SONS, York, two guineas; Mr. WILLIAMS, London, one guinea; and Mr. DOUGLAS, York, one guinea.

—— The Southampton papers report that the recent high tides have been peculiarly destructive in their effects on the stock in Mr. W. KINGSBURY'S small nursery at Bevois Valley. The nursery is the same as that originated some years since by the elder Mr. WINDEBANK, Mr. KINGSBURY'S former partner, and is so well known in the locality that its desertion, in spite of the occasional danger of inundation, was always regarded as objectionable. It abuts on to the banks of the Itchen River on the one side, and on the other is subject to receive the overflow of storm waters from the Bevois Hill when an unusual storm takes place. Some years since, from this last-named cause, the place was flooded and much damage done. On the recent occasion the flood of sea-water broke in and literally flooded all the houses, destroying thousands of seedling plants, and doing mischief to the estimated extent of about £600.

—— A very charming effect in spring bedding may be obtained by interspersing strong clumps of the beautiful vermilion-scarlet ANEMONE FULGENS with the charming pale blue MYOSOTIS DISSITIFLORA. If planted in a sheltered spot this lovely Anemone will flower as early as February, but in the open flower-beds it would produce its blooms at about the same time as does the Myosotis. The latter might be planted up closely to form a carpet, and the Anemone in clumps as pot plants. This Anemone will transplant easily in the autumn, when the clumps should be carefully divided but not be reduced too much. It would be undesirable to divide it in the spring when transplanted back to their summer quarters, as the less disturbed at the growing period the better.

—— A correspondent sent us a few weeks ago a double flower of LAPAGERIA ROSEA, so remarkable in its double condition as to demand notice. Several times it has fallen to our lot to see more or less double flowers of this beautiful and useful trailing plant, but the one to which we now allude exceeded them all in beauty and the extent of its doubleness, if we may be pardoned the use of such a word. The colour of the outer, or, as we may term them, the guard-petals was rich, and within them was a dense mass of narrow petals as regularly disposed as in the best of the double Pæonies. Our correspondent, who gave no other name than that of a "Constant Reader," informed us that the flower in question was produced as a sport from the ordinary form, and inquired of us as to whether it was likely to be perpetuated. Analogy would lead us to expect that if the sporting branch be propagated by layering or otherwise, that the peculiarity in question will be perpetuated: and for the sake of those to whom double flowers are an attraction it is very desirable that the experiment should be tried, for assuredly this variety is one of the most desirable we have seen. On examining the flower more minutely, we found a calyx of three pieces of the usual form, but rather greener and more leaf-like than usual; within these were three rose-coloured petals of the usual form, colour, and size. Within the petals was a row of stamens combined, with a cup below and above bearing imperfect and more or less petal-like anthers. These, which would be a defect from a florist's point of view, were completely concealed by the petals until the flower was pulled to pieces. Within these imperfect stamens came four or five tiers or whorls of petals, one above another, each tier or whorl consisting of brightly coloured petals of the same form and colour, and nearly of the same size as the normal petals. The extreme centre of the flower was occupied by a tuft of small irregularly shaped segments, exhibiting various transitions from the shape of the petals to that of the pistils, many of them showing imperfect ovules on their edges.

—— One of the most exquisite plants for wreaths or for adorning dresses is undoubtedly CLEMATIS CALYCINA. Its tufts of bronzy, deeply divided leaves, from the centre of which hang the whitish bell-like flowers, render it one of the most elegant plants we know of. It is not often that we see it "in full bloom," but this winter with us it has been exceptionally full of bloom. Talking of wreaths reminds us of the grotesque abominations which one sees now and then on the heads of ladies or in the shop-windows of fashionable milliners and artificial flower-makers. In a window of one of the most celebrated of these establishments at the West-end we lately saw wreaths of Daffodils and of Polyanthus Narcissus, not mixed in with but bearing pinnate leaves like those of Mahonia. After this we were not surprised to see large yellow Calceolarias treated as climbing plants; while Hops of bright gamboge and of clear magenta excited no particular astonishment. In these days, when knowledge and taste are supposed to be so much more widely diffused than heretofore, it seems a pity that artificial florists either do not copy Nature more accurately, or, ceasing to copy servilely, profit by her teachings, and adapt in a suitable and becoming manner the means to the end required. Pure conventionalism is far better than hideous or grotesque caricatures.

—— HABROTHAMNUS ELEGANS under certain circumstances is not only valuable for its flowers, but also for the berries, which for a length of time have been very attractive in the temperate-house at Kew. They are purplish-crimson in colour, and some of the clusters may well be compared to bunches of small Grapes. As usually grown this plant does not produce fruit in any quantity, the only requirement, however, seems to be a freedom of growth, such as easily obtained by planting out.

—— We learn that Mr. J. F. JOHNSON has resigned the CURATORSHIP OF THE ROYAL BOTANIC GARDEN, BELFAST, with the intention of devoting the whole of his time and energies to the more congenial occupation of a landscape gardener, in which profession he has already a fair share of practice in Ireland, and in other parts of the United Kingdom.

—— The ANNUAL DINNER of the *employés* of Messrs. DANIELS, nurserymen, of Norwich, took place on the 9th inst., when the community of interest between master and man was pleasantly illustrated.

Home Correspondence.

Dracæna indivisa.—Looking over the *Gardeners' Chronicle* for Dec. 16, 1876, p. 785, I see what I think an erroneous statement respecting the D. indivisa. I have been acquainted with it some ten years. I first saw it at the Abbey Gardens, Tresco, Isles of Scilly, where I was much struck with it, several being in flower. The gardener gave me some seed, and I was successful in raising several dozen plants. I visit the Isles every year, and am always proud to see the plants, which are in almost every garden; and several splendid rows of them, about 10 feet high, are in the churchyard at St. Mary's Isle, where the unfortunate passengers of the *Schiller* are laid. At the Vicarage, in Gulval, Penzance, there is a splendid plant, about 12 feet high, that has seeded, and plants raised from the same. Large plants flower and seed freely. There is a possibility for small plants to be taken for D. australis. I planted some two years since, in a very exposed situation, where they have no protection, and are only about 2 feet high. Your correspondent says that he dug one up after being planted two years, and found that it had multiplied sixfold, forming six handsome pot plants 30 inches high; and again, he says some planted out in the shrubberies have reached 9 feet high in the same time. He really must be talking about something else, for with us it does not increase in this way, neither does it grow so fast. *J. C. M., Penzance.*

Lily of the Valley.—Mr. Thomson, in addressing you on this subject, draws a comparison between Lily of the Valley of French origin, and Lily of the Valley of Belgian origin. Now the two great sources from which our supplies are drawn is Holland and Germany; from the former they are imported in clumps full of flowering crowns, from the latter in single flowering crowns or buds, a number of which go to make up a potful, and it is these which are grown so much for Covent Garden. I have noticed the difference between the two, and am quite sure they are distinct varieties, the German being much superior. Now, without troubling you with my idea of the points of difference, I would suggest that flowers of each be sent to the *Gardeners' Chronicle* office, and, if proved to be distinct, that Mr. W. G. Smith should favour us with an engraving. *F. H.* [Illustrations of the German and Dutch Lilies of the Valley were given in this journal in March last, p. 405. The two plants are quite distinct enough for garden purposes. EDS.]

The Supply of a Family.—What extent of kitchen-garden ground and glass would be required to provide a regular supply of forced and choice vegetables, fruits, table plants, and cut flowers the whole of the year for a family of five persons, with twenty-three attendants and a constant influx of visitors? *B. C., North Durham.* [Your question is a somewhat difficult one to answer, as so much depends upon the special requirements of the family, and various other circumstances, such as situation, climate, soil, &c. However, assuming that "B. C." resides in the country, the extent of ground under cultivation for the supply of such a family should not be less than 4 acres, two of which should be inclosed with walls; the other 2 acres should surround the walls in the form of slips, bounded by an ornamental fencing. This quantity of ground, with a judicious system of simultaneous cropping, should produce a large and sufficient supply of hardy fruits and vegetables to meet any reasonable demand. The size and number of the forcing houses must to a great extent be determined by the actual requirements. The vineries should not be less than three in number, and may average from 40 to 50 feet in length for the production of early, mid-season, and late Grapes. There should also be two Peach-houses of a proportionate size, and Melon, Cucumber, and Mushroom houses respectively. There should also be a house set apart for the forcing of the various products. These houses, with the usual appendage of frames, if judiciously managed, should produce a good supply. In making this calculation of necessary houses, I have omitted such as Pine-houses, Fig and orchard-houses, &c., which may be added at will. With regard to plant-houses for the production of plants for table and cut flowers, &c., it is very desirable to have two heated structures as stoves, as there is a great difference in the general treatment necessary for stove plants. A large proportion of the thin, tender foliaged varieties require shade to insure perfect development, while on the other hand there are many flowering and fine-foliaged plants, such as Crotons, Coleus, &c., which require full exposure to light to ensure anything like real perfection of character; therefore we shall say two stoves, two greenhouses, and two span-roofed pits with a passage down the centre for the production of bedding-out plants, and also to come in handy for the culture of soft-wooded plants for table, such as Carnations, Mignonette, &c. The 20,000 bedding plants required for planting out

will necessarily occupy considerable space, but as I should calculate that at least one-half of this number can be supplied in the shape of hardy plants which will prove far more satisfactory than such a host of gaudily coloured tender things, then the accommodation above indicated will be sufficient in the way of glass. To make anything like a trustworthy calculation of the actual labour required for the working of such a place, it would be necessary to know the nature and extent of the grounds and flower garden, as without this any calculation must be only approximate. Therefore I should say that eight to ten men, including the head gardener, would be ample to keep the whole in perfect order; but much, however, depends upon what the actual labour in management is constituted. More than one-half of the places in England are under-manned, and consequently badly managed. Large places and inadequate assistance is the order of the day, but such conditions give no real pleasure, profit, or satisfaction to any one. *G. W.*]

A Quick Method of Forcing Asparagus.—By the same post I have sent you a sample of Asparagus, and as my method of forcing may be of interest to many readers of the *Gardeners' Chronicle* I beg to send you the details. I have forced two beds this season with great success. My first was taken from the ground on November 14, and from those crowns I cut on November 17, and continued so doing, with a daily average of 150 nice heads, until December 1. I also began taking up my second bed on December 1, and began cutting in six days after planting. At the time of writing I can cut about 150 beautiful heads daily. The plan I adopt is to place the roots on a shelf in a hothouse within 3 inches of the hot-water pipes. I plant them on a thin layer of manure and soil, and after placing the roots thickly together I cover all over with a shallowing of soil, and then the one thing only remains to be done to ensure success, and that is to give plenty of water, either clear or as liquid-manure. This mode of forcing has great advantages, insomuch that it effects both a saving of time and also of material, and many who have hot-houses but who have not manure for forcing purposes can adopt it. One trial will, I am certain, prove satisfactory. *J. Clarke, The Gardens, Melton Constable, East Dereham, Norfolk.* [We received a very good sample, and are much obliged to our correspondent for the hint. EDS.]

Eucharis amazonica in the Garston Vineyard.—Amongst the many objects of interest to be seen at this famous vineyard at this dull season is a gorgeous display of this beautiful Lily, the culture of which has been ably treated on by several correspondents lately in the pages of the *Gardeners' Chronicle*. All or very nearly all agree that to do it well it is necessary, after a liberal season's growth, to give it a perfect season of rest, and then plunge in a brisk bottom-heat, when every plant will throw up flower-spikes in accordance with the strength of the bulbs. What prompts me to write of the stock at Garston is not the individual merits of one bulb, or even a dozen plants. Your readers must imagine one of those large span-roofed houses, the centre bed of which is filled from end to end with plants in robust health, all about in the same stage of growth, and yielding hundreds upon hundreds of flowers, which for marketing purposes must be a very profitable investment. When we bear in mind how simple it is to grow and flower these plants, is it not surprising why any one possessing a hothouse or two should be without them? Taken as a whole, I must confess to never having seen anything to equal this display for uniformity of merit, and upon asking Mr. Cowan how such a result was brought about I was informed that nothing novel in the shape of treatment was tried. The plants had a good season of rest in a cooler temperature than is generally supposed to be good for them, which is some encouragement to those who think they must be in possession of ranges of hothouses to grow these and similar subjects. Vine-growers will be glad to hear that the house devoted exclusively to Madresfield Court is now filled with that "well-abused" Vine, and that it can be grown to perfection under such circumstances there can be no doubt. The Vine is just breaking, and promises well, and I should say that a visit to the Garston Vineyard next July or August ought to satisfy those who complain of the whims of this Vine as to whether it is worth house-room or not. *W. Hinds.*

Superheating Vine Borders. — Would it not greatly facilitate the arrival at a correct estimate of the value of superheating Vine borders if it were possible to obtain an exact comparison of the relative temperatures of soil and atmosphere in which trees in a state of Nature first start into growth in the spring? Such an experiment should not be difficult of execution, as a thermometer might be fixed in the head of the tree, and another placed in a hole in the ground from 12 to 18 inches deep, according to the depth at which the roots are found. In this way a fair guide might be found as to the relative differences of temperature for roots and branches essential for successful Vine culture. It is assumed that with Vine roots inside the temperature of the border there is equal to that of the house, but the probability is that it is considerably lower. This will, no doubt, be found the case with trees growing in the open air. In the case of Vines with the roots outside of the house there can be little doubt that without artificial heat the difference at starting time would be considerable, and that with the application of internal heat the difference must be extremely unnatural. The obvious course in such a case would be to bring the temperature of the border somewhat nearer to that of the house by means of leaves, manure, or other heating material, but the danger in this case lies, not so much in exciting the border roots to action, as in the fact that the heat is unduly apportioned, the greatest heat being applied to the surface-roots, whilst those several inches in depth scarcely feel the stimulus. Probably the most natural temperature for outside Vine borders would be found by covering them during the spring with a temporary glass protection, and this course would doubtless be the safest and more sensible one in the long run than in applying fermenting material, as the mere exciting unduly of surface-roots is not the *bean ideal* of Vine culture. *D.*

Veitch's Self-Protecting Broccoli.—In your review of the "Fruits and Vegetables of 1876" I observe you do not notice the above Broccoli. Although situated as this place is, high up among the cold bleak Cleveland Hills, I, like your correspondent Mr. Johnston, have indeed found it to be a gem of the first water, and I think the following particulars respecting this excellent vegetable cannot fail to be interesting to many of your readers. In June last we planted out 300, which begun to be ready for cutting about the middle of November, and from that time up to the present (Jan. 6) we have been cutting from six to ten fine heads almost daily, and when cooked their delicate flavour and tenderness matter, nothing to be desired. Where vegetables are wanted in quantity during November and December every gardener should have a good stock of this choice Broccoli. It only requires to be known to become a garden necessity. *J. McIndoe, Hutton Hall, Guisborough, Yorkshire.*

The Scarcity of Holly Berries and Bees.—Few but a philospher like Mr. Darwin would have thought of linking these two facts together as cause and effect. It may, however, be so. Wasps, too, of course, may be fair to be taken into the matter, and the scarcity of wasps during the spring and summer of the past year was notorious. I have noticed that wasps frequent the Holly a good deal in the spring. Of course, too, the movements of bees and of wind is more important to such plants as the Holly than to other flowers in which the male and female organs are not only on the same plant but in the same flower. Neither does the scarcity of bees theory cover such exceptional facts as the one I recorded—one tree among thousands being literally corallled o'er with berries, while all beside were berryless—though, for that matter, neither does the severity of the weather nor of drought explain such exceptions; still I am inclined to think the severe cold when the Hollies were in flower had much to do with the destruction of the crop, just as it destroyed Apples, Pears, Plums, Gooseberries, Currants, Bees-mast, and other fruit-bearing flowers by wholesale. No doubt the Holly is a hardy plant—very hardy, in fact; so is the Oak; but, nevertheless, I have seen Oaks killed dead by May frosts: and hence it is reasonable to suppose that Holly flowers might be frost-bitten beyond the power of bearing berries by frosts finding them hard when in full bloom. No one knows better than Mr. Darwin that the ability of plants to resist cold is a matter of condition rather than constitution. A plant may pass through zero unscathed when at rest, while all its embryo fruit may be cut off, and even its life be destroyed, by from 10° to 15° of frost out of season. Thus it comes to pass that the cold a plant may safely endure in its native clime is no safe criterion of what it may withstand in another country, inasmuch as in the latter the cold may come upon it in a different stage. Alike in regard to maturity or state of growth, spring frosts, for instance, are not destructive in the ratio of their severity, but rather in the degree of their unseasonableness. The plants are allured into abnormal tenderness through fair promises of fine weather that are not fulfilled, or unwise cultural devices, and the plants thus taken unawares, and in a tender condition, succumb to the cold. It would, however, be interesting to know if the scarcity of bees or wasps was co-extensive with the scarcity of Holly berries, and whether that scarcity was at all affected by the proximity, or otherwise, of hives of honey-bees, which were active last spring in some localities. In regard to this place, for instance, we had four good hives near to many of our Hollies, but not a single berry within more than 500 yards of them; while the solitary example of a bush laden with berries was nearly double that distance from any honey-bees. Also how far the scarcity of bees would be likely to account for the scarcity of, say, acorns and Beech-mast, which are almost as rare as Holly-berries in some localities this season. Much Clover seed was also grown in this and other parts of the kingdom: perhaps some of the old agricultural readers of the *Gardeners' Chronicle* will say whether the scarcity of Clover seed last year was general. It was a good bee season in this neighbourhood—the remark of course, being confined to the honey-bee and its produce, and having no reference to the wild bee or wasp. The latter were very scarce throughout the earlier parts of the season, though they put in a pretty strong appearance here for their share of mellow fruit in the autumn. *D. T. Fish.*

—— I beg a little space in your journal to confess my error with respect to the cause of the scarcity of Holly berries. I have been convinced of this by the two communications in your last number, by a statement in the *Garden* by Mr. Fish, and by some private letters which I have received. It appears that several causes in combination have led to this scarcity; but I still think that the rarity of bees of all kinds in this neighbourhood during the spring, of which fact I feel assured, may have played a part, though a quite subordinate one. *Charles Darwin, Down, Beckenham, Jan. 17.*

—— There is little doubt that several causes may have made the scarcity of Holly berries last year so apparent everywhere. I think, however, that Mr. Darwin's hypothesis of bees not fertilising the blossoms is not one of the causes, for bees last year were very plentiful, and the hives stronger than usual. I never before knew such crops of the white Clover as were to be seen in this district all through the season, every pasture-field and roadside being covered with plants in flower. The bees, therefore, had plenty of food, and an excellent honey harvest was the result. There are immense quantities of Holly in the hedges and plantations in this district of North Nottingham, and the failures in their berry-bearing are all alike. On the outskirts of Sherwood Forest there are some very long hedges of tall Hollies, and it is only where the bushes have been sheltered with some that any berries are to be seen on them. The Holly likewise grows and prospers on some magnesian limestone crags near this, where the soil on the surface is very thin, but no berries were produced on the bushes last year, although they usually show more berries than the bushes grown on rich soils. *William Tillyer.*

—— Something like a confirmation of Mr. Darwin's theory of insect fertilisation has occurred locally here this year, where our Holly trees are a "glorious sight," as Evelyn well describes them when covered with their coral berries. We have generally myriads of insects here in spring and summer, and also several strong hives of honey-bees quite close to the Hollies. One old bush never fails in any season to have a fine crop of berries ever since it was nearly ringed or barked round by rabbits one severe winter several years ago. *T. R. B.*

The Blackthorn in Bloom on January 9.—Is it not nearly three months in advance of its usual period of flowering? I have not been able to go and see the hedge, but I am assured that there are several sprays of white blossom out in full beauty on some Blackthorn, near here; at Mr. Gray's house. Mr. W. Howitt termed this flower, has been unfurled early this year. Primroses have been in blossom in the garden for some weeks. *Helen E. Watney, Lisse, Hants.*

Luminous Mycelium. — In the *Gardener's Chronicle* for December 4, 1875, p. 719, will be found an illustration and description of a remarkable case of phosphorescent fungus-spawn found permeating entirely through the wood of a rotten stump of Oak. Captain H. King, of Chilhurst, Petersfield, who kindly forwarded the original materials to us, has kept the spawn-infested stump in view, and the mycelium has now produced a dense crop of Agaricus fascicularis. Captain King has obligingly sent me another portion of the stump with the Agarics *in situ*, and they apparently spring from the same dense white spawn which was luminous a year ago, but it is not luminous now. *W. G. S.*

The "New Danger for Orchid Growers."—I am obliged to Mr. McLachlan for recalling my attention to the notice of the Embiæ contained in my friend Lucas' work on the *Insects of Algeria*, in which it is distinctly stated that the young Embiæ inhabit little silken tunnels, as was also stated to be the case with the insects sent by Mr. Michael; hence the suggestion in the *Gardeners' Chronicle* that the web was probably spun by a species of spider common in Orchid-houses is not supported, although not actually disproved. I have since, however, received a further communication from Mr. Michael of specimens of the gnawed roots and webs, with the statement that he had "seen the insect make its web, apparently for

purposes of concealment, with some organs situate in or near the head; also you will observe the *débris*," *i.e.*, the insect's excrement, which appears to me exactly to resemble that of some Tinea larva, and is certainly not that of a spider. *J. O. Westwood.*

Inside *v.* **Outside Vine Borders.**—When such men as Mr. Henderson, who, I believe, has taken more first prizes for Grapes than any other grower, and Mr. Wildsmith, who bids fairly to do as much in the future as Mr. Henderson in the past, differ in opinion, we may well exclaim, "When doctors differ, who shall decide?" My own experience in Vine culture, as compared with these gardeners, is indeed small; but, nevertheless, I find that white Grapes keep far better and ripen better when planted in inside borders, though the latter give certainly thrice the trouble in watering. In the case of early Vines, I have always seen inside borders preferable; I am sorry to differ with such champions, but experience alone tells me to plant in inside borders. *R. Gilbert.*

Notes on Grapes.—Observing several inquiries concerning Mrs. Pince's Black Muscat Grape, I am inclined to give your readers a short account of my experience with it. I have it worked on Lady Downe's, both sorts bearing; the bunches are very large, with fine berries, but lacking colour, and the bunches partake somewhat of the parent shape, viz., large shoulders and conical bunch, but not so particularly one-shouldered as Lady Downe's. Another, inarched on Black Prince, does very well, colouring almost to perfection, with pyramid (inverted) shaped bunches; both these are growing in a late-forced vinery. A third, grafted on Black Hamburgh, both bearing colours equal to the parent, quite black; this in a mid-season vinery. I am convinced that Mrs. Pince's requires a longer season, with less fire-heat. Black Alicante does equally well on Lady Downe's and its own roots with me. Bowood Muscat does first-class on Foster's Seedling, throws very long bunches, with rounder berries than upon its own roots; upon Black Hamburgh it does well, and the bunches in shape partake of the character of the Black Hamburgh or parent. I don't know better stocks than Foster's Seedling and Black Hamburgh; the former is a remarkably free grower, requires more restraining or pinching than any other I know of. I find stocks influence the style and character of the bunch more than most writers venture to observe of late, and I have tried a great many on time or other. With regard to late keepers I would place Black Alicante first, Lady Downe's second, Mrs. Pince's third, West's Saint Peter's fourth, Gros Guillaume fifth, Gros Colman sixth; (the latter requires a long season to grow it to perfection, with plenty of heat, and it is the noblest looking Grape grown). Of white Grapes Muscat of Alexandria and Bowood are best flavoured, but Syrian and Trebbiano for late keeping, also White Lady Downe's. Perhaps I may give you some further remarks about early Grapes on another occasion [Yes, do]. for information on Vines Grapes seems always welcome subject with gardeners, and the chief question is, "How do his Grapes look?" and I am sure Dr. Lindley wasn't far out when he said, "A good supply of Grapes covered a multitude of sins." *A. S. Kemp, Haughton Gardens, Shifnall.*

A Holly Tree Fruiting Twice the Same Year.—As there has been a good deal of correspondence lately about Holly berries, I send you the following, *quantum valeat.* Some few years ago I had a shooting place in Argyllshire, and on one part of the ground was a very fine Holly tree, which had one summer a splendid crop of berries. As the summer passed the berries disappeared, eaten, I conclude, by birds, or blown down. To my astonishment, a second crop appeared, equally fine, the same winter. The tree was covered from top to bottom both in summer and winter. It strikes me that this is rather a singular circumstance, and I do not think bees had anything to do with the fructification of the berries, as I doubt if there were any near, as it is in a wild part of the county. The tree was on a hillside, facing, I should say, about E.S.E., sheltered, and near a salt-water loch. It was standing by itself, and was, and I hope still is, a very fine tree. That winter was an excessively cold one—snow and frost for three or four weeks continuously, and woodcocks most abundant. *C. Ruddell-Todd, Jan.* 13.

The Clive House Seedling Grape.—This Grape, for which the Fruit Committee of the Royal Horticultural Society, at their meeting on December 6, 1876, awarded Mr. D. P. Bell, Clive House, Alnwick, a First-class Certificate, was raised twenty years ago in the garden of His Grace the Duke of Northumberland, Alnwick Castle, by William Caseley, who then, as now, was employed in the forcing-houses there. The female parent was Black Morocco, impregnated with the pollen of White Syrian, for the purpose of causing the former to set its fruit better than it had been in the habit of doing. By the time that the Grapes were ripe some of the berries were noticed as being of unusual size. From these Mr. Caseley saved seeds, which were sown by him, and which produced several plants, the fruit of some being black, and that of others white. After being fairly tested, all but two were found to be nearly worthless. These two are still in cultivation in the houses there, that for which the certificate was awarded being one of the two. My only motive for interfering in this matter is that honour may be given to whom it is justly due, and that this excellent Grape may not be "sent out" under a false name. I may also state that Mr. D. P. Bell has only had it in his possession for the last few years. *Robert Bowie, The Gardens, Chillingham Castle.*

Notes on Vine Culture.—I have more than once been struck with the apparent difference in the produce of Hamburghs and Muscats upon the same soil. Indeed it may be a question for physiologists to solve whether or not these two kinds of Vines may be termed distinct species. Though I have seen cases where Hamburghs are more at home and seem to do better in some places than Muscats, I am inclined to think that the difference in the results of Muscat culture on different soils is even greater than the difference in the Hamburghs, and perhaps more especially in their keeping qualities. To illustrate this point I well recollect the beautiful samples of Muscats that Mr. Denham, the Duke of Roxburgh's gardener at Broxmouth, used to show at Edinburgh over a dozen years ago. They were large in bunch and berry, and better in flavour than those grown at Floors, but for keeping qualities I am under the impression they could not be compared. The same thing also, I might say, is the case here as compared with my experience of Muscat culture at Elvaston. All things being equal, I think finer looking Muscats could be grown at Elvaston than could be grown here, but after being ripe they would not keep nearly so long; at any rate I should have no difficulty in keeping good Muscats here well into March, whereas at Elvaston they were finished, and I might say in good time to make the most of them, before the new year. A soil that produces gross bunches of Muscats I should conclude would be apt to be against their keeping qualities. However, I am inclined to think that inside and outside roots also exert a great influence on the keeping in proper condition of late Grapes. If the roots are allowed to run far out of a porous nature, to get dry soon, it will be against the keeping of late Grapes without shrivelling to keep the border without water, which is to be avoided, for the proper atmospheric condition. Outside borders for late Grapes, protected with litter, and a proper atmosphere in the house, will be a safe mode of culture in any locality. The Vine is such an accommodating plant that it might be said that only with very early Grapes is so much care required, and these as far as possible, for various reasons, should be substituted with late Grapes or with those of the previous season. With an early house, and sometimes also bringing Vines on when the atmospheric conditions tend to give the cultivator more tendrils than bunches, by watering with water of too high a temperature, and when the Vines are in an early stage, causing the shoots to make way without the proper vigour that the cultivator would desire. Circumstances do a great deal in Vine growth. Last autumn in looking at the early vinery border here, which is inside as well as out, I observed that where the front sashes were up (the house being a lean-to), with the sashes being open nearly all weathers, new roots were to be found in this very damp part when I could find none elsewhere, the Vines being in a state of rest. Too much moisture in this part caused an untimely root-action. What the general deduction from observations in Vine culture is every cultivator has to prove for himself, and to learn at the same time from his friends so as to make his practice safe. *R. Mackellar, Abney Hall.*

Saponaria ocymoides.—In a recent number of the *Gardeners' Chronicle* a correspondent inquires if seed of this plant preserves its vitality for any length of time, or whether it should be sown as soon as gathered. As no one else has offered a reply, I venture to give you the result of my experience, and it is to the following effect:—That well-ripened seed of this plant will, in a temperature of 55° to 65°, vegetate freely at any period within a year of its maturity, and in a moderate percentage after an interval of eighteen months, so that your correspondent has a fair right to conclude that the seed supplied him, and which failed to germinate, was old or defective in quality. *East Anglian.*

Fermenting Materials on Vine Borders.—Mr. Hind's theory and my practice differ very much with regard to the value of fermenting materials for horticultural purposes, and I fear his remarks are calculated to mislead. I fail to see how he could produce ripe Grapes in May, where all the roots are outside, without the aid of the old-fashioned dung-bed. If we start two vineries at the same time and under the same conditions in November and December, using manure on one and not on the other, the benefit arising from the hot dung will soon be very evident, teaching us not to de-spise the old plans. Whatever differences of opinion may exist with regard to the practice of starting early pot-Vines in bottom-heat, the results are more favourable with it than they are without it; an abundance of roots in a healthy condition is a most essential element in the successful culture of the Vine. It is hardly possible, and quite unnecessary, to start the roots in advance of the top, as they rarely start naturally before the fruit is thinned or sometimes stoned, as may be seen by growing a plant in a glass pot. An incident occurred here a short time since which is worthy of notice. After pruning a Waltham Cross Vine, I noticed a lump of transparent gum exuding from the cut on the main rod; this in a few days became quite hard, and would not dissolve in cold water, but I found it would readily dissolve in warm water. I think this proves beyond a doubt that the hard condensed sap in well ripened Vines requires a moist warmth to set the sap in motion and push the Vines into growth. If we cut a pot Vine off level with the soil, and plunge it in a warm manure-heap outside, where the top remains cold, we find it soon commences to bleed, or as some would say to set the pump going; and it will be found that the roots will not move before the Vine has started at the top again, whereas had it been put on the hot dry pipes without moisture it might not have moved at all. I once made a plug of Muscat wood to stop a hole in the pipes; this started into growth, and showed a fine bunch of Grapes, whereas had I put it into a hole in the dry hot flue of the same temperature as the pipes it would have speedily lost its vitality. It is not an unfrequent occurrence for Vine eyes when put in to push into growth five or six leaves, and show a bunch of Grapes before making any roots whatever. *J. H. Goodacre, Elvaston.*

Forestry.

As most of the moorland devoted to planting is too wet for the purpose without drainage, underground deep tile drainage is of all other systems decidedly the best for thoroughly drying the ground, but is less adapted for arboricultural purposes than those of agriculture; not that forest trees are less appreciative of well-drained ground than corn or Turnips are, but the comparatively large expense entailed in doing the work being about three times greater, acre for acre, than for open surface drains, and the insurmountable difficulty of preventing the tree roots from penetrating the soil till they reach the tiles and choke them. The soil being rendered loose and open by the act of cutting the drain, becomes on that account still more attractive to the roots of the trees than the surrounding unbroken ground, hence they soon fill the drains.

Many plans have been proposed for remedying this evil, but none have hitherto proved available or successful. The depth of drain, description of soil, size of tile, &c., severally aid in determining the length of time the drain will act without being choked by the tree roots, but under the most favourable circumstances they will reach them, and render them useless. A modification of the underground tile drain has also been tried, and not without success. It is constructed in the following manner:—The drain is first cut to the usual depth of 3½ to 4 feet, and laid with tiles proportionate to the quantity of water it is to contain, and filled in to about half its depth. It is sloped on the sides, and made in all other respects the same as an ordinary open surface drain. The advantages of this over that of the common tile drain is that the roots are longer in reaching the tile, on account of the sloping exposed surface they must traverse before reaching the loose soil in the bottom of the drain; and often they do reach the tile, and ultimately choke it, so as to force the water to the surface. It then acts as a common surface drain, and in that capacity does its work without entailing any additional expense either by deepening or enlarging the drain in any way.

No part of the surface of a plantation is so completely interwoven with the roots of trees as the margins and bottoms of drains, footpaths, and places rendered bare, whether of herbage or soil; and such being the case it is both expensive and hazardous to deepen existing drains, for the obvious reason that in doing so roots are necessarily cut to such a degree as to cause many trees to be blown down by the first severe gale that occurs.

The distance apart at which drains should be laid must be regulated by a variety of circumstances Sometimes they require to be put as close as 10 feet apart, and at other times as wide as 30 feet, and the depth must vary, if not in accordance with the distance apart, at least as greatly. The object sought to be attained by open surface drainage is altogether different from that of deep underground tile drainage, and the one system should never be compared with or confounded with the other. Trees, unlike agricultural crops, do not require deep drainage, for as soon as the former reach such a height that the wind gets hold of them, the soil is shaken and loosened, and thereby the surface stagnant water sinks to such a depth that it ceases to injure their growth.

The process of absorption in a plantation is also much greater than in an agricultural field, especially in winter. Trees at all seasons absorb from the soil a great quantity of moisture, and carry it into the air, but in winter there is strong evidence that trees exert a more powerful influence by absorption than vegetation of other descriptions does, and therefore when once fairly started in growth they effect an amount of drainage for themselves that other vegetable products cannot do.

Drainage is a work that can be done by contract better than most others can, and it should always be so done when convenient. For ordinary purposes drains answer well when made 20 inches deep, 30 inches wide at top, and 10 inches wide at bottom. These dimensions are applicable to clay soils and other descriptions, except soft peat bog or flow moss, in which case, on account of its tendency to subside when the water is drawn out of it, the drains should be prepared to be 36 inches wide at top, 24 inches deep, and 12 inches wide at bottom. The excavations of the drains should in all cases be spread over the surface, both because it induces the herbage to decay and form plant food; but the soil itself, when washed into the ground, acts in a marvellous manner upon the growth of the trees. *C. Y. Michie, Cullen House.*

Reports of Societies.

Royal Horticultural: *Jan.* 17.—Lord Alfred S. Churchill in the chair. At the meeting to-day there was an excellent display of plants for the season, and a full attendance of committee-men, but we are sorry to say that but few Fellows put in an appearance in the afternoon. The excellence of the meeting was, however, full of significance to the plodding horticulturists, who appear to be determined to stick to the old ship, though it still remains in troubled waters. At the afternoon meeting but little business was transacted, and after Dr. Masters had dealt with the subjects brought before the Floral Committee, and Dr. Hogg those of the Fruit Committee, it was announced that on February 14 the Council proposed to hold the meeting in the large conservatory, and have a band in attendance.

SCIENTIFIC COMMITTEE.—Rev. M. J. Berkeley in the chair.

The Late Mr. Alfred Smee.—Dr. Masters moved, and Mr. Andrew Murray seconded, a proposition to the effect that a letter of sympathy be sent to the family of the late Alfred Smee, Esq., a constant attendant at the Committee, and who had just been nominated by the Council as one of the Vice-Presidents.

New Members.—Rev. H. Harpur-Crewe and the Rev. G. Henslow took their seats for the first time.

Triticum repens (Twitch).—Dr. Masters showed, on the part of Mr. Melville, roots of Triticum repens, which were found most serviceable in binding the sand together on the sea-coast at Dunrobin. Mr. Berkeley remarked that at one time it was proposed to utilise the roots of Twitch in the manufacture of paper, but that the experiment had not been successful. Mr. Edgeworth remarked that Twitch formed good food for pigs.

Monstrous Cyclamen.—Dr. Masters showed, for Mr. Parker, of Tooting, a Cyclamen, in which one of the flower-stalks bore a tuft of leaves and flowers at its extremity.

Male Spike of Encephalartos villosus.—From Mr. Bull came a fine spike of this (recently figured in our columns), and having a delicate perfume like Meadow Sweet.

Daphne Laureola.—The Chairman showed specimens of this plant from Wales, in which the bark was hypertrophied in places, and gave origin to adventitious buds and leaves, which were, however, of short duration, the bark and wood eventually dying.

Diseased Osiers.—The Chairman reported that some diseased Willows which had been submitted to him were affected with an imperfectly developed state of a fungus (Rhytisma maximum).

Embia.—Mr. McLachlan made some remarks on this insect (see p. 845, vol. vi.), confirming both the web-spinning properties of the insect, and also the fact of the insect eating the roots of the Orchid.

Course of the Sap.—Mr. A. Murray read a communication on this subject, which will be found in another column, p. 80.

Crocuses. — Rev. H. Harpur-Crewe exhibited flowers of Crocus syriacus, a native of Aleppo, and which flowers in December and January. 2. *C. biflorus* estriatus (?), which flowers in the turf of the Boboli Gardens of Florence in February. 3. A species from Mentone, supposed to be C. lineatus.

Australian Insects.—A letter was read from Mr. Stein seeking a remedy for some beetle (?) which attacks certain trees at the Cape, but as the information given was of the vaguest and most meagre character, and no specimens were sent, no opinion could be given.

Diospyros Kaki.—Mr. Hiern confirmed the statements already made, that the astringency of these fruits disappears as the fruits blet.

Calliphruria sp.—Mr. Hemsley reported that the supposed new Eucharis exhibited at the last meeting was a new species of Calliphruria, a figure and description of which will be given in a subsequent number of the *Botanical Magazine.*

FLORAL COMMITTEE.—W. B. Kellock, Esq., in the chair. The available space was more than filled by the contributions sent to this meeting, principally by the leading nurserymen. The only Certificates awarded were one of the first class to Sir Trevor Lawrence, M.P. (Mr. J. Spyers, gr.), for the beautiful Lælia Dayana, described by Professor Reichenbach at p. 772, vol. vi.; one of the second class to the same gentleman for Dendrobium Lindleyanum, a species much resembling D. nodosum or D. crassinode, and a Botanical Commendation to Sir Trevor also for Schlimia trifida, a curious white sweet-scented Orchid, whose flowers bore a singular resemblance to a small inverted Cypripedium. Messrs. James Veitch & Sons, Chelsea, were awarded a silver-gilt Davis Medal for a beautiful group of flowering plants principally consisting of Orchids, but including also showy groups of Cyclamens and hybrid Amaryllis. Amongst the Orchids there was nothing particularly requiring comment, the most noteworthy being small flowering examples of such well known subjects as Odontoglossum Alexandræ, Lycaste Skinneri, Cattleya Trianæ, Cœlogyne cristata, Sophronites grandiflora, Lælia anceps, Pleione humilis, &c. To Mr. B. S. Williams, Holloway, a bronze Davis Medal was awarded for a choice group of Orchids and Palms, which included the new Lælia Dayana, Cypripedium insigne, Cattleya aclandiæ, Dendrobium Goodyera discolor, Cypripedium villosum, Odontoglossum cordatum, Lælia anceps, Masdevallia ignea, &c. A small, but well-flowered group of well-known Orchids, tastefully set up in a mass of Adiantum farleyense, was contributed by Sir Henry Peek, M.P., Wimbledon (Mr. Ballantine, Ollerhead, gr.), and a similar award was voted. Votes of thanks were passed to Messrs. Charles Lee & Son for a group of small specimens of fine-foliaged stove and greenhouse plants, and also for an interesting display of Japanese and other evergreen plants; to Mr. R. Dean, Ranelagh Road, Ealing, for a group of well-flowered pot specimens of Lee's Victoria Regina Violets, &c.; and to Mr. Howard for a display of dried leaves and Fern fronds from America. From the Society's garden at Chiswick, Mr. Barron sent up flowering branches of Chimonanthus grandiflorus, Viburnum nudiflorum, Lonicera Standishii, L. fragrantissima, and the Glastonbury Thorn.

FRUIT COMMITTEE.—Henry Webb, Esq., in the chair. As usual at this time of the year but few subjects came under the notice of the committee. The most important was another specimen of the handsome and finely-flavoured Pine-apple shown at the last meeting by Mr Miles, gr. to Lord Carington, who was then requested to get what information he could about the variety for the use of the committee. Mr. Miles has, we understand, failed to obtain any satisfactory details respecting the variety, and cannot even get its name; so that the committee, considering it a desirable acquisition for winter fruiting, gave it the provisional name of Lord Carington, and awarded a First-class Certificate. A vote of thanks was passed to Mr. J. Fowler, gr. to Lord Harewood, of Harewood House, Leeds, for a well-preserved bunch of the Muscat of Alexandria Grape, cut from the original Vine at Harewood, known as the Charlesworth Tokay, and which last year carried a crop of over 300 bunches. A Cultural Commendation was also voted to Mr. Miles for a dish of new Black Hamburgh Grapes, well-coloured and of good flavour, the second crop which the Vine has produced within twelve months; and a vote of thanks to Mr. J. Hepper, gr. to C. O. Ledward, Esq., The Elms, Acton, for three baskets of Mushrooms. Mr. J. Perkins, The Gardens, Thornham Hall, Suffolk, sent a specimen of Cox's Golden Gem Melon; and from Messrs. Lott & Hart, Whitehill Nursery, Faversham, came specimens of a large seedling Apple named Hart's Glory, of fair cooking quality. Specimens of Beurré de Jonghe and Josephine de Malines Pears were sent up from Chiswick.

Foreign Correspondence.

NEW CALEDONIA: ITS CHARACTER AND CAPABILITIES.—This island has lately been placed in a somewhat prominent position before the world on account of its being the destination of several thousands of French Communists, and the scene of their many gallant but often desperate efforts at escape. It however has other claims to notice, though perhaps not of a very distinguished character. Discovered by Captain Cook during his second voyage round the world, it was named by him from its supposed resemblance to the Caledonia of the North. He described it as a "country unable to support many inhabitants. Nature has been less bountiful to it than to any other tropical island in this sea. The greatest part of its surface consists of barren rocky mountains."

This description is true at the present time, so far as it goes. To the stranger coming from tropical countries, either to the east or the west, the barrenness of the island (especially of the southern half) is little less than appalling. Mountains are seen running up from the water's edge to an elevation of nearly 4000 feet, with scarcely a trace of forest on their slopes, but in its place only a species of wretchedly stunted brushwood or scanty grass unfit for herbage, or what is quite as frequent as scrub, huge scars, sometimes of hundreds of acres in extent, where the surface soil has slipped away and exposed the brick-red earth beneath. Even in the ravines, where one naturally expects to find dense jungle and perennial streams, it is extremely rare (at least, in the southern half of the island) to meet with either. The valleys seem almost as dry and parched as the spurs, and a more miserable appearance than that presented by Ile Uen, a mountainous little island, only separated by a narrow channel from the southern mainland, can scarcely be imagined. Even Cocoa-nut Palms, which the authorities, with a most praiseworthy desire to benefit the natives, have planted in narrow bands along the coasts, do not seem to thrive; and the ordinary hardy littoral vegetation of the tropics—certain species of Ficus, Mangroves, Pandani, Cerbera, wild Almonds, &c.—is only found in a few isolated spots, and is by no means general. One may sail along the coast for many miles without seeing a single tree, except perhaps a ragged wind-blown Pine (Araucaria montana) here and there on the highest ridges.

The rainfall is heavy at certain seasons, especially from December to April, and the amount of soil carried down by the rivers is often very great, but there are scarcely any alluvial flats, such as one looks for in all mountainous tropical countries as the result of denudation; indeed, the proportion of this class of fertile land, as compared with the whole extent of the island, must be extremely small; and it is this fact, when considered from a geological point of view, that affords an explanation of the poverty of the country, and the smallness of its native population, which has been estimated, but probably very erroneously, at from 30,000 to 50,000.

There can be little doubt that the whole island is sinking about as rapidly as the alluvium from the mountains is deposited; and as a result, except in a few specially favoured localities, there are no alluvial flats, although the whole island is surrounded by a very wide coral reef, and the water within is free from ocean currents, and therefore most favourable for deposition. In place of rich alluvial areas are found extensive inlets or sounds, such as those of Dombea, Kanala, and Diahot, with, for the most part, bare hill and mountain slopes rising abruptly out of the water. The serpentine, of which the southern half of the island is composed, never very rich under any circumstances, is hopeless for purposes of cultivation when it has been disintegrated on a mountain slope, and deprived of its more fertile properties through the denudation that is continually going on, whilst at the same time this disintegration and denudation are not a source of much fertility at lower levels, on account of the deposition taking place on an ever-sinking sea-bed. A hungry and stoney soil on the slopes, that seems to defy all efforts at improvement, is the result. Even the Lantana, which has so rapidly overrun Southern India and Ceylon, shows here no tendency to spread and to oust the scanty vegetation indigenous to the soil. On the lower hills the Niaouli (Melaleuca viridiflora), one of the Myrtaceæ, is found scattered about, at considerable intervals, even on the poorest soils. This is by far the commonest tree in

the island, and with its silvery bark, scanty, light-coloured foliage and dwarfish aspect lends quite a peculiar character to the general barrenness of the country. A dwarf Casuarina, generally from 3 to 9 feet in height, and commonly called a Swamp Oak by the Australians resident in the island, occupies irregular patches on the hill-sides near the coast. The wood is tough and the form of the shrub elegant, but in masses the effect is sombre and unpleasing.

In Nouméa itself the usual tropical ornamental shrubs are to be seen, such as Flamboyant (Poinciana regia), Oleander, Bougainvilleas, Bignonia venusta, Aloes, with young specimens of Cocoa-nut and Date Palms. In the neighbouring jungles numbers of Freycinetiæ and Cordylines, with a few Ferns, Blechnums, Lygodiums, Davallias, a Gleichenia, a Pteris, and large masses of Asplenium Nidus may be found. Further inland—but it is never possible to get far from the sea, the island being about 230 miles long, and only 40 in width at the broadest part—very irregular and isolated patches of jungle are to be met with, generally, but not always following the course of a stream. Their appearance is very striking. The upper foliage is extremely dense and massive—frequently almost as dark in tint as Ivy, and matted together with heavy-foliaged creepers. In the midst of this, and in striking contrast with it, may be seen the snow-white foliage of the Kekune, or Candle-nut tree (Aleurites triloba). As a rule, there is very little undergrowth, such as Ferns, mosses, Orchids, &c., in the jungles of the southern part of the island of which we have been speaking. Cordylines are quite a feature in these forests, as is in the damper places a certain species of Araliaceæ closely resembling Theophrasta, and I have come upon splendid white Lilies at the edges of the forest at considerable elevations. Sometimes the ground is perfectly bare, scarcely a moss being seen even on the trunks of the trees, and it is possible to move about with the greatest ease and security, except in the neighbourhood of the Supplejack. At other times the jungle is a mass of creepers, through which it is extremely difficult to penetrate, but the contrast is always most marked between these and the jungles of South India, Ceylon, or Java.

In all the forests of New Caledonia that I have been in, the shade afforded is most complete, and this may possibly have something to do with the absence of ground vegetation, but I am inclined to think that it is the porous character of the subsoil and the consequent rapid draining away of the moisture that renders the surface so unsuitable for the growth of Ferns and mosses. In the North, where the rainfall is heavier and the geological formation different, consisting chiefly of schists and slates, the forests are both more extensive and really very rich in the undergrowth spoken of—as may be seen by the fact that they contain something like 200 species of Ferns and over 120 mosses. Some of the valleys south of Balade on the north-east, coast where Captain Cook first landed, are very steep and densely clothed with forests, suggesting splendid opportunities for the cultivation of Coffee after the Ceylon system; but I was told that the force of the wind is so great during the cyclones which visit the island in the early part of the year that Coffee trees would be torn bodily from the ground and their cultivation under such climatic conditions is, of course, hopeless. At Kanala, about 100 miles to the south-east of this part of the coast, I visited the largest Coffee plantation in the island. This is one of the few spots where any alluvial soil is to be found, and the proprietor of half of it (100 acres) has about fifty planted with Coffee, the rest being under Rice, Maize, Sugar, or Manihot cultivation. Even under such favourable conditions of soil as this, it is found necessary to manure the Coffee trees in order to obtain a satisfactory crop. Several varieties of Coffee have been employed, and the trees are planted 8 feet apart and in rows 8 feet wide, so that it is possible to plough up the weeds between them. The plants are topped at 5 or 6 feet and the primary branches allowed to grow unpruned in any number from the stem, so that the tree presents an extremely bushy appearance totally different from that of the best crop-bearing trees of Ceylon. Even under these conditions individual trees will bear 2 lb. or more of Coffee (prepared), and 7 or 8 cwt. per acre in a favourable year may sometimes be gathered. The injurious prevalence of the black-bug (Capnodium) fungus proves that the climate is somewhat too damp and perhaps too cold for the perfect growth of the plant. A white coccus, too, does a certain amount of injury, but the "leaf disease" of Ceylon, and South India (Hemileia vastatrix) is here, as in Java, totally unknown. The crop-time generally extends over the five months of wet season and considerable difficulty is experienced in drying the parchment coffee for market. At present there are in all about 150 acres of Coffee in the island, planted almost entirely on small alluvial flats, and the annual production, except in a good year, is barely sufficient to supply the wants of the colony; and unless some of the sheltered valleys in the north can be planted out—which as yet has not even been thought of—it seems probable that the importation of this commodity will continue. The only article of consumption that is not imported is sugar. Special efforts have been made and special privileges granted by the Government, in the shape of cheap convict labour and suitable lands in order to make this enterprise successful. The cultivation is chiefly carried on on the west coast from Nouméa northwards, where alluvial flats are more extensive than elsewhere; but these have long ago been all taken up, and the production of sugar has as yet but rarely allowed of much more than a nominal exportation. The fact is that, what with the difficulty of obtaining labour and the natural poverty of the soil, there is little hope that the island will ever yield much more than an ample supply for its own population of 12,000 or 15,000 whites (convicts, Communists, soldiers and settlers), together with its 20,000 or 30,000 Kanaks, in any one of its articles of consumption, unless it be sugar, and even this I think is very doubtful. Several old Bourbon sugar-planters are settled in the colony; one of them, M. de Greslan of Dombea, near Nouméa, kindly showed me all the objects of interest on his estate, which consists partly of alluvial lands suitable for Sugar, Maize, &c., and partly of mountain jungle and grass. From ten to twenty varieties of cane I was informed are cultivated on this estate, the work being chiefly performed by Tamil coolies, formerly imported into Bourbon and exported thence into New Caledonia. Maize, though planted year by year, is frequently a complete failure, on account of the ravages of a brownish-coloured ladybird when the plants are young.

Under the shade of the forest M. De Greslan was planting Coffee trees, those which had been previously planted in the open not having proved a success. He informed me that there were no less than 112 varieties of fruit trees on his estate—Mangoes, Oranges, Rambutans (Nephelium lappaceum), Loquats or Japanese Medlar, Cœur de Bœuf (Anona reticulata), Soursop (Anona muricata), Pine-apples, Strawberries, Cerises de Brazil, Moreton Bay Chestnut, Sapodilla-plum, &c., and that he had been at considerable expense in trying to introduce foreign fruits into the island. He has had to contend with an ineradicable weed called Tea-shrub, which is very disheartening. In the neighbourhood of Nouméa, Potatos, Cabbages, French Beans, and other European vegetables are cultivated, chiefly by *liberés*, or ticket-of-leave men, in the same gardens with the Papaya (Carica Papaya) and the Banana; but the want of water for irrigation, as well as for other purposes, is very severely felt, and the vegetables and fruit for the supply of the town are chiefly brought from a distance. The natural grasses of the country are

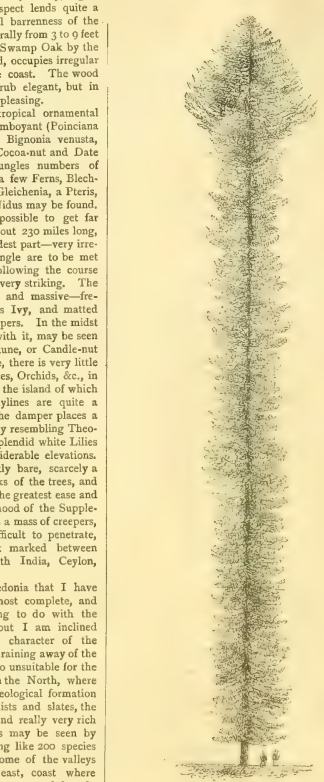




FIG. 13.—ISLET OFF NEW CALEDONIA, WITH ARAUCARIA COOKII.

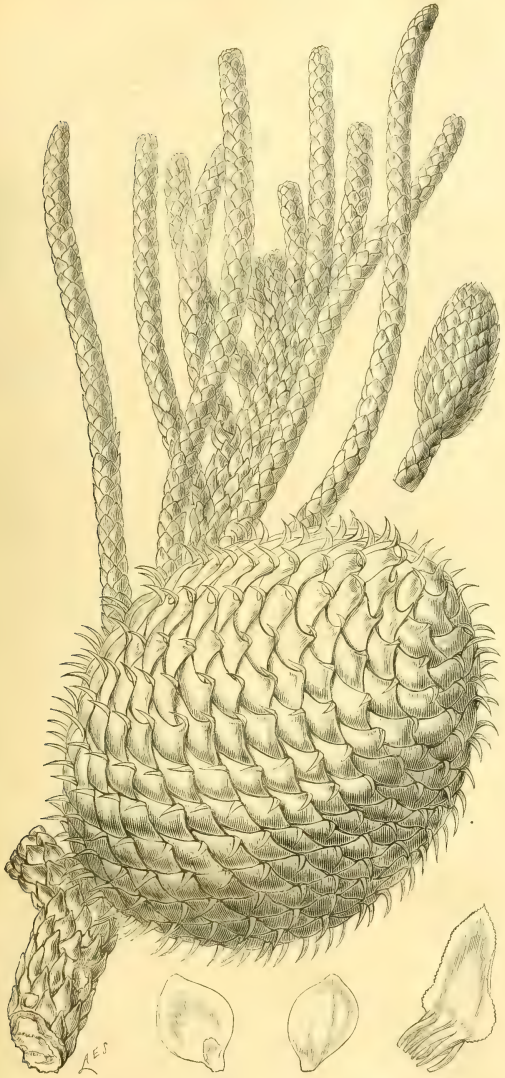


FIG. 14.—ARAUCARIA COOKII. (FROM *Bot. Mag.*)

considered by Australian stockmen to be very poor for the purposes of pasturage, and one of them (Andropogon austro-caledonicum, I believe) possesses a spiky seed-case which is said to penetrate when swallowed by sheep into every part of the body. The land consequently must be eaten bare by cattle before smaller stock are turned on it. Another pest, which threatened at one time to be very injurious, was Asclepias curassavica, said to have been introduced in soldiers' mattrasses from Bourbon or Tahiti. This plant was rapidly overspreading many of the pastures when a Fritillary butterfly appeared in enormous quantities, both in the larva and imago form, and ate it down to the ground. It is perhaps worth suggesting here that this plant may possibly prove of great service to the island, as the Lantana promises to be to Ceylon and Southern India, through the renovation of poor or exhausted soils by the deposition of humus.

There are either four or five different species of New Caledonian Pine found in the island, the principal of which is Araucaria Cookii or columnaris—the one discovered by Captain Cook in the southern parts of the island and on the adjoining Isle of Pines. Some of these trees attain a height of 200 feet, and they appear to thrive best on little rocky islands a few acres in extent or close to the sea. They have a somewhat curious habit, even when growing alone, of shedding their branches for five-sixths or more of their height, and then replacing them by a smaller and more bushy growth, so that the tree at a distance presents a very columnar appearance, the resemblance being increased by the summit being crowned with a mass of foliage somewhat like a capital (fig. 13). The natives not unfrequently plant these trees in their burial grounds, or rather in the bits of bush where they expose their dead to the birds and the hermit-crabs.

As to the natives themselves, there is very little chance of making them generally useful in the cultivation of the land. Although very muscular they are extremely lazy and independent, and will not submit readily to the necessary discipline of plantation life. Indeed, one can scarcely expect men—many of whom at an earlier period in their lives have been cannibals, and who have indulged themselves with the mad excitement of native warfare—to settle down readily to the humdrum employment of hoeing corn. Other tillers of the soil have consequently to be obtained, by means of labour vessels, from the neighbouring islands, or else by the importation of Tamil coolies from Bourbon. This latter is by far the most successful plan as yet adopted, but it has only been carried out to a very limited extent. The Tamil is exceedingly docile, and though not very muscular, it is surprising how much work he will get through if properly managed. The Kanak, on the other hand, is very difficult to deal with, and the manner in which he has been obtained is not likely to render him cheerfully amenable to the requirements of the planter.

The food which the natives used before the arrival of Europeans was almost exclusively the Taro, I believe of two kinds (Colocasia esculenta and macrorhiza), which were cultivated in terraces on the hillsides where water was available for the purposes of irrigation. The root of the Fern (Pteris esculenta), so universally eaten by the Maories of New Zealand, was scarcely ever used by the Kanaks of New Caledonia. The pith of Cycas circinalis, which is common, is often made into a kind of sago and eaten. A few fruits, but none of much importance, are eaten; nor have the natives much animal food except the flesh of pigs that have run wild since their introduction by Europeans. There are no wild animals indigenous to the island—the only ground game ever hunted by the natives being the Kagou (Rhinocetus jubatus), a member of the crane family living in the woods, that has enjoyed security from four-footed enemies so long that it has lost the use of its wings, and can be easily captured by dogs. Young birds, the size of thrushes, I have seen native women transfixing with pieces of stick and roasting alive before the fire. When the locusts make their appearance, as they sometimes do, in enormous swarms, the natives readily procure a meal by setting fire to the grass on a hill-side, and picking up their food ready roasted after the flames have passed.

At the present time it is perhaps somewhat early to form a decided opinion as to the ultimate capabilities of the island when plants from all parts of the tropical and subtropical world shall have been introduced for the purposes of acclimatisation. It is possible that some may be found to overspread the waste places of the island and to impart a fertility to the soil which it does not at present possess, but it may be assumed that as some of the hardiest specimens of tropical vegetation, *e.g.*, Lantana, Ageratum, Couch-grass, have failed to make any progress except in very isolated spots, the prospects are not very promising.

It may be mentioned that owing to the absence of

jungle vegetation and lowlands, as well as on account of the narrowness of the island, the climate is extremely healthy, no case of epidemic sickness (unless recently imported) having ever been known in the island, although the filthiness of the low-lying parts of Nouméa, owing to the utter absence of any sewage system, is such that it seems little less than a miracle that the town has escaped so long. *R. Abbay.*

Obituary.

IT is with the greatest regret that we announce the death, on the 11th inst., of ALFRED SMEE, Esq. An enthusiast in whatever he undertook, he threw himself as warmly into the pursuit of gardening as into the chemical, electrical, surgical, and other subjects in which he attained fame. His garden at Wallington was a perfect epitome of all departments of gardening, useful and ornamental; a keen lover of Nature, he had gathered together a vast variety of interesting plants. Nothing came amiss to his wide sympathies in this way, and if bedding plants were nearly excluded from his garden it was because he liked them less than other plants. His collection of hardy fruit trees was one of the largest of any private collector in this country. The outcome of his garden experience was manifested in his richly illustrated work, *My Garden* — a treasure-house of information for amateur gardeners. Mr. Smee was for some time chairman of the Fruit Committee of the Royal Horticultural Society, and served on its Council. Few men had clearer and juster notions of the duties and objects of the Society, or was more emphatic in giving them utterance. His feelings were always those of a staunch horticulturist, firmly impressed with the conviction that the Royal Horticultural Society, if it were to take its proper position as the national representative and exponent of gardening, should devote all its energies to scientific and practical horticulture. In private life Mr. Smee was beloved for his unvarying kindness and liberality of spirit. As we hope in a short time to publish a portrait of the late Mr. Smee, we defer for the present any further notice of his career.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JAN. 17, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to 32° and Sea Level.	BAROMETER. Departure from Mean of 15 Years.	TEMPERATURE OF THE AIR. Highest.	TEMPERATURE OF THE AIR. Lowest.	TEMPERATURE OF THE AIR. Range.	TEMPERATURE OF THE AIR. Mean for the Week.	TEMPERATURE OF THE AIR. Departure of Mean from Average of 15 Years.	HYGROMETRICAL DEDUCTIONS FROM GLAISHER'S TABLES 5TH EDITION. Dew Point.	HYGROMETRICAL DEDUCTIONS FROM GLAISHER'S TABLES 5TH EDITION. Degree of Humidity. Sat. = 100.	WIND. Average Direction	RAINFALL.
Jan.	In. 29.58	In. — 0.20	° 41.6	° 25.4	° 16.2	° 33.4	° + 2.1	° 26.5	94	N.NE. W.	In. 0.00
12	29.71	— 0.01	35.5	20.2	15.3	27.8	— 4.2	20.9	91	Calm	0.00
13	29.87	+ 0.15	42.7	31.5	11.2	36.6	+ 0.2	34.2	91	Calm W.	0.00
14	29.53	— 0.19	49.3	38.1	11.2	43.9	+ 7.4	42.8	96	S.SE.	0.28
15	29.88	+ 0.15	45.8	33.8	12.0	38.8	+ 2.3	34.5	85	WSW. W.	0.02
16	29.88	+ 0.15	52.7	38.1	14.4	46.2	+ 9.5	43.7	92	WNW. S.	0.00
17	29.56	— 0.07	53.6	44.0	9.6	48.3	+ 11.5	45.6	91	S.	0.09
Mean	29.72	0.00	45.9	35.0	10.0	40.6	+ 4.1	38.2	92	variable	sum 0.67

Jan. 11.—Overcast, dull, and cold. Strong wind. Occasional rain till 4 P.M.
— 12.—A very dull, cold, foggy day. Hoar-frost on ground all day.
— 13.—A fine bright cold day. Fog in morning. A little thin rain about 10 P.M.
— 14.—A dull miserable wet day. Mild and damp.
— 15.—A fine pleasant day. Cool and bright. Shower of rain in early morning.
— 16.—Very fine and bright till 3 P.M.; dull and overcast after. Thin mizzling rain at 11 P.M. Mild.
— 17.—A dull cloudy day. Frequent thin rain. Very mild. Cloudless at night.

LONDON: *Barometer.*—During the week ending Saturday, January 13, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.08 inches at the beginning of the week to 29.55 inches by the morning of the 8th, decreased to 29.48 inches by the afternoon of the same day, increased to 30.05 inches by the morning of the 10th, decreased to 29.66 inches by the morning of the 11th, increased to 30.07 inches by the morning of the 13th, and was 30.07 inches at the end of the week.

The mean reading for the week at sea level was 29.75 inches, being 0.46 inch above that of the preceding week, and 0.17 inch below the average.

Temperature.—The highest temperatures of the air varied from 55° on the 9th to 35½° on the 12th; the mean value for the week was 46½°. The lowest temperatures of the air ranged from 29½° on the 12th to 44½° on the 8th; the mean for the week was 37½°. The mean daily range of temperature for the week was 9½°, the least range in the day being 5½° on the 11th, and the greatest 13½° both on the 9th and 10th. The mean daily temperatures of the air and the departures from their respective averages were as follows:—7th, 48°.3, + 12°; 8th, 48°, + 11°.8; 9th, 48°, + 11°.8; 10th, 41°.8, + 5°.5; 11th, 38°.4, + 2°.1; 12th, 32°.2, − 4°.2; 13th, 36°.6, + 0°.2. The mean temperature of the air for the week was 41°.9, being 5°.6 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 80½° on the 7th, 73½° on the 9th, and 70½° on the 13th; on the 12th 36° was the highest reading recorded by this instrument. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 24½° on the 12th, 30½° on the 13th, and 33½° on the 10th; the mean value for the week was 34½°.

Wind.—The direction of the wind was S.W. and N.E., and its strength brisk at times. The weather during the first five days of the week was dull, wet, and very mild; on Friday and Saturday the weather was somewhat finer, cold, but foggy.

Rain fell on five days during the week, the amount collected was 1.88 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 55° at Blackheath and 54° at Truro; at Hull 48° was the highest temperature; the mean value from all stations was 51½°. The lowest temperature of the air was 27½° at Nottingham; at Portsmouth and Norwich 32° was the lowest temperature. The mean value from all stations was 30°. The range of temperature in the week was the greatest at Blackheath, 25½°, and the least at Bradford, 18½°. The mean range from all stations was 21½°.

The mean of the seven high day temperatures was the highest at Truro, 50½°, and the lowest at Hull and Sunderland, both 43½°; the general mean from all stations was 46°. The mean of the seven low night temperatures was the lowest at Sunderland, 35½°, and the highest at Plymouth, 41°; the mean from all stations was 38°. The mean daily range of temperature in the week was the least at Norwich and Leicester, 5½°, and the greatest at Truro and Manchester, both 11½°; the mean daily range of temperature from all stations was 8°.

The mean temperature of the air for the week from all stations was 41½°, being 10½° higher than the value for the corresponding week in 1876; the highest was 45½°, at Plymouth, and the lowest 39½°, at Sunderland.

Rain.—The amounts of rain measured at the several stations were comparatively small as compared with previous weeks. The heaviest fall, however, was 2½ inches at Brighton, and the least fall was twotenths of an inch nearly at Leicester, Sheffield, and Liverpool. The average fall over the country was seven-tenths of an inch nearly.

The weather during the week was dull, wet, and very mild till the 11th, and on the 12th and 13th the sky was cloudy, and the weather was frosty and cold, with fog.

SCOTLAND: *Temperature.*—In Scotland the highest temperatures of the air varied from 49½° at Leith to about 48° at Dundee, Aberdeen, Greenock, and Paisley; the mean value from all stations was 48½°. The lowest temperatures of the air ranged from 24° at Paisley to 31° at Edinburgh; the mean from all stations was 27½°. The mean range of temperature from all stations was 21°.

The mean temperature of the air for the week from all stations was 38°, being 5½° higher than the value for the corresponding week in 1876. The highest occurred at Edinburgh, 39½°, and the lowest at Dundee and Perth, both 37½°.

Rain.—The falls of rain varied from 2 inches at Greenock, to half an inch at Dundee and Aberdeen; the average fall over the country was 1 inch.

DUBLIN.—The highest temperature of the air was 56½°, the lowest was 24½°, the range was 31½°, the mean was 41½°, and the fall of rain was 0.17 inch.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—BACON.

158. MAIDENHAIR (BRAZILIAN). — Will you kindly tell me how the fronds are grown or prepared for market so that they may preserve their freshness for so long a time as they are seen to do in Covent Garden? In whatever stage I cut them, whether old, young, or medium, they wither or dry up in a very few hours—before they are in a bouquet an hour they are withered. *C. Z.* [We believe that only the most wiry and best matured fronds can be cut and sent by the growers to Covent Garden, and these will only keep fresh for about twenty-four hours. In the florist's shops the fronds are kept in a dark moist place, and when sent any distance are packed in air-tight boxes. They should not be grown too hot or too moist. EDS.]

159. WHITE VARIETIES. — Will any floriculturists kindly inform me if they have noticed whether white or pale varieties of garden plants are relatively more selffertile than the coloured? Mr. Darwin's white Mimulus, pale Pelargonia, according to Dr. Denny, and a white Antirrhinum, show this peculiarity; but I should be glad to hear of other instances. *George Henslow, 7, Bentinck Terrace, Regent Park, N.W.*

160. DAMAGE FROM FALLING TREES.—Can you say whether, if a large tree be blown down on a neighbouring land, and fall upon another's, doing great damage, the injured party can claim damages? *J. S.* [This is a legal question which some of our readers may be able to answer from their own experience. EDS.]

161. ASPHALTE WALKS.—May I inquire of some of your correspondents the best means known of laying down asphalte walks in gardens; the composition of the materials in parts; whether it should be mixed with hot or cold tar; what thickness is best to withstand the washings of heavy rain; and, if laid now, would frost affect it? To give it a bright glistening surface, would Derbyshire spar, or the chippings of tuffa rock, be most durable and effective? *Cephas.*

Answers to Correspondents.

BOOKS: *Reader.* Yes; at 171, Fleet Street, or through your agent. Price 2*s.*

GALLS ON YEWS: I enclose what seems to be an unusual tufted growth of Yew leaves, in case it may be of any interest to you from a teratological point of view. *F. C.* [The tufted growth, as shown in the

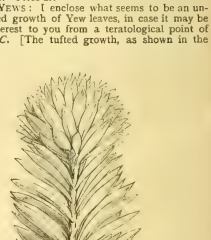


FIG. 15.—GAL ON YEW.

accompanying illustration (*fig.* 15), reproduced from our volume for 1873, p. 1110, is the work of the gall midge of the Yew, Cecidomyia taxi.]

DISEASED LEAVES: *Amateur.* The so-called diseased leaves of Statice and others look as if suffering from attack of red-spider. The Cinerarias can only be suffering from too much damp either at the root or top, and perhaps also from want of a sufficient circulation of air.

DOUBLE PRIMULA: *E. Hillier.* The flowers are very pleasing—a delicate blush, very full, and nicely fringed. Double varieties are, however, now so plentiful that it needs to be seen growing beside the others to judge if it is superior.

GRAPE CURE: *J. Fryer.* We do not understand your question. Do you refer to the Vine pest, Phylloxera, to the Vine mildew, or what? If you mean the medicinal uses of Grapes, apply to Messrs. Churchill, New Burlington Street.

MISTLETO: *E. F.* The Mistleto will grow on the Thorn, and also on the Apple, Lime, and various other trees. The best plan is to fix the berries on the bark in a sheltered part, and protect them from birds; they will adhere by their own viscidity if crushed on the surface of the bark. The underside of a branch is generally preferred. It may be done now.

NAMES OF PLANTS: *Darlington*. Your Dendrobe is, there is little doubt, D. Linawianum (the moniliforme of the older botanists). As to the Lælia, it is no doubt the best Orchid of the actual year, whether male or variety it is impossible to say. Please send us your name and address.—*A. B.* 1, Panicum latifolium; 2, Elymus virginicus; 3, next week.—*W. E. H.* It is beyond our power to name the miserable scrap sent. Send a better specimen.—*An Old Subscriber.* 1, we are at present unable to determine, but will try and work it out: it is a species of Fodocarpus unknown to us; 2, Retinospora plumosa aurea; 3, Chamæcyparis sphæroidea variegata; 4, Podocarpus chinensis (Wallich); 5, Fitz-Roya patagonica; 6, Juniperus sabina; 7, Retinospora ericoides.—*C. B. C.* 1, Garrya elliptica; 2 and 3, species of Acacia with which we do not recognise; 4, Asplenium cicutarium; 5, Spermannia africana.—*B. F.* The New Zealand Tea tree, Leptospermum scoparium.

PAPHIOPEDILUM SUPERBIENS.—*H. G. R.* We have received no communication about this plant.

PEACHES: *Horace.* Your proposition to grow Peaches on a boarded fence (east and west aspects) will end in utter failure, excepting you are in one of the most favoured of situations. Peaches require a full southern aspect—all the sun you can give them. A few of the early sorts, &c., may fruit elsewhere, but there is no certainty of success.

POISONOUS HERB: *E. W. G.* The "poisonous herb" mentioned in the paragraph from the *Birmingham Daily Post*, as having been eaten by sailors with fatal results, being mistaken for Watercress, is possibly Sium latifolium, but we cannot possibly speak with any certainty without seeing the plant.

PROLIFEROUS CABBAGE LEAF: *W. C.* Such branching of the veins is not uncommon in Cabbages. Doubtless the curled Kails originated in this way.

THUJA CAVENDISHII: *G. B. T.* The fruit become yellowish when ripe, and in that state are excellent for dessert. We are not aware that it is used in the green or unripened condition.

WALTONIAN CASES: *F. C.* Write to Messrs. Barr & Sugden, or Messrs. Dick Radclyffe & Co.

WASH FOR STEMS OF FRUIT TREES: *F. G. L.* Use a mixture of lime and soot, in water, introducing enough clay to give it body and take off the glaring colour. Give the bark a good hard scrubbing before applying the wash.

YOUNG GARDENERS: *F. B.* No, thanks; we could not find space for such a communication.

CATALOGUES RECEIVED:—Messrs. J. Veitch & Sons (Royal Exotic Nursery, King's Road, Chelsea, London), Catalogue of Garden and Flower Seeds, Horticultural Implements, &c.—Charles Turner (Royal Nurseries, Slough), Catalogue of Seeds for the Kitchen and Flower Gardens, and Farm.—Messrs. Haage & Schmidt (Erfurt, Prussia), Trade Seed List of Trees and Shrubs.—Messrs. Dick Radclyffe & Co. (129, High Holborn, London), Catalogue of Vegetable, Flower, and Garden Seeds, Tools, &c.—John Scott (Yeovil, Somerset), Descriptive Catalogue of Seeds for the Flower and Kitchen Gardens, and Farm.—Messrs. Waite, Burnell, Huggins & Co. (79, Southwark Street, London), Spring Catalogue of Vegetable and Flower Seeds.—Messrs. Austin & M'Alslan (16, Buchanan Street, Glasgow), Descriptive Catalogue of Vegetable and Flower Seeds, Implements, &c.—Messrs. Kent & Brydon (31, Friesgate, Darlington), Descriptive Catalogue of Vegetable and Flower Seeds.—E. P. Dixon (157, Queen Street, and 75 to 77, High Street, Hull), Catalogue of Flower Seeds, and also Descriptive Catalogue and List of Flower Roots.—R. G. Trott (Clare Street, Bristol), Quarterly Spring Catalogue.—Messrs. Thomas Kennedy & Co. (Dumfries), Select Vegetable and Flower Seeds, &c.

COMMUNICATIONS RECEIVED.—R. C.—A. G.—G. J.—A. D.—W. E.—W. H.—F. W. F.—F. H.—J. M.—D. T. L.—W. M.—W. T.—J. S.—H. E.—D. T. F.—R. B. F.—J. H.—J. R.—J. B. L.—C. W. H.—F. Ender.—W. D.—G. S.—W. T.—A. J.—J. H. G.—W. D. F.—J. T.—E. S.—J. E.—J. S.—G. F. M.—J. G.—E. A.—H. M., Euys (next week).—W. W.

Markets.

COVENT GARDEN, January 18.

Our market is now so very bare that there is nothing of importance to quote. *James Webber, Wholesale Apple Market.*

VEGETABLES.

	s. d.	*s. d.*
Artichokes, per bush.	4 0 ..	Leeks, per bunch ..
— Eng. Globe, doz.	4 0	Lettuces, per score
Asparagus, Fr., bun.	20 0 ..	— French, per doz.
— English, p. bun.	8 0 to 0	Mint, green, bunch
— Sprue, per bun.	1 6 ..	Mushrooms, per pott.
Beans, French (new), per 100 ..	3 6 ..	Onions, per bush. ..
Beet, per doz. ..	1 0 to 2 0	— young, per bun.
Brussels Sprts. bush.	7 0 ..	Parsley, per bunch ..
Cabbages, per doz. ..	1 0	Potatos, new, per lb.
Carrots, per bunch ..	0 6 ..	Radishes, per bunch
Cauliflowers, per doz.	2 0 4 0	— Spanish, doz. ..
Celery, per bundle ..	1 6 ..	New Jersey, doz.
Chilis, green, per 100	3 0 ..	Rhubarb, per bundle
Cucumbers, each ..	1 6 ..	Salsafy, per bundle
Endive, per doz. ..	0 4 ..	Seakale, per punnet
— Batavian, p. doz.	2 0 ..	Shallots, per lb. ..
Garlic, per lb. ..	0 6 ..	Spinach, per bushel
Herbs, per bunch ..	0 2 ..	Tomatas, per doz. ..
Horse Radish, p. bun.	4 0 ..	Turnips, per bundle

POTMOT.—Kent Regents, £5 to £6; Essex Regents, £4 10s. to £5; Kidneys, £6 per ton.

FRUIT.

	s. d.	*s. d.*
Apples, per ½-sieve	1 6 ..	Oranges, per 100 ..
Cobs, per lb. ..	1 0 ..	Peaches, per doz. ..
Grapes, per lb. ..	3 0 ..	Pears, per doz. ..
Lemons, per 100 ..	8 0 ..	Pine-apples, per lb..
Melons, each ..	1 6 ..	

PLANTS IN POTS.

	s. d.	*s. d.*
Azaleas, per dozen ..	24 0	Hyacinths, per doz.
Begonias, per doz. ..	6 0	— Roman, per doz.
Bouvardias, do. ..	12 0	Lily of Valley, each
Cinerarias, per doz. ..	9 0	Mignonette, do. ..
Coleus, per dozen ..	3 0	Myrtles, do. ..
Cyclamen, per doz. ..	12 0	Palms in variety, each
Cyperus, do. ..	6 0	Pelargoniums, scarlet, per doz. ..
Dracæna terminalis	30 0	— variegated, per doz.
— viridis, per doz.	18 0	Primula sinensis, doz.
Epiphyllums, per doz.	18 0	Solanums, per doz.
Ferns, in var., p. doz.	6 0	Tulips, per dozen ..
Ficus elastica ..	6 0	Valotta purpur., doz.
Heaths, variety, doz.	9 0	
Heliotrope, per doz.	6 0	

CUT FLOWERS.

	s. d.	*s. d.*
Azaleas, 12 sprays ..	1 0	Mignonette, 12 bun.
Bouvardias, per bun.	1 0	Narcissus, 12 sprays
Camellias, 12 blooms	2 0	Pelargoniums, 12 spr.
Carnations, per dozen	1 6	— zonal, 12 sprays
Cyclamen, per doz. ..	3 0	Poinsettia, 12 sprays
Daphnium, 2 bims. ..	3 0	Primula, obl., p. bun.
Eucharis, per doz. ..	6 0	Roses, indoor, p. doz.
Euphorbia, 12 sprays	2 0	— Christmas, bun.
Gardenia, per doz. ..	9 0	Stephanotis, 12 spr.
Heliotropes, 12 spr.	0 6	Tropæolum, 12 bun.
Hyacin. Rom., 12 sp.	2 0	Violets, 12 bun. ..
Lily of Valley, 12 spr.	1 6	

*** Stephanotis and Gardenia blooms are very scarce.

SEEDS.

LONDON: *Jan.* 17.—We have to report a greater spirit of inquiry for farm seeds, which with better weather would soon develope into extreme activity. For every variety of seeds the trade exhibits great firmness, whilst for several descriptions higher prices are to be quoted. From all the American seed-saving sections there comes concurrent testimony as to the shortness of the yield, and the firm feeling consequently entertained by holders. The markets of the United States are also very materially strengthened by the fact that not only this country, but also France and Germany are looking across the Atlantic for their supplies for the ensuing spring. The late advance of £3 to £4 per ton in the value of white Clover seed is well sustained. Trefoils, although not quotably dearer, are held with more confidence. A good trade has recently been doing in foreign Italian, fine samples of which are making more money. A limited business has been passing in Baltic Tares. The position of the Canary seed market shows no variation. Fine qualities of Mustard and Rape seed are scarce, and a little demand would soon enhance currencies.—*John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday trade was quiet, but steady. Dry parcels of English Wheat were held at an advance of 1*s.* per quarter, which in a few instances was obtained; for foreign Wheat quotations were much the same as on Monday of last week. Good malting Barley was about 1*s.* per quarter higher on the week, while grinding and other sorts fully maintained previous currencies; malt was quite as dear. Oats and Maize remained at the quotations of last week; Beans and Peas underwent no appreciable alteration; and flour was firm, especially fine American, but no actual advance can be noted in prices.—Trade on Wednesday was quiet, and quotations were much the same as on Monday. A firm tone prevailed for all dry and superior qualities of produce, the supply of these, in consequence of the unsettled weather of late, being very short; but for damp and inferior parcels the market remained dull.—Average prices for the week ending Jan. 13:—Wheat, 51*s.* 3*d.*; Barley, 39*s.*; Oats, 24*s.* 8*d.* For the corresponding week last year:—Wheat, 44*s.* 7*d.*; Barley, 34*s.* 3*d.*; Oats, 23*s.* 10*d.*

HAY.

In the Whitechapel market on Tuesday trade was brisk, but there was a large supply, and prices were unchanged:—Prime Clover, 100*s.* to 144*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 135*s.*; inferior, 70*s.* to 85*s.*; and straw, 30*s.* to 36*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 132*s.* to 140*s.*; inferior, 110*s.* to 120*s.*; superior Clover, 140*s.* to 150*s.*; inferior, 120*s.* to 130*s.*; and straw, 58*s.* to 63*s.* per load.

POTATOS.

The Borough and Spitalfields markets reports state that there were moderate supplies of Potatos, and trade remained steady at the following quotations:—Kent Regents, 100*s.* to 140*s.* per ton: Essex do., 100*s.* to 130*s.*; Scotch do., 100*s.* to 160*s.*; rocks, 85*s.* to 100*s.*; flukes, 160*s.* to 190*s.*; Victorias, 150*s.* to 180*s.*; and Kidneys, 100*s.* to 120*s.*—The imports into London last week amounted to 12,540 bags from Hamburg, 10,781 from Antwerp, 5,056 from Boulogne, 1,056 Ghent, 1,195 Rotterdam, 990 bags 100 barrels Harlingen, 400 sacks from Boulogne, and 40 barrels from New York.

COALS.

Business at both Monday's and Wednesday's markets was firm, at previous prices, viz.:—East Wylam, 17*s.* 6*d.*; Walls End—Hetton, 18*s.* 3*d.*; Hetton, 20*s.*; Hetton Lyons, 18*s.* 3*d.*; Lambton, 19*s.* 6*d.*; Original Hartlepool, 20*s.*; Caradoc, 19*s.* 9*d.*; Keller, 18*s.* 6*d.*; East Hartlepool, 19*s.* 9*d.*; South Hartlepool, 19*s.*

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Dr. Hogg has spoken of this excellent Melon in the highest terms, and after tasting it pronounced it a fruit of the highest merit.

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Messrs. Charles Lee & Son are now prepared to offer this very useful and delicious new Melon in sealed packets, at 3s. 6d. per packet.

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ASH, Mountain, 2½ to 3½ feet, 16s. per 100 ; 4 to 5 feet, 20s. per 100.
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POPLARS, Balsam, 5 to 7 feet, 8s. per 100.
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RHODODENDRONS, Hybrid and Pontica, mixed, 3-yr. seedling, fine, 5s. per 100 ; do. and 2-yr. bedded, 18s. per 1000 ; extra transplanted, 8 to 12 inches, 70s. per 1000 ; 2 to 1½ feet, 110s. per 1000 ; 1½ to 2 feet, 20s. per 100 ; 18s. per 100.
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,, aurea vulgaris, 2 to 3 feet, 24s. per dozen.
,, semper-aurea, 7 to 12 inches, 18s. per dozen.
,, American, 4 to 8 feet, 3s. to 6s. per dozen.
Tree Box, 2 to 2½ feet, 3s. per dozen.
Broom, 5ft. 3s. per dozen.
Cedrus Deodara, 2 to 2½ feet, 21s. per dozen.
Cephalotaxus Fortii, 1½ to 2 feet, 24s. per dozen.
Cryptomeria japonica, 2 to 3 feet, 12s. per dozen.
Cedrus africana, 4 to 5 feet, 15s. per dozen.
Gold Privet, 1 to 1½ feet, 12s. per dozen.
Juniperus sinensis, 3 to 4 feet, 24s. per dozen.
,, drupacea, 2 to 2½ feet, 30s. per dozen.
,, glauca, 3 feet, 30s. per dozen.
Lilacs, 4 feet, 5s. per dozen.
Laurus canadaica, 2 to 3 feet, 25s. per dozen.
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Cash or reference. Catalogues of Trees and Seeds on application to
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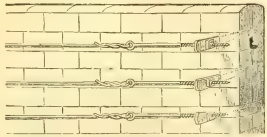
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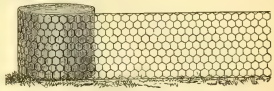
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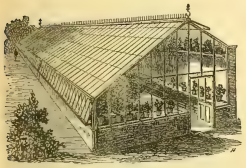
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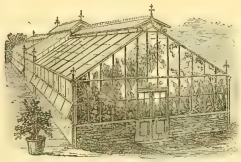
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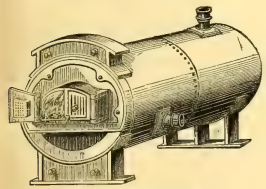
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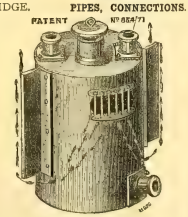




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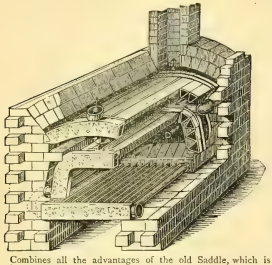
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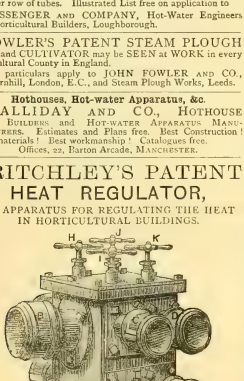
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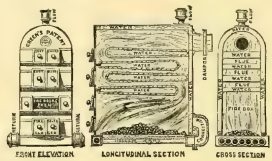
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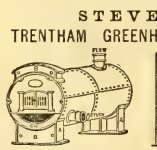
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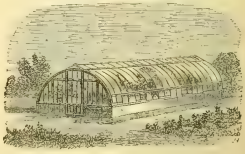
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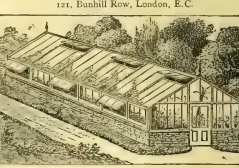


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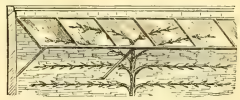
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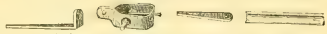
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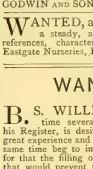
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GEORGE KINGSTON, Secretary.

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The THIRD EXHIBITION of PLANTS, FLOWERS, FRUIT, VEGETABLES, DINNER TABLE DECORATIONS, and COTTAGERS' PRODUCTIONS, will be held in the Old Deer Park, Richmond Green, on THURSDAY, June 28. Schedules may be obtained of

ALBERT CHANCELLOR, Hon. Sec.

1, King Street, Richmond, S.W.

WEST OF ENGLAND ROSE SHOW, Hereford.

This ANNUAL EXHIBITION of ROSES is fixed to take place on THURSDAY, July 6.

January 22, 1877. By order of the Committee.

INTERNATIONAL HORTICULTURAL EXHIBITION, 1877.

A GREAT INTERNATIONAL HORTICULTURAL EXHIBITION will be held at Carlisle on THURSDAY, FRIDAY, and SATURDAY, September 6, 7, and 8, when nearly £1200 will be OFFERED FOR COMPETITION in FRUITS, PLANTS, EXOTIC and NATIVE PLANTS, &c. SPECIAL PRIZES have also already been promised; and as the SCHEDULE of PRIZES will be issued in a few weeks, it is hoped that Gentlemen interested in the Advancement of Horticulture, and inclined to give SPECIAL PRIZES, will communicate with the Acting Secretary, in time to insure their appearance in the Schedule. A select number of Advertisements will also be inserted at £2 2s. per Page, £1 1s. per Half-page. Copies for Advertisements must be sent not later than February 10.

Mr. JOHN MOUNSEY, Acting Secretary.

Victoria Buildings, Lowther Street, Carlisle.—Jan. 25.

ZUR BEACHTUNG.—Hiermit erlauben wir uns ergebenst anzuzeigen, dass der VEREIN DEUTSCHER GAERTNER IN LONDON, mit Anfang dieses Jahres das Vereinslocal verlegt hat nach dem Hotel "City Arms," Bridge Road, Hammersmith, an Fusse der H. Brücke, unweit der Eisenbahn Stationen, Hammersmith. Naechste Versammlung SONNABEND, d. 27 JANUAR, Abends 8½ Uhr, wozu freundlichst sämmtliche deutsche Gaertner, zur Zeit in London, eingeladen werden.—J. V.

SALES BY AUCTION.

Heyfield Nursery, London Road, St. Alban's, Herts.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, as above, without reserve, by order of Mr. J. Horwood, on THURSDAY, February 1, at 1 o'Clock precisely, a large quantity of valuable NURSERY STOCK, consisting of large Limes, Poplars, Horse Chestnuts, &c., also Cupressus Lawsoniana, Thujas of sorts, Aucubas, Common and Portugal Laurels, Berberis, Green and Variegated Hollies, &c.; Fruit Trees in variety, Standard and Dwarf Roses, best sorts; and numerous other Trees and Shrubs.

May be viewed any day prior to the Sale, and Catalogues had on the Premises, and of the Auctioneers, 58, Gracechurch Street, E.C., and Leytonstone, E.

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IMPORTANT CLEARANCE SALE OF VALUABLE NURSERY STOCK, comprising a great variety of Lawn Trees, including some splendid specimens of Picea Nordmanniana, Lowi, grandis, nobilis, magnifica, Douglasii, 4 to 10 feet high; a valuable collection of other Coniferæ and Evergreen Shrubs, recently transplanted and adapted for Ornamental Planting; also a fine collection of Orchids, in all the choice varieties, and a number of Camellias and other Greenhouse Plants.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, on the Premises, the Whitchurch Rectory, Edgware, N.W., on SATURDAY, February 17, at 12 o'Clock precisely.

May be viewed prior to the Sale, and Catalogues had on the Premises, and of the Auctioneers as above.

Tooting, S.W.

PRELIMINARY NOTICE.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, the Exotic Nursery, Tooting, S.W., on THURSDAY, February 22, a general assortment of healthy and thriving young STOCK.

May be viewed prior to the Sale, and Catalogues may be had on the Premises and of the Auctioneers.

Sobralia Cattleya.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY February 1, at half-past 12 o'clock precisely, some fine plants of this NEW SOBRALIA, which was fully described by Professor Reichenbach in the *Gardeners' Chronicle* of January 20, 1877, p. 72. Unlike most of the ordinary Sobralias, this species has large thick flowers of a firm fleshy texture; the sepals are purplish-brown with rich rosy-purple lip; instead of the flowers being borne singly, they are produced on stout spikes each with six or seven flowers, two or three each spike being expanded at the same time; from which it will be seen what a remarkable Sobralia this is. The plants are good, and just showing strong breaks.

On view the morning of Sale, and Catalogues had.

Lilies, Orchids, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 1, at half-past 12 o'clock precisely, 1000 splendid BULBS of LILIUM AURATUM, just arrived from Japan in fine condition; and a quantity of other LILIES; GLADIOLUS, &c.; 100 plants of the rare and valuable GLAZIOUA INSIGNIS; an importation of CYMBIDIUM EBURNEUM and other ORCHIDS, in good condition; Cases of ARAUCARIA sp., and of SEED of ABIES MAGNIFICA; also some SEED of MENTZELIA ARNATA, PENTSTEMON COBÆA, P. SECUNDIFLORUS, ECHEVERIA HARRISII LEAVENWORTHII, a few GREENHOUSE PLANTS, &c.

On view the morning of Sale, and Catalogues had.

Imported Coelogynes.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 1, at half-past 12 o'Clock precisely, an Importation of the rare CŒLOGYNE CRISTATELLOSA, CŒLOGYNE CORRUGATA, CŒLOGYNE ODORATISSIMA, and an unnamed CŒLOGYNE, probably new: also an importation of the rare DENDROBIUM ALBUM, which Wight in *Icones Plantarum Indiæ Orientalis* describes thus:—"This is one of the handsomest of the genus I have yet met with—large pure flowers." Also some imported plants of the rare ACANTHOPHIPPIUM BICOLOR: this Orchid gives flowers of large size, bugle yellow and scarlet. Also some good plants of the exceedingly choice and beautiful new SOBRALIA VIRGINALIS: this has large pure white flowers with rich golden throat; the plants are showing strong breaks. On the same time will be sold several plants of ODONTOGLOSSUM CRISPUM (Alexandræ), ODONTOGLOSSUM VEXILLARIUM, and various other ORCHIDS.

On view the morning of Sale, and Catalogues had.

Valuable Lilies.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 1, at half-past 12 o'Clock precisely, an importation of good BULBS of the beautiful LILIUM NEILGHERRENSE. The white flowers of this magnificent Lily are delicately suffused, and of great substance. It bears several flowers on a stem, each flower nearly a foot long. Also some excellent Bulbs of the following new varieties of Lilium neilgherrense, viz.:—

LILIUM NEILGHERRENSE ROSEUM—the exterior of the flower-tubes of this variety is pink, the interior white.

LILIUM NEILGHERRENSE FLAVUM—a handsome light yellow-coloured form of this charming Lily.

LILIUM NEILGHERRENSE TUBIFLORUM—a magnificent pure white Lily, with very long flowers: figured in Wight's *Icones Plantarum Indiæ Orientalis*.

LILIUM NEILGHERRENSE TUBIFLORUM LUTEUM, a very handsome yellow-flowered variety of tubiflorum.

And some splendid flowering bulbs of other CHOICE LILIES, including Bloomerianum ocellatum, purpureum, Humboldtii, giganteum, pardalinum, parvum, californicum, and Wallichianum. Also a quantity of CHOICE BULBS and TUBERS from California, including Calochortus, Cyclobothras, Brodiæas, Triteleias, Calliproras, Erythroniums, Bloomerias, &c.; and some fine BLOOMING BULBS of the handsome tCrinum brachynema, C. australe, C. pratense canaliculatum, tuberous-rooted Begonias, Pancratiums, Amaryllis, North American Cypripediums, with a variety of other Bulbs and Tubers.

On view the morning of Sale, and Catalogues had.

Knockholt, near Sevenoaks, Kent.

(About 2 miles from Halstead Station on the South-Eastern Railway.)

MR. HODSOLL will SELL by AUCTION, on the Premises as above, on TUESDAY, January 30, at 12 for 1 o'Clock, a quantity of valuable NURSERY STOCK, comprising about 3000 Deciduous and Evergreen Shrubs, Plants and Trees, including many choice Specimen Plants, quantity of fine Laurels, Arbor-vitæ, Yews, Hollies, Rhododendrons, &c.; also several Garden Frames, and other useful items.

Catalogues may be had of the Auctioneer, Farningham, Kent.

To be Sold.

TO BE SOLD, a SMALL NURSERY, containing between 2000 and 3000 feet of Glass; good Dwelling-house.

C. FAIRNINGTON, 4 Elm Tree Road, St. John's Wood, London, N.W.

To Nurserymen, Florists, &c.

TO BE SOLD, TWO capital VINERIES, each 26 feet long, with Forcing and Boiler Houses, erected about nine years since by Messrs. Weeks & Co., of Chelsea. The whole are in excellent repair, and are fitted in the most complete manner with Hot-water Apparatus, Staging, &c., and have Tesselated Pavement. They are at present standing in the grounds of a mansion on Wimbledon Common. For further particulars, and cards to view, apply to

Messrs. WALTON, SON AND CO., Estate Agents, Corner of Putney Hill, S.W.

To Nurserymen and Others.

TO BE LET, the GOOD-WILL and Old-established BUSINESS of the late Mr. John Thomas, Nurseryman, Ruthin, Wales. Apply to

Mr. T. E. TREW, Ship Street, Brecon.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION. At a General Meeting of the Members of this Institution, held on January 18, for the purpose of ELECTING THREE PENSIONERS on the Funds, the following was the result of the Ballot:—

CANDIDATES.

Name.	Age.	Votes.
HENRY BUTCHER	72	605
JOHN BLACKSHAW	63	202
MARY ANN ADDISCOTT ..	64	752
HENRY ASHTON	69	186
WILLIAM BLACK..	51	427
JAMES GOSTLING	72	875
STEPHEN WEST	74	338
WILLIAM TRUSTY	68	719
ELIZABETH AVRES	60	844
GEORGE B. LINTON	63	77
GEORGE MCKAY	65	63
JAMES MAJOR	60	32
MATHEW NISBET	70	39
ELIZABETH ROGERS	69	233

The Meeting then declared JAMES GOSTLING, ELIZABETH AVRES, and MARY ANN ADDISCOTT, as having the greatest number of Votes, duly ELECTED PENSIONERS of this Society. EDW. R. TYLER, Secretary.

14, Tavistock Row, W.C.—January 20, 1877.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

J. WILLS takes this opportunity of thanking all who have given their votes for the election of E. AVRES, which have secured her Election. Number of Votes, 884.

Royal Exotic Nursery, South Kensington, S.W.

PROTHEROE AND MORRIS, HORTICULTURAL MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 58, Gracechurch Street, City, E.C., and Leytonstone, E. Monthly Horticultural Register had on application.

SPANISH CHESTNUT, ASH, LARCH, and ALDER, stout, well-rooted, transplanted.—A large quantity to be Sold at low prices.—G. SHORLEY, Midhurst.

To the Trade.

JAMES BIRD, Nurseryman, Downham, has to offer extra fine Standard MAYDUKE CHERRIES.

Grape Vines.—Strong Fruiting and Planting Canes.

WM. CUTBUSH AND SON have a large Stock of the leading sorts, price on application.

Highgate Nurseries, London, N., and Barnet, Herts.

SEED POTATOS (true and good).—Rivers' Royal, Myatt's and Bliss's Prize: a few hundreds of each. W. JACKSON AND CO., Nurseries, Bedale.

Large Evergreen Trees for Screens.

WILLIAM MAULE AND SONS offer Norway SPRUCE and CEDRUS DEODARA, 10 to 15 feet high, well-rooted—the former at 5*s.* each, the latter 10*s.* 6*d.* The Nurseries, Bristol.

Notice.

EDMUND PHILIP DIXON'S CATALOGUE of NEW and CHOICE SEEDS is now ready, and will be forwarded gratis and post-free on application. EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

To the Trade and Others.

PATERSON'S VICTORIA POTATOS, seed size, grown on the best Lincolnshire soil, in large or small quantities. Prices on application.

CHRISTMAS QUINCEY, Potato Grower and Merchant, Peterborough.

SPECIMEN PLANTS for Sale, consisting of FERNS, ALSMANDAS, MARANTAS, &c. For full particulars apply to

WILLIAM PAYNE, Nurseryman, Covent Garden House, Taunton.

The Best Cucumber in Cultivation.

SUTTON'S DUKE OF CONNAUGHT. —*From* Mr. ROBERT DRAPER, *Gr. to the* Right Hon. Earl Vane, *July 29.*—"Your new frame Cucumber, Duke of Connaught, is the best kind I ever saw; suitable for exhibition." Price, 2*s. 6d.* per packet.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

Johnstone's St. Martin's Rhubarb.

EARLIEST and BEST in CULTIVATION for Open Ground, has a splendid colour and excellent for Forcing. Strong roots, 25*s.* per 100. Trade price on application. W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

Genuine Garden Seeds.

WM. CUTBUSH AND SON have for many years held some of the finest Stocks of SEEDS in the Trade, and they believe that no house can possibly supply better quality. CATALOGUES post-free on application.

HIGHGATE, LONDON, N.; and BARNET, HERTS.

Spring Bedding Daisy.

DAISIES, and strong healthy WALLFLOWERS, 5*s.* per 100, cheaper by the 1000. Terms Cash, or would EXCHANGE for Fuchsias, Ivies in Primulas, Cineraias, Spiræas, Cyclamens, Deutzias, Early Rose, or any Early Blooming Plants.

Merton Abbey Nursery, near Wimbledon.

Cheap and Good.

W. FIELD, Tarvin Road Nursery, Chester, has to offer the following:—

TREE BOX, 2 to 3 feet, 40*s.* per 100.

AUCUBA JAPONICA, 1 to 1½ foot, 25*s.* per 100.

SYCAMORE, strong, 8 to 10 feet, 12*s.* per 100.

Splendid excellent well-rooted stuff. Cash.

Monro's Duke of Edinburgh Cucumber.

J. MONRO begs to inform the Trade, &c., that he has SOLD the ENTIRE STOCK of Seed of the above-named Cucumber to

Messrs. CARTER AND CO., The Queen's Seedsmen, 237 and 238, High Holborn, London, W.C.; and as no other Cucumber is grown by J. Monro, those having it from the above-named firm are bound to have true.

Potter's Bar, January 8, 1877.

GARIBALDI STRAWBERRY. — This variety was awarded a Cultural Certificate by the Fruit Committee of the Royal Horticultural Society on December 6. The Raiser can supply for cash strong plants at 5*s.* per 100, package free. See *Gardeners' Chronicle* for Jan. 6, page 21.

THOS. ARMSTRONG, Nurseryman, Moorville, Carlisle.

SILVER FIR.—Fine clean grown and clean leaders. Transplanted Silver Fir, 9 to 12 inches, 20*s.* per 1000: 12 to 18 inches, 25*s.* per 1000.

W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

To the Trade.

MANETTI STOCKS, extra clean stuff, fit to work this season, 30*s.* per 1000, 4*s.*6 per 100, per 10,000. Dwarf ROSES on Manetti, extra fine plants and first-class sorts, my selection, 9*s.* per 100, 80*s.* per 1000. SEAKALE, strong, 40*s.* per 1000: if forced will throw some good Kale. For Cash only with orders.—RICHARD LOCKE, Alexandra Nurseries and Frame Farms, Red Hill, Surrey.

Pelargoniums, Pelargoniums.

JAMES HOLDER AND SON have a fine healthy Stock of the above to offer, at the following low prices for Cash, viz., 25*s.* per 100, distinct sorts, hamper and package included; 4-pots, 9*d.* per dozen, 6-pots, 1*s.* per dozen, in 48-pots, 9*s.* per dozen, 60*s.* per 100, basket and packing extra. Crown Nursery, Reading.

R. AND A. MORRISON beg to offer the following:—

LARCH, transplanted, 2 to 3½ feet, at 25*s.* per 1000: 12 to 18 inches, 17*s. 6d.* per 1000.

1-yr. seedlings, 4*s.* 100, per 10,000.

FIR, Scotch, 9 to 18 inches, at 17*s. 6d.* per 1000.

True Native SCOTCH FIR SEED, price per lb. or cwt. on application.

Pinefield Nurseries, Elgin.

Verbenas, Verbenas, Verbenas.

WILLIAM BADMAN offers Purple King, Crimson, and Rose Verbenas, best sorts, in single pots, 12*s.* per 100; or 1 turned out of pots, 10*s.* per 100. Good rooted Cuttings, 6*s.* per 100, 50*s.* per 1000, package included.

Cemetery Nursery, Gravesend, S.E.

Green Ivies of Sorts in Six Kinds.

ROBERT PARKER, having a Surplus Stock of fine Plants in pots of the above-named, will be pleased to dispose of them in quantities, at very low prices. Names, sizes, and prices per dozen, 100, or 1000, will be given on application.

Exotic Nursery, Tooting, Surrey, S.W.

ARECA BAUERI (Seaforthia robusta).—Of this rare species, one of the finest of Greenhouse Palms, a fine stock of young plants is to hand, and offered at unprecedentedly low prices, viz.:—

Nice young Plants, in single pots, 32*s.* per dozen.

1-yr. seedlings, in store pots, 48 per 100.

Early order solicited by

JEAN NUYTENS VERSCHAFFELT, Ledeberg, Ghent, Belgium.

To the Trade.

H. AND F. SHARPE'S Special Priced LIST of HOME-GROWN GARDEN and AGRICULTURAL SEEDS of 1876 growth, is now ready, and may be had on application.

Seed Growing Establishment, Wisbech.

SEED POTATOS in several excellent Garden varieties, grown specially for Seed. List, with prices per cwt. or ton, on application. A change of Seed always advantageous.

W. P. LAIRD AND SINCLAIR, Seed Merchants, Dundee, N.B.

To Fruit and Fish Salesmen, &c.

GREELEY ARSLEY.—Five Tons to be Disposed of. Parties wishing to purchase the same, to be delivered weekly, will do well to apply to

JOHN SALSBURY, Market Gardener, King's Newton near Derby.

Fox and Game Covert.

ENGLISH FURZE, 1-yr. old, fine, 5*s.*; 2-yr., extra fine, 10*s.* per 1000. ENGLISH BROOM, 2 to 3 feet, 15*s.* per 1000. MAHONIA AQUIFOLIA, extra bushy, 25*s.* per 100.

WILLIAM MAULE AND SONS, The Nurseries, Bristol.

To Clear the Ground.

STRONG LIMES, POPLARS, ASH, SYCAMORE, OAKS, HORNBEAM, WALNUTS, SPRUCE FIRS, &c., 10 to 20 feet; well transplanted. Prices on application.
W. P. HUME, Exotic Nursery, Gloucester.

FOR SALE, CHEAP.—Box Edging, 10,000 yards; Orchid Sphagnum, Spiræa japonica, Sempervivum californicum, Scabiosa glaucum, Polemonium coeruleum var. Particulars from
J. B. YOUNG, Landscape Gardener, Bridge of Allan.

Special—To the Trade and Fruit Growers.

MAIDEN APRICOTS, PEACHES, and NECTARINES, 1000 Victoria PLUMS, 1000 Lord Suffield APPLE. Other Maiden Fruit true to name.
D. REIFFERMANN, Egham.

To the Trade.

SEEDLINGS.—2,000,000 LARCH, 500,000 ALDER, a quantity of BEECH and SYCAMORE, and 5-yr. ELM; every plant guaranteed true native. For samples and PRICE LIST apply to
WILLIAM KIERNAN, Nurseryman, Dangan, Summerhill, Co. Meath, Ireland.
The above to be sold at very low prices.

ASPARAGUS and SEAKALE. — Good Forcing, 80z. per 1000, or 9s. per 100; also 2-yr. and 3-yr. at low prices.
RHUBARB, Matyear's Early Red, 6s. and 9s. per dozen.
Prices to Trade on application.
J. COOPER, Balfour Cottage, Fulham Fields, S.W.

Spring Seed Guide.

LITTLE AND BALLANTYNE, the Queen's Seedsmen, Carlisle, cordially intimate their illustrated CATALOGUE of SEEDS is now ready, and may be had post-free. It contains every requisite for the Garden and the Farm, and much useful information on Amateurs.

GERANIUMS, strong, from store pots.—Bijou, Beauty of Calderdale, Perilla, Aurora, Madame Christine, Amy Hogg, Waltham Seedling, Crystal Palace Gem, 9s. per 100; 100 Cuttings, half the above prices.
W. BROADBRIDGE, Wellesbourne, Warwick.

EAST LOTHIAN STOCK (true), White Scarlet, and Purple, 1s. and 2s. 6d. per packet. Wardie variegated BORECOLE, very choice, 1s. per packet.
CATALOGUES of GARDEN SEEDS, &c., are now ready, and will be sent on application.
WILLIAM THOMSON AND CO., Seed Merchants and Nurserymen, 16, St. Cuthbert Street, Edinburgh.

To the Trade.

WM. WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex, have to offer:—
AUCUBA JAPONICA, fine bushy plants, 9 to 12, 12 to 18, and 18 to 24 inches.
CEDRUS DEODARA, splendid stuff, each plant a specimen, 1 to 1½, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.
Price on application.

SMITH'S BERKSHIRE CHAMPION ONION is undoubtedly the finest Onion in Cultivation, either for Market or Exhibition; grows to a large size, very handsome, good keeper, and a long keeper. New seed, own growth, 10d. per oz., free by post, with Hints on Cultivation.
THOMAS SMITH, Seed Grower, Long Wittenham, Abingdon.

The Best Late Broccoli.

BROCCOLI, Christie's Self-protecting Late White.—Pronounced by all who have seen it as the finest self-protecting Broccoli in cultivation. Price per packet, 2s. 6d. A limited quantity to offer to the Trade, price on application.
EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

PEAR STOCKS.—The Subscribers have a quantity of above to remove at once, and beg to offer them at the following very low prices:—
3-yr. transplanted, fine, 25s. per 1000.
3-yr. seedling, fine, 5s. per 1000.
THOMAS METHVEN AND SONS, Leith Walk Nurseries, Edinburgh.

To the Seed Trade.

OUR WHOLESALE CATALOGUE is now ready, and may be had on application. A copy has been posted to all our Customers, if not received an early intimation will oblige.
BARR, SUGH AND NASH, 60, Strand, London.

LARGE TREE BOX and EVERGREEN HOLLY.—Handsome, bushy, and well-rooted, will transplant with good balls of earth, 5, 6, 7, and 8 feet high. Tree Box lives under trees better than any other Evergreen Fine. An inspection invited. Price on application to
T. JACKSON AND SON, Nurseries, Kingston, Surrey.

PALMS for TABLE DECORATION.—Twelve distinct choice sorts, ready to pot on into 5-inch pots, 21s. Established in that size about 2 feet high, fit for immediate decoration, 42s. and 63s., according to sorts. A large and valuable collection of exhibition specimens, from 21s. each. Package free for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

VERBENAS, VERBENAS, VERBENAS. —Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6s. per 100, 50z. per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, for 8s. Terms cash.
H. BLANCHARD, The Dorset Nurseries, Blandford.

BROCCOLI, Mitchinson's Penzance Winter White, 2s. 6d. per ounce or 1s. per packet, free per post. Wholesale Price on application to
J. G. MITCHINSON, Seed Stores, 9, Chapel Street, Penzance.

ASPARAGUS, Giant and Connover's Colossal, fine plants, strong and extra strong, for planting and forcing. Also several kinds of POTATOS for planting. Kinds and Prices on application to
JOHN AND GEORGE MCHATTIE, Seed Merchants, Chester.

FIRST-CLASS NURSERY STOCK.

JAS. BACKHOUSE & SON

Beg to offer the following, of which they have an extra stock:—

FOREST and ORNAMENTAL TREES and SHRUBS.

ABIES DOUGLASII, extra transplanted, 2 to 3 feet, 100s.; 3 to 4 feet, 140s. per 100
ARBOR-VITÆ, American or common, 2 to 3 feet, fine, 27s. 6d. per 100
„ Chinese, transplanted, 9 to 12 inches, 15s. per 100
ASH, Mountain, 6 to 7 feet, 60s. per 1000, 8s. per 100; 7 to 8 feet, 12s. 6d. per 100
ARUNDO CONSPICUA, an elegant Grass, 18s. per dozen
BERBERIS DARWINII, extra transplanted, 12 to 18 inches, 15s. per 1000, 17s. 6d. per 100
„ WALLICHII, extra transplanted, 12 to 18 inches, 35s. per 100
BROOM, common, 1-yr. seedling, 9s. per 1000, 1s. 6d. per 100
„ „ bushy, transplanted, 50s. per 1000, 6s. per 100
„ Spanish, transplanted, 70s. per 1000, 9s. per 100.
CEDAR, Red, 1½ to 2 feet, 5s. per dozen, 30s. per 100; 2 to 3 feet, 7s. per dozen, 50s. per 100
ELM, English, from seed, 6 to 7 feet, 30s. per 1000, 12s. 6d. per 100; 7 to 8 feet, 25s. per 100
„ „ grafted, 3 to 4 feet, 27s. 6d. per 100; 5 to 6 feet, 40s. per 100
„ grafted, of ornamental sorts, 6s. to 30s. per dozen
„ Wych, 3½ to 4½ feet, 40s. per 1000, 6s. per 100; 5 to 7 feet, 12s. 6d. per 100; 7 to 8 feet, 25s. per 100
„ Weeping, of best forms, good heads, 30s. to 50s. per dozen
EUONYMUS RADICANS VARIEGATUS, excellent dwarf shrub for edgings or borders, 25s. per 100, 4s. to 6s. per dozen
JUNIPERUS TRIPARTITA, a fine branching semi-erect Juniper, well adapted for covering banks, &c., 1½ to 2 feet, bushy, 10s. 6d. per dozen; 2 to 2½ feet, bushy, 16s. per dozen
LIBOCEDRUS DECURRENS, 3 to 3 feet, 18s. per dozen.
ERICA CARNEA ALBA (White Spring Heath), 15s. per dozen; hardy sorts, good variety, 40s. per 100, 6s. per dozen
LIMES, from layers, 3 to 4 feet, 16s. per 100, 2s. 6d. per dozen; 4 to 5 feet, 20s. per 100, 3s. per dozen; 8 to 9 feet, 100s. per 100, 15s. per dozen
LILAC, Common, 2 to 3 feet, 18s. per 100, 3s. per dozen
„ White, 2 to 3 feet, 25s. per 100, 5s. per dozen
MAPLE, Norway, 6 to 8 feet, 12s. 6d. per 100; 2s. 6d. per dozen; 8 to 10 feet, 25s. per 100, 5s. per dozen
HORNBEAM, 3 to 4 feet, 35s. per 1000, 5s. per 100
PICEA NOBILIS, 2 to 2½ feet, fine stout plants, 200s. per 100, 50s. per dozen; 1½ to 2 feet, do., 160s. per 100, 42s. per dozen; 3 to 3½ feet, do., 350s. per 100, 52s. 6d. per dozen
POPLAR, Black Italian, 10 to 12 feet, 30s. per 100, 6s. per dozen; 15 to 18 feet, extra, 21s. per dozen
„ Lombardy, 2 to 3 feet, 35s. per 1000, 5s. per 100; 3 to 4 feet, 45s. per 1000, 7s. per 100; 4 to 5 feet, 60s. per 1000, 8s. per 100; 5 to 7 feet, 90s. per 1000, 12s. 6d. per 100, 2s. 6d. per dozen; 7 to 8 feet, 20s. per 100, 4s. per dozen
PRUNUS SINENSIS ALBA-PLENA, strong, 18s. per doz.
THUJA VERVAENEANA, 9 to 15 inches, 60s. per 100, 9s. per dozen
THUJOPSIS DOLABRATA and VARIEGATA, 9 to 12 inches, 80s. per 100, 12s. per dozen; 12 to 15 inches, 120s. per 100, 18s. per dozen; 15 to 18 inches, 24s. per dozen
VINCA ACUTILOBA (Italian Periwinkle).—A fine addition to the number of hardy creepers, and will be especially valuable for planting banks or rockwork. It is of compact and bushy growth, with shining deep green leaves, and pale lilac or French-white flowers, 2s. 6d. each; 24s. per dozen
YUCCA CONSPICUA, extra fine stout plants, 2 to 2½ feet, 5s. to 7s. 6d. each. Highly ornamental for vases, flowering in beds, &c.
FLOWERING SHRUBS, of sorts, in good variety, and strong plants, 4s. to 8s. per dozen
For prices of LARCH, SCOTCH and SPRUCE FIRS, and other Forest Trees, see Catalogue, which will be sent on application.

FRUIT TREES.

VINES, strong planting canes, leading sorts, 5s. to 7s. 6d. each
FIGS, strong, of sorts, 3s. 6d. to 7s. 6d. each
APPLES, dwarf or bush, with fruit-buds, extra transplanted, 18s. per dozen
CHERRIES, best sorts, fine maidens, 70s. per dozen
„ dwarf trained, 30s. to 42s. per dozen
CURRANTS and GOOSEBERRIES, good useful sorts, 2s. per dozen, 12s. 6d. per 100; large prize sorts, 4s. per dozen, 25s. per 100.
PEACHES, of sorts, dwarf-trained, 4s. to 5s. each
PEARS, of sorts, dwarf-trained, strong, 2s. 6d. to 3s. each
„ „ Pyramids on Quince, 1s. 6d. to 2s. 6d. each
„ 2-yr. seedling, extra fine. Price to the Trade on application
PLUMS, Victoria, half-standards, 1s. 6d. each, 15s. per dozen
„ dwarf-trained, of sorts, 2s. 6d. to 3s. 6d. each

ROSES.

STANDARDS and HALF-STANDARDS, fine named sorts, our selection, 15s. per dozen, 105s. per 100
DWARFS, fine named sorts, our selection, 9s. per dozen, 63s. per 100

LISTS ON APPLICATION.

JAS. BACKHOUSE & SON, YORK.

ALDERS.—Fine stout stuff, 3 to 4 and 4 to 5 feet, can be supplied at a very reasonable rate.
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

AUSTIN AND MCASLAN, GLASGOW.
Established 1797.
GARDEN and IMPLEMENT (64 pages) CATALOGUE
Free on application.

To the Trade.

OSBORN AND SONS can still supply dwarf maiden PEACHES, NECTARINES, and APRICOTS of the leading kinds, and a few Standards. Also Dwarf and Standard APPLES, PEARS, PLUMS, and CHERRIES.
Fulham Nurseries, London, S.W.

TWELVE BEAUTIFUL ORCHIDS, 42s., established plants of fine sorts, as Cattleya citrina, Lælia autumnalis, Lælia albida, Odontoglossum, Dendrobiums, and upwards of fifty other sorts. They have all made fine growth this season.
JOHN H. LEY, Royal Nursery, Croydon.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, Nurserymen, Ussy, Calvados, France, have an immense Stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted. Priced CATALOGUES may be had of
Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

The Best Scarlet-fleshed Melon.

SUTTON'S HERO OF BATH.
—From Mr. W. Wildsmith, *Gr. to* the Right Hon. Viscount Eversley.—"I consider your Hero of Bath the best scarlet-fleshed Melon yet in existence, being A 1 in quality, appearance, and productiveness. His Lordship, who previously had a prejudice against scarlet-fleshed Melons, pronounces this variety superb."
From Mr. Thomas Lockie, *Gr. to* the Right Hon. Lord Otho Fitzgerald, *August 27.*—"I consider your Hero of Bath Melon the best I have ever grown of the scarlet-fleshed class. It is very handsome, of good constitution, and excellent in flavour."
Price 2s. 6d. per packet.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

From Paris.—Roses, Pæonies, Camellias.

LÉVÊQUE AND SON, Nurserymen, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand ROSE TREES, Standards, Half-standards, Dwarfs, and on own root—New and Old sorts.
LÉVÊQUE AND SON respectfully solicit Gentlemen and Nurserymen visiting Paris to inspect their Stock, the largest in Paris.
SPLENDID PYRAMID CAMELLIAS, price 12s. to 50s. each; small, 2s. 6d. to 10s.
CATALOGUES and LISTS on application.

From Paris.—Large Bulbs of Gladioli Seedlings, AND NAMED SORTS.

LÉVÊQUE AND SON, Nurserymen, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand strong, healthy Flowering BULBS of GLADIOLI. The Seedling Bulbs are particularly recommended—their flowers equal to the named sorts (seeds have been taken from the best varieties obtained). GLADIOLI, Seedlings, 8s. per 100, 4s. per 1000, 4os per 10,000; mixed white, red, pink. Separate colours, 12s. to 20s. per 100; yellow, 24s. per 100. Named sorts per 100, 20 sorts, 10s.; 25 sorts, 20s.; 50 or 100 sorts (the best), from 25s. to 40s. less or more, according to the novelty. All good flowering bulbs. English Cheques on London, or Post-office Orders on Paris, accepted in payment.

To the Trade.

CELERY, Calderstone's, the finest old grown, 10s. per lb.; also GOOSEBERRIES, Lancashire Prize, 3-yr. old, 30s. per 100.
N.B.—Remittance must accompany orders from unknown correspondents.
N. CREWS, Nurseryman and Seedsman, St. Helens, Lancashire.

To the Trade.

PEACHES, dwarf-trained, a fine Stock—Royal George, Noblesse, &c.; MORELLO CHERRIES, dwarf-trained, all very fine, 7 to 15 shoots each; APPLES, Pyramid, 4 to 5 feet, and 6 to 7 feet; FRUITING TREES, fine, best varieties. Price on application.
SAMUEL HARTLEY, Headingley Nursery, near Leeds.

PYRUS or CYDONIA, the NEW JAPAN APPLE or QUINCE.—This gorgeous hardy scarlet May flowering fruit tree ripened a fine crop of its golden, deliciously-scented fruit in this garden, far exceeding the general failure of our common Apple crop. The jam made is most delicious, which may be tasted at the nursery, or sample sent to those who really take an interest in the delicacies of the dinner-table.
Original plants 21s. and 15s. each; younger, 10s., 7s. 6d., and 5s. each.
WILLIAM MAULE AND SONS, The Nurseries, Bristol.

EAST LOTHIAN INTERMEDIATE STOCK (true).—New Seed of the above splendid Stock, for present sowing, in packets of White, Purple, Scarlet, and White, wall-leaved, at 1s., 2s. 6d., and 5s. each colour. Price per ounce to the Trade on application.
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Asparagus, Asparagus, Asparagus.

ROBERT AND GEORGE NEAL have the above to offer in large or small quantities, 1-yr., 2-yr., and 3-yr. old:—
1-yr. old, 20s. per 1000.
2-yr. old, 25s. per 1000.
3-yr. old, 35s. per 1000.
Price to the Trade on application.
The Nurseries, Wandsworth Common, S.W.

SEEDS—SEEDS—ALL KINDS.—Before ordering your Seeds, send for Illustrated CATALOGUE, which contains full Directions,
How, When and What to Sow.
PENGILLEY AND POOL (successors to the Heatherside Nurseries Company), 59, Queen Victoria Street, London, E.C

To the Trade Only.

SAM DYER has to offer to the Trade fine Standard MULBERRIES, Standard LIMES, from layers, 8 to 10 and 10 to 12 feet, very fine; GOOSEBERRIES, best named sorts; CURRANTS, Red, White, and Black THORNS, 3-yr. transplanted, extra strong. Prices per 100 or 1000 on application.
The Nurseries, Bridgwater.

MESSRS. JNO. STANDISH AND CO.'S CATALOGUE for Autumn, 1876, and Spring, 1877, is now ready, and may be had, post-free, on application.
It contains the following:—
Plants of Recent Introduction. Conifers.
Stove and Greenhouse Plants. Hardy Climbers, Clematis, &c.
Plants for Winter Forcing. Rhododendrons, Azaleas,
Azalea indica and Camellias. Kalmias, &c.
Tree Carnations and Ericas. Roses, Standards and Dwarfs.
Ferns and Lycopods. also 10 pots.
Hardy Trees and Shrubs. Fruit Trees.
Transplanted Forest Trees. Grape Vines.
Dutch Bulbs. Flower Roots, &c.
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A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands, has to offer the following:—
YUCCA ANGUSTIFOLIA, strong plants, 1 foot high, £2 per dozen, £12 10s. per 100. In my nursery this beautiful new Yucca withstood, without the slightest protection, the severe winter of 1875.
APPLES, strong 2-yr. Palmettes and Pyramids, 42s. per 100, £18 15s. per 1000.
HARDY AQUATICS at the lowest prices.

Complete Liberal Collections of
CHOICE VEGETABLE SEEDS, 15s., 21s., 42s., 63s., and 105s. each, carriage paid. As my new and choice seeds are now in large demand, please order early. SPECIALITIES:—
CAULIFLOWER, Veitch's Autumn Giant, true, 1s. 6d. per packet.
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ROSES, Dwarf, 4s. per dozen, 25s. per 100, 210s. per 1000.
PEACHES and NECTARINES, dwarf-trained, 21s. per dozen, 150s. per 100.
RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1½ to 2 feet, 21s. per dozen, 150s. per 100.
" " " for immediate effect, 2½ to 4 feet, and same through, 42s. per dozen, 300s. per 100.
" Seedlings, 9 to 15 feet, 24s. per dozen, 200s. per 100.
" PONTICUM, 1½ to 2 feet, bushy, 6s. per dozen, 35s. per 100.
KALMIA LATIFOLIA, 1 to 1½ foot, buds, for potting, 75s. and 100s. per 100.
ANDROMEDA FLORIBUNDA, buds, for potting, 75s. and 100s. per 100.
ERICA CARNEA, very fine, 21s. per 100.

American Plants Without Peat.
WILLIAM MAULE AND SONS beg to offer the choicest hardy English and Continental RHODODENDRONS, with BELGIC and other AZALEAS, at 30s. per dozen, or £10 per 100.
The plants are grown in stiff loamy soil, on an exposed and elevated situation, and will thrive in almost any soil, free from iron, lime, or chalk.
Handsome Standard RHODODENDRONS, with fine heads, well set with bloom, 10s. 6d., 21s., and 42s. each.
Large bushes of PONTICUM, CATAWBIENSE, and other common varieties, at 50s., 75s., and 100s. per 100.
The Nurseries, Bristol.

SOFT-WOODED and OTHER PLANTS, of good quality, true to name, and very cheap.
Begonias, tuberous, to name, 9s. per dozen; B. Frœbelli, 3s. 6d. each; Begonias, flowering, of sorts, Abutilons of sorts, 4s. per dozen; Fuchsias, twelve sorts, 3s.; Chrysanthemums, twelve sorts, 3s.; Coleus, twelve sorts, 3s.; Pentstemons, twelve sorts, 3s.; Phloxes, twelve sorts, 3s.; Heliotropes in variety, 2s. 6d. per dozen; Ageratums, 2s. per dozen; Lantanas, in sorts, 3s. per dozen; Salvias, in sorts, 3s. per dozen; Carnations and Picotees, 6s. per dozen; Show Pinks and Pansies, 4s. per dozen; Mimulus, in variety, 3s. per dozen; Saxifragas and Sedums in variety, 3s.; Tropæolums, in variety, 3s. per dozen; Pæonies, Delphiniums and Potentillas, 9s. per dozen; Pyrethrums, 6s. per dozen.
WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

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J. MATTHEWS AND SON, Milton Nurseries, Stoke-on-Trent, Staffordshire, have to offer the following:—
RHODODENDRONS, 100,000, fine bushy plants, thinly grown and well-rooted.
" SPLENDIDUM, 10,000, white, 1 to 1½ foot, 37s. 6d. per 100.
" CAUCASICUM PICTUM, 10,000, light scarlet, 1 to 1½ foot, 50s. per 100.
" JACKSONII, scarlet, 1 foot, 40s. per 100; 1 to 1½ foot, bushy, 60s. per 100.
" HYBRIDS, from all the choicest named varieties, 1 foot, bushy, 20s. per 100; 1 to 1½ foot, 30s. per 100; 1½ to 2 feet, 80s. per 100.
" PONTICUM, 10 to 12 inches, 50s. per 1000; 12 to 15 inches, 10s. per 100; 15 to 18 inches, 15s. per 100; 18 to 24 inches, 40s. per 100; 2 to 3 feet, 50s. per 100; 3 to 3½ feet, bushy, 80s. per 100.
YEWS, English, clean, well-grown plants, 6 to 9 inches, 40s. per 1000; 8 to 12 inches, 50s. per 1000; 1 to 1½ foot, 30s. per 100.
CUPRESSUS LAWSONIANA, fine Ornamental tree for Lawns or Wood Planting as shelter for Game, also for Garden Fencing, 2 to 3 feet, 30s. per 100; 3 to 4 feet, 50s. per 100.
ASH, Mountain, 2½ to 3½ feet, 25s. per 1000.
BOX, Tree, 1 to 1½ foot, 12s. 6d. per 100; 1½ to 2½ feet, 20s. per 100; 2 to 3 feet, 30s. per 100.
CURRANTS, quantity of extra strong Black Grape, 70s. per 100.
CATALOGUES of all other Nursery Stock free on application.

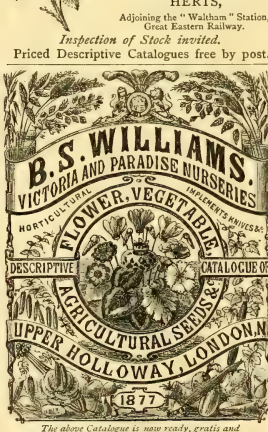


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PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 8 inches at 4 feet from the ground.
LIMES, 12 to 20 feet high, and girthing 6 to 10 inches at 4 feet from the ground.
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CHARLES LEE AND SON (Successors to Messrs. John & Charles Lee), of the Royal Vineyard Nursery, Hammersmith, W., beg to announce that in consequence of the Retirement of Mr. John Lee from the business, they have TAKEN OVER the ENTIRE NURSERY and SEED TRADE so successfully carried on for many years by the late Firm, and they trust the same liberal patronage so long given to Messrs. John & Charles Lee will be continued to the New Firm.
Charles Lee & Son pledge themselves to devote all their energy to raising First-class Stock in every department, which the large resources at their command will enable them to supply with considerable advantage to the Public both as regards quality and price. With a view to a more extensive production of Stove and Greenhouse Plants of the best quality they intend to almost entirely rebuild their extensive ranges of Glass on a new site, a portion of the old Nursery being taken up for building purposes. All orders to be addressed to
CHARLES LEE AND SON, Royal Vineyard Nursery, Hammersmith, W., where the general business of the Nursery and Seed Trade will be carried on; or to
Mr. DIXON, Feltham Nursery; Mr. CANNON, Ealing Nursery; Mr. WEBB, Arboretum, and Mr. MARSLEN, Wood Lane, Isleworth.

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B. MALLER, Lewisham, S.E.
VINES, strong, 36s. per dozen.
ERICAS, ventricosa and hybrida, in 48-pots, at 12s. per dozen, 80s. per 100.
CHERRIES, dwarf-trained, strong, 18s. and 24s. per dozen.
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ROSES, Standard, 2 to 3 feet stems, with fine heads, 60s. per 100.

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IVIES, Irish, in 32's, extra fine, 100s. per 100.
" from ground, fine, 25s. per 100.
CLOVES, Carnation, strong, 60s. per 100 pairs.
And in the spring—
ALTERNANTHERA AMŒNA, 12s. per 100.
" PARONYCHIOIDES, 8s. per 100.
" MAGNIFICA, 8s. per 100.
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H. CANNELL begs to announce that he has a splendid stock of the following, established in 60's, just ready for shifting:—
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CINERARIAS, 2s. 6d. per dozen.
Smaller, 1s. per dozen less, and 50s. per 100. Special prices per 100 or 1000.
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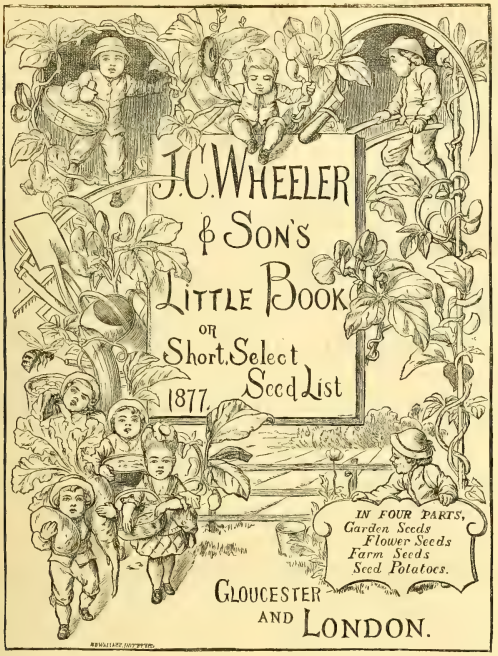
CHOICE TUBERS and ROOTS.—Twelve tuberous BEGONIAS, including Frœbelli, roseflora, intermedia, Sedeni, vivicans, &c., for 21s.; very fine bulbs. Twelve CALADIUMS, splendid tubers, fit for exhibition, ready to start, 21s. A few collections of these latter at 60s. per dozen, consisting of bulbs averaging 10 inches in circumference.
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CUPRESSUS LAWSONIANA, green and well-rooted, 6 feet, 50s. per dozen; 7s. per 100.
THUJOPSIS BOREALIS, transplanted last spring, 2 to 2½ feet, 7s. per dozen, 50s. per 100.
YEWS, common, 30s. per 100.
LIMES, straight, stout, and well-rooted, 6 feet, 4s. per dozen, 25s. per 100.
HOLLIES, Green, bushy, and well-rooted, 1½ to 2 feet, 25s. per 100.
SKIMMIA JAPONICA, extra transplanted, nice bushes, 12 inches high, with flower-buds, 4s. per dozen, 25s. per 100.
RHODODENDRON PRÆCOX, bushes, covered with flower-buds, 18s. per dozen.
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RHUBARB, Victoria, large roots, for forcing, 25s. per 100.
GREENHOUSE AZALEAS, small, 7s. per dozen; fine flowering plants (including many novelties), 15s. to 24s. per dozen.
DAPHNE INDICA RUBRA, with flowers, 15s. per dozen.
ISAAC DAVIES, Nurseryman, Ormskirk.

VINES, VINES, ROSES, FRUIT TREES, &c.
VINES, strong planting and fruiting Canes of Black Hamburgh, Black Alicante, Lady Downe's, Gros Colman, Foster's Seedling, Muscat of Alexandria, Madresfield Court, Mrs. Price, Dr. Hogg, Waltham Cross, 22. 6d., 32. 6d., and 52. each; Veney's Black Muscat and Pearson's Golden Queen, 72. 6d. to 122. 6d. each.
ROSES, dwarf hybrid perpetual, best sorts, 72. per dozen, 50s. per 100.
APPLES, PEARS, PLUMS, and CHERRIES, pyramids, 12s. and 18s. per dozen; dwarf-trained, 30s. per dozen.
CURRANTS, RASPBERRIES, 3s. per dozen, 20s. per 100.
STRAWBERRY, Garibaldi, 2s. per dozen, 4s. 6d. per 50, 7s. 6d. per 100; Vicomtesse Héricart de Thury, 12. 6d. per dozen, 3s. 6d. per 50, 5s. per 100. In 60 other good varieties, true to name, 2s. 6d. per 100.
WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

To the Trade—Sandringham Early Kidney Potato.
HAND F. SHARPE have secured a fine stock of the above excellent POTATO, which is pronounced by the Queen's gardener, not only the earliest, but the most prolific, and the finest quality in cultivation. Being very short in the haulm it is peculiarly adapted for forcing purposes. Price and further particulars may be had on application.
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SPECIMEN AZALEAS (Winter flowers).—An abundance of splendid flowers can be had in a week or two, or at once, by purchasing a few Specimen Azaleas, now opening flower. The plants are from 2 to 3 feet over, perfect shape, some hundreds of flowers and buds, which will last for months at this time of the year. All new and valuable sorts, 21s., 31s. 6d., and 42s. each, according to size and sorts. Eighteen plants only are for Sale. They are all worth double the money. Packages gratis for cash with orders.
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Chestnut, 2 kinds, 8 to 12 feet.	Poplars, 3 kinds, 8 to 12 feet.
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Laburnum, 2 kinds, 8 to 12 ft.	Limes, 8 to 12 feet.
	Hornbeam, 8 to 12 feet.

All the above are very fine and very cheap.

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BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18*s.* to 30*s.* per dozen.

Samples, with lists of the sorts, will be forwarded on application.

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Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12*s.* and 18*s.* per doz., or £5 per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded, £5 to £7 10*s.* per 100, or 18*s.* per dozen.

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KNAP HILL NURSERY, WOKING SURREY

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NEW SOBRALIA AND IMPORTED CŒLOGYNES.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 1, at half-past 12 o'Clock precisely, some fine Plants of the New SOBRALIA CATTLEYA, which was fully described by Prof. Reichenbach in the *Gardeners' Chronicle* of Jan. 20, 1877, p. 72. Unlike most of the ordinary Sobralias, this species has large thick flowers of a firm fleshy texture, the sepals are purplish brown, with rich rosy-purple lip; instead of the flowers being borne singly, they are produced on stout spikes, each with six or seven flowers, two or three on each spike being expanded at the same time; from which it will be seen what a remarkable Sobralia this is. The plants are good, and just showing strong breaks. Also an importation of the rare CŒLOGYNE GLANDULOSA, C. CORRUGATA, C. ODORATISSIMA, and an unnamed Cœlogyne, probably new; also an importation of the rare DENDROBIUM ALBUM, which Wight, in his *Icones Plantarum Indiæ Orientalis*, describes thus:—"This is one of the handsomest of the genus I have yet met with; large pure white flowers." Also some imported plants of the rare ACANTHOPHIPPIUM BICOLOR; this Orchid gives flowers of large size, bright yellow and scarlet. Also some good plants of the exceedingly chaste and beautiful New SOBRALIA VIRGINALIS; this has large pure white flowers, with rich golden throat; the plants are showing strong breaks. At the same time will be Sold several plants of ODONTOGLOSSUM CRISPUM (Alexandræ), O. VEXILLARIUM, and various other Orchids.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

VALUABLE LILIES.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 8, at half-past 12 o'Clock precisely, an Importation of good Bulbs of the beautiful LILIUM NEILGHERRENSE. The white flowers of this magnificent Lily are deliciously fragrant, and of great substance; it bears several flowers on a stem, each flower nearly a foot long. Also some excellent Bulbs of the following new varieties of Lilium neilgherrense, viz.:—

LILIUM NEILGHERRENSE ROSEUM—the exterior of the flower tubes of this variety is pink, the interior white.
LILIUM NEILGHERRENSE FLAVUM—a handsome light yellow-coloured form of this charming Lily.
LILIUM NEILGHERRENSE TUBIFLORUM—a magnificent pure white Lily, with very long flowers; figured in Wight's *Icones Plantarum Indiæ Orientalis*.
LILIUM NEILGHERRENSE TUBIFLORUM LUTEUM—a very handsome yellow-flowered variety of tubiflorum. And some

Splendid flowering Bulbs of other choice LILIES, including BLOOMERIANUM OCELLATUM, PURPUREUM, HUMBOLDTII, GIGANTEUM, PARDALINUM, PARVUM, CALIFORNICUM, and WALLICHIANUM; also a quantity of choice Bulbs and Tubers from California, including CALOCHORTUS, CYCLOBOTHRAS, BRODIÆAS, TRITELEIAS, CALLIPRORAS, ERYTHRONIUMS, BLOOMERIAS, &c.; and some fine blooming Bulbs of the handsome CRINUM BRACHYNEMA, C. AUSTRALE, C. PRATENSE CANALICULATUM, tuberous-rooted BEGONIAS, PANCRATIUMS, AMARYLLIS, North American CYPRIPEDIUMS, with a variety of other Bulbs and Tubers.

On view the morning of Sale, and Catalogues had.

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The entire Stock of this extraordinary Grape has been placed in our hands for distribution. It is a strong growing Vine, good constitution, free from shanking, will keep till spring, and under ordinary management will produce splendidly formed bunches, and well coloured, up to 25 lb. At the winter show of the Royal Horticultural Society of Ireland on November 11, 1876, three bunches of this Grape were exhibited by the introducer, Mr. Roberts, the well-known Grape-grower, of Charleville Forest, Tullamore, which obtained the First Prize, and were awarded the Society's Medal for special and meritorious productions, and it is scarcely necessary to say more than that these bunches, which weighed collectively over 45 lb., were the admiration of everybody who saw them at the Show, and they were seen and admired by many others who saw them growing on the Vine.

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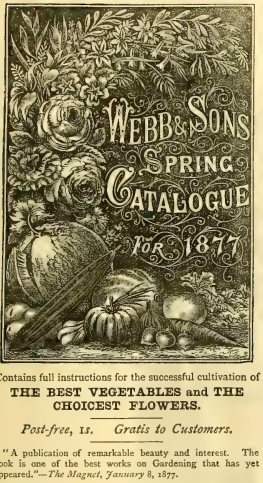
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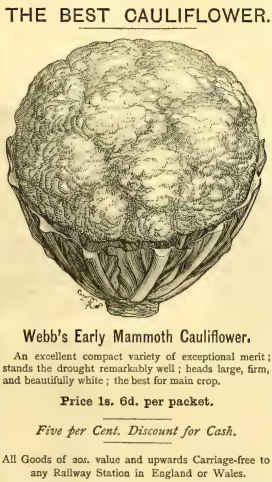


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JOHN H. LEY, Royal Nursery, Croydon.

Splendid New Melon, 1877.

CHARLES LEE AND SON (Successors to Messrs J. & C. Lee) have the pleasure to announce that they have purchased the entire Stock of MANN'S HYBRID GREEN-FLESH MELON, which they now offer for the first time. It has already earned a high reputation in London and the provinces for its many excellent qualities, among which may be mentioned a remarkably high and exquisite flavour at all seasons of the year—perfection of shape and size for dessert—a thin rind and melting flesh, with an overflow of perfumed juice. It is also a heavy cropper, and forces well.

Dr. HOGG has spoken of this excellent Melon in the highest terms, and after tasting it pronounced it a fruit of the highest merit.

Mr. CULVERWELL, of Thorpe Perrow, fellow judge with Mr. FOWLER, of Harewood House, at the Leeds Horticultural Show, where they awarded a First-class Certificate to "Mann's Hybrid Green-flesh Melon" speaks of it as "an exceedingly fine Melon, especially at that early season—the early part of June."

Mr. INGRAM, of Belvoir Castle, writes, in the third week of October, "that in spite of the disadvantage of a long term of gloomy weather, at this season of the year, Mann's Hybrid Green-flesh Melon was sweet, tender in flesh, very juicy, and distinct in character."

Messrs. Charles Lee & Son are now prepared to offer this very useful and delicious new Melon in sealed packets, at 3*s.* 6*d.* per packet.

CHARLES LEE AND SON, Hammersmith, W.

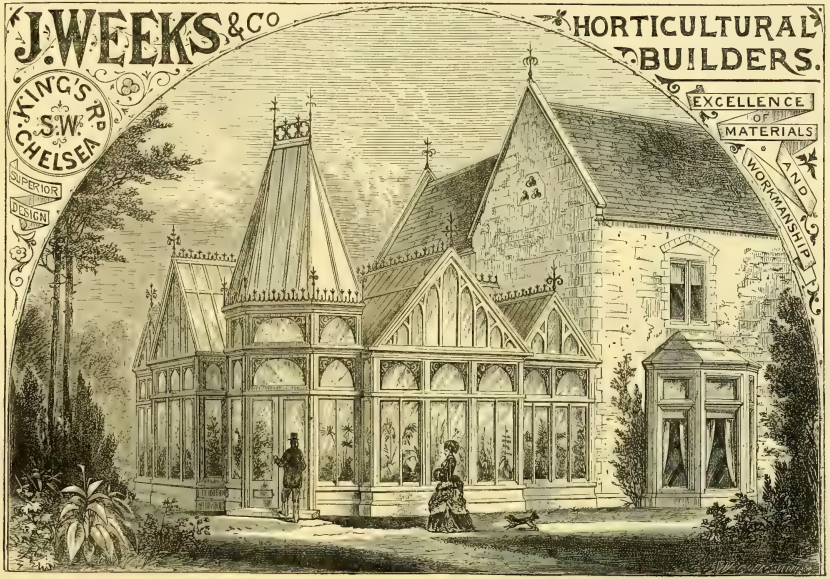
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CUCUMBER, Walker's Hero (New)	2 6
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MELON, Osmaston Manor Hybrid	2 6
,, Laura's Beauty, (New)	2 6
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ONION, Williams' Magnum Bonum	1 6
PEA, Williams' Emperor of the Marrows .. per quart	2 6
TOMATO, The 100 Days .. .. .. per packet	1 6

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VICTORIA & PARADISE NURSERIES UPPER HOLLOWAY, LONDON, N.

SATURDAY, JANUARY 27, 1877.

WALKING-STICKS.

IF we were to pick out hap-hazard any one commodity and trace its history from the earliest stage to the condition in which we find it, we should no doubt find that history one of great interest and instruction, for it is a fact that most of us know but little of the manufacture of our principal articles of trade, notwithstanding that many of them are directly derived from sources with which we are specially interested, namely, the vegetable kingdom. This is particularly the case with a dealer in walking-sticks. These articles, with umbrellas, now form a distinct trade, and the wares, as exhibited by the retail dealers, are often most attractive, not only on account of the variety of the sticks themselves, but also on account of their elaborate manipulation, artistic and inartistic. "The Natural History of a Walking-Stick" would form a subject upon which even a book might be written, for we might trace the origin and use of the walking-stick from the very earliest period—how that it was originally a staff, and was used even by the mediæval pilgrims as now by Swiss tourists; how the upper part was often hollow, forming a receptacle for religious relics and snuff or perfume; how the first head of Saffron is said to have been secretly brought from Greece in the hollow head of a pilgrim's staff, and afterwards largely cultivated at Saffron Walden, which place derived its name from the above fact; and further, how that the silkworm was introduced to Europe in a similar manner.

Though the walking-stick of the present day can trace its ancestry to the staff, the bulk of the modern sticks are in no way comparable to their ancestors, inasmuch as in former times they were really of use to relieve the limbs to some extent of the weight of the body, and so were of a tolerable thickness, rigidity, and strength; at the present time they are chiefly carried for ornament, or on account of a prevailing fashion, though indeed the fashion of carrying a stick, whether for use or ornament, has descended through ages, with more or less change. Many old gentlemen still call their walking-stick a staff, and are as particular about its style and mounting as they are about their dress.

Notwithstanding all this a walking-stick, unlike an umbrella, would seem to be an article that would never wear out, and given the chance of accidents by loss or breakage would apparently last a lifetime, or even be passed from one generation to another, which in reality is not an uncommon occurrence. Whence, then, does it come that the manufacture of walking-sticks and umbrella-sticks is one of the great trades of London? Thousands upon thousands and tons upon tons of sticks are cut not only in this country but imported from all parts of the world, simply and solely for use as walking-sticks. From the East and West Indies, China, Java, and Singapore, immense quantities are constantly being brought. From the latter countries come all the varieties of Bamboo known in trade by distinct names, such as the "dog-head" cane, from the fact that a portion of the rhizome is left attached to each stick, which, having two protuberances like ears, gives it a resemblance to a dog's head. These trade names, though ordinarily those under which they are imported, are very often quite unknown to botanists, the names being

evidently more adapted to convey to the popular mind the appearance of the sticks than as indicating their proper scientific classification. Though so many varieties of Bamboo are constantly imported (mostly from China) and very largely used, little or nothing is known as to the species producing them. A few years since a very beautiful stick was introduced from Borneo under the name of Rajah cane; the hardness of this stick, together with its beautiful markings of dark lines, caused it at once to become popular. The name "Rajah" is said to be derived from the fact of the duties paid for its export being claimed by the Rajah of Borneo. Though enormous quantities of this stick were, and, indeed, are still, being imported, nothing is known as to its botanical origin further than that it is the stem of a Palm.

Another favourite stick is that of the Pimento, or Allspice (Pimenta vulgaris). This is more particularly adapted for umbrella-sticks, owing to its extreme rigidity and strength and its non-liability to warp. These sticks are imported from the West Indies, often in tolerably thick billets, and with a crook or bend, from which a knob or hook may be formed. From the West Indies also come many of the Orange and Lemon sticks, perhaps the most highly prized of all natural sticks, that is, of sticks with the bark on. These are valued on account of the fine white lines abundantly seen on the bark, especially after being polished; they are, moreover, suitable both for walking-sticks and umbrellas, the bark being removed and the stick smoothed for the latter purpose. Though there is something in common between the Orange and Lemon sticks, the first may easily be known by its beautiful green bark, with fine white longitudinal markings, while the Lemon can be detected by its symmetrical proportions and the regularity and prominence of its knots. In these, as in all other sticks, the quality varies very considerably; though they can be procured at almost any stick-dealer's, choice specimens are rare, and realise large prices.

The well-known Malacca cane is also a very choice stick; it is the produce of Calamus scipionum, and does not come from Malacca, but is imported from Siak, on the opposite coast of Sumatra. These canes are valued according to the length of their internodes; a perfect stick of the required length taken from between the nodes fetching a very high price, sometimes, indeed, as much as ten guineas, but this, of course, depends a great deal on the style of mounting. A genuine or perfect Malacca cane should be the natural stick, properly tapering, and simply cleaned and polished; quantities of those, however, seen in the shops have had their nodes rubbed down to make them appear continuous, after which they are stained or painted, and finally polished, and when so finished they are extremely difficult, except to a practised eye, to detect from a natural Malacca cane.

Of late years an immense number and variety of sticks have been imported into this country from Algeria, where many kinds are systematically cultivated for commercial purposes. From this country are chiefly imported the sticks of the Pomegranate (Punica granatum), Olive (Olea europæa) Myrtle (Myrtus communis?) the petioles of the Date Palm (Phœnix dactylifera), and latterly the small branches of a species of Eucalyptus, probably E. globulus. All these, more especially the Olive and the Myrtle, have been and are still in great request.

Such, then, are some of the sticks of foreign produce which constantly and in large numbers find their way into the English market. Besides these we have numbers of British-grown sticks, the principal of which are Ash, Oak, Holly, Blackthorn, Cherry, Maple, Hazel, Crab, and, last but not least, the Box and common Furze, added to which the Channel Islands supply us with the well-known Cabbage-stalks. *J. R. Jackson, Kew.*

(*To be continued.*)

WINTER DECORATIVE PLANTS.

In addition to the many flowering plants grown for decorative purposes at mid-winter, Ferns play an important part, and especially the Maidenhair Fern, A. cuneatum, and the elegant A. gracillimum. At the Royal Nursery, Ascot, Messrs. Standish & Co. grow these two in immense quantities, and at Christmas there could be seen two long span-roofed houses quite filled with some thousand plants of A. cuneatum, the great majority in 32-pots, with larger examples in pots an increased size. Every plant was a perfect specimen in itself, so admirably was it grown. The plants are not marketed, but simply grown for the fronds, and they are constantly being sent to London. The ripened developed fronds are those gathered, as they stand much better and last longer than the young ones. They are gathered and carefully laid in baskets, and reach their destination without taking harm. A. gracillimum is wonderfully well grown at Ascot. There are those who term it a "misfy grower," and say they cannot do anything with it, but at Ascot it is the very perfection of vigour, and if anything more robust than A. cuneatum. It is a very fast grower.

A large number of plants had been raised from seed, and it was curious to note that in a very young state the pinnæ were as large as those of A. cuneatum; but when it gets into size, the young fronds take on that small elegant form peculiar to it. So rapidly do the plants come on from seedlings, that there were admirable specimens in 48-pots that were in the seed-pans a year ago. Some extra large specimens showed off the character of the species to the very best advantage. It may be that failures with this charming Fern arise from the use of too much peat in the soil: at Ascot no peat whatever is used. The soil is a sandy, turfy loam, and a little horse-manure, and strong plants have a little weak manure-water once a-week, and rather more in summer-time. The experience gained at Ascot teaches that A. gracillimum will not grow in peat. The cuneatum is increased by dividing the plants when they break into growth after being cut over for the London season. The plants, as soon as they begin to be active, are cut to pieces, and potted in 32-pots.

Asparagus decumbens is much grown for table decoration at Ascot; its long handsome shoots are very acceptable for clothing the stems of tall epergnes. This species was growing in 48-pots, and a line of plants along the front of a stage of Camellias, &c., hung down like a fringe. The plant puts forth pseudobulbs like an Orchid, and is nearly deciduous in summer, but most ornamental in winter.

GREENHOUSE PLANTS.

THEIR CULTURE AND MANAGEMENT.

Bignonias.—The different species here treated of are climbing or twining plants, and are suitable for greenhouse or conservatory decoration as roof climbers, covering back walls, or growing round pillars. So managed their natural habit is seen to advantage, as a portion of their shoots can be allowed to hang in graceful festoons; and, even when not in flower, grown in this way they are very effective. They can be so arranged as to drape the wood or ironwork of the building in a manner to take off the objectionable straight lines without shutting out too much light from the general occupants of the house. This is a matter that cannot be too forcibly impressed upon those who have the charge of plant structures of this description—that where roof-climbers are allowed to form a complete thicket up to the glass, as a consequence they exclude the light from the plants that occupy the lower stages in a way that precludes the possibility of the latter doing more than drag out a miserable existence.

Roof-climbers have an elegance that cannot be imparted to ordinary trained pot specimens; but to allow the comparatively few plants that can be accommodated on a roof to monopolise the whole house, so as to render the cultivation of everything else attempted to be grown an impossibility is as great a mistake as can well be committed. In this as in most other things a medium course is the best; the roof of a conservatory can be sufficiently draped with climbers as to answer the purposes required, without making the body of the house a mere living sepulchre for the unfortunate plants placed therein. Subjects for furnishing the roofs in this way can either have their roots kept confined in pots proportionately large to the size of the plant, or, as is more usual, be planted out; the latter system has many advantages, not the least of which is that the plants will last much longer so treated, but the space thus apportioned to the roots should always be sufficiently confined to prevent the plants getting too rampant. Neither should plants intended for growing in this way ever be turned out in these prepared beds whilst they are very small, or in many cases unless naturally strong growers they do not do well, for the reason previously explained in connection with the management of conservatory climbers, that when the roots are few in quantity they cannot lay hold of the soil before it gets sour, in which case they rarely afterwards do satisfactorily; therefore if the plants are small it is generally better to grow them on in pots for a year, and afterwards to put them out.

Climbers are often grown for sale and kept with their roots confined in small pots until they get so stunted as to prevent their growing freely, consequently it is much the best to select such as are young and free in growth in preference to those that may be larger yet not in as good a condition. If of the usual size, in 6-inch pots, they should be repotted in April, giving them a 3-inch shift. All the kinds here treated of will succeed in a mixture of turfy loam and fibrous peat in equal proportions, to which should be added enough sand to keep the whole porous; do not make the soil too fine, and pot moderately firm. In most cases it will be better to confine these Bignonias to a single stem until they have attained a considerable height, consequently they will not require the leading shoot stopping, but should be encouraged to extend in length, and for this purpose three or four long sticks should be inserted in each pot, round which the plants ought to be kept regularly trained, not allowing the shoots to twine about them in a way that they will be difficult to undo. Through the spring and summer encourage growth by syringing overhead every afternoon, and keeping the atmosphere moistened in very bright weather, during which a thin shade will assist them. When the roots get well hold of the soil give them plenty of water, and admit air freely, to keep the growth strong; towards the close of summer dispense with shade and the use of the syringe, so as to harden them up. Keep during the autumn and winter in an ordinary greenhouse temperature, with just enough water at the roots to maintain the soil in a medium state of moisture.

Before growth commences in the spring they should be turned out into the border wherein they are to be grown; this ought to be well drained with 5 or 6 inches of broken crocks or pounded bricks, over which some fibrous material from the soil should be placed, so as to keep the latter from being washed down into the drainage; on this put 10 or 12 inches of good soil, consisting of a mixture of peat, loam, and sand similar to that already advised in planting a portion of the roots. Such as are at the outside of the ball should be loosened and spread out in the border; in this way they will soon begin to grow and occupy it. Syringe them regularly overhead every day all through the growing season; on a free use of the syringe in this way a good deal of success depends, as by so doing insects are kept down. All the after-treatment required will be to keep the shoots trained to the wires that are to support them, and when the space they are intended to fill is covered, to regularly use the knife, so as to keep them in due bounds. In time the soil becomes exhausted: to remedy this, a couple of inches should be taken off the surface each spring without injuring the roots, and its place supplied by new, to further assist which, liberal applications of manure-water may be given them during the growing season.

The following varieties are deserving of cultivation:—

B. capensis (syn. with Tecoma capensis) has orange-coloured flowers, produced in summer. It is a native of the Cape of Good Hope.

B. capreolata: flowers scarlet, blooms in June and following months. It comes from North America.

B. grandiflora: flowers from July to September. This fine species is from Caraccas.

B. speciosa: a pink-flowered plant from Uruguay, blooms in the spring.

B Tweediana: a yellow-bloomed kind, that flowers in the summer. It is from Buenos Ayres.

B. venusta: orange-coloured flowers, blooms in the autumn. A native of South America.

B. (Tecoma) jasminoides: a handsome pink-flowered species, from Moreton Bay.

Insects.—Red-spider will live upon them, but must be kept under by a free use of the syringe. Should they get affected with scale, this can be kept down by frequent use of sponge and brush. *T. Baines.*

GARRYA ELLIPTICA.

AMONG hardy ornamental shrubs few surpass the Garrya elliptica, which is just now clothed with its long pendulous racemes of flowers, that hang from the tips of the branches in the greatest profusion. In form and appearance these greatly resemble the catkins of the Hazel or Filbert, but they are considerably larger and much handsomer, and being backed up as they are by such dark rich foliage, and flowering at this season, when all else is bare and desolate, they produce a striking effect, and command admiration. In habit and growth the plant is much like the evergreen Oak, except that it is more free and open, and has leaves considerably larger and more elliptic in shape. Considering its great beauty and the length of time it has been introduced, it is very remarkable that it appears so little known, for it is a plant one seldom meets with except in very extensive collections. This is much to be regretted, as it is well adapted for any of the many uses to which shrubs are generally put. It, however, shows off to the greatest advantage when trained up piers or buttresses to walls, or when planted at equal distances on the latter to form panels to be filled in with other plants of distinct character. In positions of this kind they are singularly attractive, as the whole of their flowers are thrown out clear of the foliage, where they are moved by every passing breeze, and exhibit themselves in the most graceful manner possible.

It is a shrub that will bear the knife well, and may be pruned hard in every season, but this should be done directly the blooms fade, or the plant will not have time to break again and ripen the young growth, without which it would not flower again the following winter. Those we have are spurred close back any time in April, so as to confine them to their present size, and when so treated they never fail to produce an abundance of bloom from the top to the bottom, in which condition it is impossible to imagine anything more ornamental in the plant way at this season of the year. The female variety appears to be even more scarce than the male, as I note in a recent issue of the *Gardeners' Chronicle* an inquiry from a correspondent as to where it is likely the plant can be obtained; and as it is said to fruit freely it would form a most suitable companion to the other, and be an object of much interest, as well as furnishing a supply of seed from which to raise others.

Their propagation is, however, by no means difficult, as I have raised many from layers, and I have no doubt but they would strike readily from cuttings if put in at the proper season, which for most evergreens is about the middle of September—a time when they soon form a callus, and emit roots the following spring. If propagated in this way, it is necessary to put them in a very sheltered situation, where they would be safe from cold cutting winds, and not exposed to the full effects of severe frosts, as they are not so hardy as Laurel or Aucuba, and being of a more firm woody nature, have less sap to keep them alive. Layers may be put in at any time, and all that is requisite with these is to select the best of the lower branches, and bury them under some sharp sandy soil, of from 4 to 6 inches in depth, leaving out all the ends of the shoots, which in the course of a year or so will form so many plants. I have just been picturing to myself what exquisite looking evergreen hedges the Garrya elliptica would form, and how beautiful it would be with almost every twig laden with the pendent inflorescence with which they are clothed nearly the whole of the winter.

As it is a plant that stands cutting so well and may therefore be kept to any form or shape, no living screen could at all compare with it when used for such a purpose. Pruned and trained as a pyramid, to plant in conspicuous places on lawns or other positions, they have a most graceful effect, or left pretty much to themselves in the shrubbery they are sure to attract notice, and, in the rich garb they assume, assert their superiority over most of their compeers as decorative plants. The wet mild winter has suited them admirably, and I have never seen them in finer condition or better clothed with flowers—the result, no doubt, of the fine dry autumn we had, which was so exceedingly favourable for ripening the growth of all trees and shrubs—a blessing that will be shared in by all during the ensuing summer should we but get a favourable spring to set the blossoms, with the buds for producing which all kinds of trees are now bristling, but I fear in rather too forward a state to escape unless we soon get a check by a change in the weather. *J. S.*

BOTTOM HEAT WITHOUT COST.

THIS will no doubt be welcomed as a boon by many cultivators. For there can hardly be a doubt that one chief reason why bottom-heat has often been disparaged or decried arises from its cost. Whether generated from below or sent down from above, bottom-heat costs much in labour and material. The few examples examined of borders heated by something like a forest of hot-water pipes, however successful, assuredly presented a vivid illustration of the expensiveness of the heat thus provided; and banks of fermenting material also cost a good deal to move to and fro, and be kept warm enough for service when used as a source of bottom-heat. It must also be admitted that there is difficulty as well as danger in depending on the erratic irregularity of fermenting materials as a source of bottom-heat. The heat rises and falls at times in the most irregular and unexpected manner: when most is needed there is least—when least, most. Even the most skilful in these matters, cannot regulate a hotbed as they would stoke a fire. Only a short time ago, one of the best gardeners told me of mishaps of this kind that lost him a crop of Grapes, and impaired the health of fine young Vines for a year or two. A bed of spent-looking material was renewed with a truckload of London dung; the latter went off almost like a charge of gunpowder, and before the violent character of the decomposition was discovered every root within a foot of the surface was destroyed. The mass when moved was so hot that the men could not stand upon it, and it smelt as if the dung had been saturated with some mineral oils. So offensive as well as hot was the whole mass, that it was burned up, as it was considered unfit for manure. No doubt this was an exceptional case, but it illustrates in a striking manner the danger (similar in kind, though less in degree) to which cultivators dependent on fermenting materials for bottom-heat are daily exposed.

No doubt hot water, judiciously arranged and wisely used, reduces the danger of bottom-heat to a minimum, and regulates its amount with almost mathematical precision. But every real advance in safety and exactness enhances the cost, and it would be quite impossible to procure bottom-heat without cost for horticultural purposes by means of hot water either in pipes, tanks, open gutters, or by any other manner or mode of distribution. Neither do I promise this boon by means of limekiln-heating. That system has done all I stated I saw it do, and probably more, and "I bate not a jot of heart or hope" of its past and present doings and future achievements. But I am not about to advocate the warming of Vine borders with limekilns, nor the vineries or Pine stoves themselves with hot-water boilers set astride their top or sunk into their hot, dusty throats. All that may be practicable enough, but my object now is quite different. In promising bottom-heat without cost, it may be wise to pause and inquire how comes it that bottom-heat is wanted. Nature's law is that terrestrial and celestial temperatures should run a sort of neck-and-neck race for supremacy or equality. As a matter of fact the two often run a dead heat: at other times and seasons the one may be slightly in advance of the other, but these two are ever struggling for an equilibrium of temperature. The earth and air exchange solar heat, and divide it between them; to do so, however, with effect and on anything like fair principles of reciprocity, the one must have free access to the other. Nature never attempts to shut out atmospheric heat from the earth, nor terrestrial heat from the air. The wisdom of cultivators, in devising means by which to place the roots of such plants as Vines, for instance, in a colder medium than their tops, would seem perfect and unique folly to Nature. That folly would seem to Nature to blossom into fatuity, if after doing so efforts were made to warm cold borders outside, when they might have been kept sufficiently warm without cost by simply making them inside. Hence our simple recipe for bottom-heat without cost is to place the roots of all plants in the same structures in which they are grown. The roots will then enjoy about the same average temperature as the tops, and this will be found sufficient bottom-heat for Vines and nearly all other plants.

On this point I am glad to endorse the views of such a distinguished Grape and Melon grower as Mr. Wildsmith. I also agree with his condemnation of half-and-half borders. It is difficult to conceive how this great source of bottom-heat, the ground-floor of vineries and other houses, has so seldom been utilised. Anywhere, almost anyhow, outside has been preferred to the inside. And yet the floors of vineries afford ample space for borders. No doubt they are often washed into mud or sodden into sourness, but all that is readily altered, and no one can contend that as good borders may not be as easily formed and kept rich and good inside as out. They are also far more under control. Heat is provided for them by the operation of natural laws, that cost nothing to enforce. The supply of water may be adjusted at pleasure, food may be given or withheld as wanted, drainage and aëration are more easily managed on inside borders than out. More, inside borders are helpful to the tops; their surfaces are better evaporators of moisture and gaseous food than shelves, pipes, floors, or walls. Nothing seems so grateful or helpful to leaf and stem as the raw loose surface of freshly moved rich soil, such as good Vine borders are made of.

Vines ought to have bottom-heat, in fact they will not thrive without it. Late Vines planted outside have their roots sufficiently warmed by the direct solar rays, and the contact of warm air. Early Vines—that is, all that are expected to ripen their fruit before May or June, or early in July—may have sufficient bottom-heat without cost by simply growing them wholly in borders inside the houses in which the tops are grown. If any Vine-grower knows any valid reason, or just cause or impediment, why Vines will not do as well or better in inside borders than out, perhaps he will now be good enough to declare it, or for ever after hold his peace, and grow his early Vines in inside borders from this time forth, and thus obtain his bottom-heat for nothing. *D. T. Fish.*

P.S. — Since writing the above I observe that Mr. Henderson, one of the oldest and best Grape growers, objects to inside borders, on the ground that they are mostly faulty, as is proved by the fact that the roots are always trying to get outside. But such objections are readily answered. To contend that outside borders are *per se* better than inside, is really to assert that the climate of England is more suitable for Vine roots than the artificial climate of our vineries. All beyond this is matter of making and management; and if inside borders fail from faults of either, the fault is wholly the cultivator's, for the borders are wholly under his control. As to the roots trying to get out, that is a matter of solar attraction, as Mr. Henderson will find if he makes an outside Vine border on the north side of the vinery—the outside roots will show an equally strong tendency to come in. Besides, roots will generally find and hug walls very closely, and hence their proximity to them is no sure proof that they are trying to get either out or in, but rather that they find it good to be there.

New Garden Plants.

DENDROBIUM PETRI, *n. sp.*

This is a rather promising, neat Dendrocoryne. Imagine a reduced D. Farmeri, with one or two upright racemes of white flowers and very small bracts. It grows to the height of more than a foot, and its shining stems, as well as the small leaves and racemes, would make a good effect in a dense mass in the eyes of those Orchidists of a refined taste who think white an elegant colour, and preferable to the bright colours of the Poppy or Sunflower. It may be compared with the Dendrobium Moorei of Baron von Müller, which has much smaller flowers, and in which the lip, in lieu of being rhombiform, is ligulate-acute, with two angulate teeth before the base. There is a peculiar, nearly square callus between the teeth, described as "raised lines." Our species is probably a Polynesian discovery of the zealous traveller, Mr. Peter Veitch, to whom it is dedicated, and who has sent it to the Chelsea nursery. *H. G. Rchb. f.*

Dendrobium (Dendrocoryne) Petri.—Caulibus nitidis superne exampliectis subcatis, triphyllis; foliis oblongis acutis marginibus tecnue scabrido sub tactu; racemis paucis erectis plurifloris; bracteis minutis, mentoo brevissimo pedicellato tertiam quartamve partem aequante; sepalis ligulato-acutis, tegalis elongis acutis longe ungulatis; labello cuneato rhombeo utrinque obtusangulo, callo ligulato a basi ad disci medium tendente, superne bilobo, utrinque ad quasi-columna tuberculato. Flores alb.—Polynesia (non Australia). Petrus Veitch, qui florem nec indicavit. *H. G. Rchb. f.*

CURMERIA WALLISII, *Mast.**

This is a new and beautiful stove foliage plant of the Aroid family, of tufted habit, with somewhat spreading stalked leaves of an ovate-oblong slightly oblique form, rounded at the base, acute at the apex, where they are somewhat abruptly prolonged into a short acumen. The margin of the leaf is entire and bordered throughout with a narrow band of white. The midrib is depressed upon the upper, prominent on the lower surface, and from both sides of it proceed in an arching manner to the margin a series of secondary nerves at short intervals, the intervals being filled with smaller nerves closely crowded together, yellow blotches, the under surface is glaucous, pinkish beneath the green upper surface, paler beneath the yellow spots, the whole sprinkled with minute white dots.

The largest leaf seen by us measured about 6 inches in length (not including the stalk), by 3 in breadth, but we have little doubt that these dimensions will be exceeded as the plants increase in vigour. The leaf-stalks are channelled on the upper surface, and measure from 1—2 inches in length, half of that length being occupied by a sheathing base. We refer to the foot-note for the strictly technical characters of the inflorescence, but we may say that they are such as to induce us to place the present plant in the genus Curmeria, a genus founded in the *Illustration Horticole*, 1873, p. 45, t. 121, by MM. Linden and André, on the plant known as C. picturata, and to which we were enabled to add a second species, C. Roezlii, in these columns—1874, p. 804, figs. 159, 160. The present plant, like the last mentioned, is a native of Colombia, whence it was introduced by Mr. Wallis, as the C. Roezlii was by the collector whose name it bears. All three species were introduced to commerce by Mr. W. Bull.

C. Wallisii has at first sight much resemblance to C. Roezlii, but is very superior to it as a garden plant, from the brightness and elegance of its variegation. It differs also in its relatively broader, more ovate, more abruptly pointed leaves, and especially in its shorter leaf-stalk, the relative shortness being especially observable in the petiole proper, or that portion which intervenes between the sheathing portion of the leaf (the latter not shown in the illustration, fig. 16) and the blade, in this respect approaching to Curmeria picturata. The three species may thus briefly be distinguished :—

C. picturata, Lind. et André, *Ill. Hort.* 1873, p. 45, t. 121.—Leaves on short stalks, cordate, with two rounded basal lobes, ovate, or ovate-oblong, pointed, marked along the midrib with a narrow silvery white band.

C. Roezlii, Mast. in *Gard. Chron.* 1874, p. 804, figs. 159, 160.—Leaves on long stalks, ovate-oblong, rounded or slightly tapering at the base, not cordate, tapering gradually at the apex, and with a few pale yellow scattered blotches on the upper surface.

C. Wallisii, Mast. *infra*. — Leaves on short stalks, slightly oblique, ovate-oblong, rounded and slightly tapering at the base, abruptly acuminate at the apex, bordered with a white edge, sprinkled above with bright golden blotches.

All the species are from Colombia, and have a more or less aromatic perfume when bruised. *M. T. M.*



FIG. 16.—CURMERIA WALLISII. (SPATHE, SPADIX, AND LEAF, NAT. SIZE.)

A, B, Side and face of stamens, enlarged 10 diameters. C, Elevation and sections of ovary and stigma, enlarged 20 diameters.

The ground colour of the upper surface is of a rich velvetty green, broken up by irregularly map-like

* *Curmeria Wallisii*, Mast., sp. nov.—Acaulis rhizomate perennante aromatico; foliis patentibus 6-pollicaribus et ultra, petiolatis, petiolis 1—2 poll. long. maxima pro parte vaginantibus, superne anticeque canaliculatis a latere compressis, laminis glabris superne intense viridibus irregulariter aureo-maculatis subtus pallidioribus glauceseentibus ovato vel oboyato-oblongis basi rotundatis apice breviter subitoque deltoideo-acuminatis, albo-marginatis; spatha brevi pedunculata 3—3½ poll. long. basi convoluta ventricosa, medio constricta supra medium parum aperta, apice breve-acuminata pallide punicea maculis albidis minimis conspersa, intus nitida; spadice teretì spathâ vix breviore undique floribus obtecti.—Flores fere omnino ut in congeneribus.

Hujusce generis species tres sunt descriptæ nempe—1. *Curmeria picturata*, Lind. et André, *Ill. Hort.* 1873, t. 121. Foliis patentibus ovato-oblongis basi cordatis medio-argenteo-fasciatis. 2. *C. Roezlii*, Mast. in *Gard. Chron.* 1874, p. 804, figs. 159, 160. Foliis erecto-patentibus longe petiolatis oblongo-acuminatis basi rotundatis. 3. *C. Wallisii*, Mast. ut supra. Foliis patentibus brevi-petiolatis ovato-oblongis obliquis deltoideo-acuminatis basi angustatis insigniter aureo-maculatis.

ALFRED SMEE.

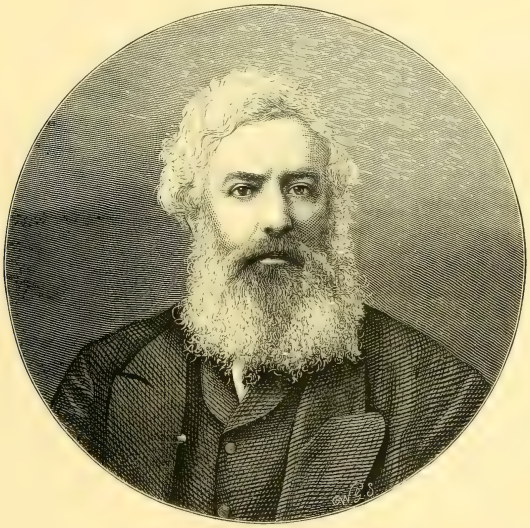
WE avail ourselves of the opportunity afforded us by the publication of a portrait of the late Mr. Alfred Smee to give a few additional particulars of his career. Educated at St. Paul's School and King's College, London, he pursued his medical studies at St. Bartholomew's Hospital. This is not the place to dilate upon his strictly professional labours; it must suffice to say that he early attained eminence as a lecturer and teacher in surgery, and held many appointments in connection with medical institutions,

To the last he retained his position as surgeon to the Bank of England, where his father had been Accountant-General. Mr. Smee himself, in conjunction with the engineer, Mr. Hensman, and the printer, Mr. Coe, devised and brought out the present form of the Bank of England notes and cheques; while his professional knowledge made him a valuable coadjutor in various life insurance offices and similar institutions. Of one of these, the Gresham, which has attained a foremost position, he was one of the original founders. The bent of his mind was early turned to chemical and electrical studies, on which he published various memoirs, but in connection with which subject he will probably be longest remembered by the form of battery known as Smee's battery. His scientific attainments were speedily recognised, for he was elected a Fellow of the Royal Society at the unusually early age of 23, while the Society of Arts awarded him a gold medal in recognition of his invention of Smee's battery, and of his metallurgical researches. His publications were indeed numerous and varied, displaying great industry, unwearying energy, a wide general knowledge of many subjects, an intimate acquaintance with a few, and a vivid imagination, which led sometimes to hasty inferences and fallacious analogies. Of this his papers on the Potato murrain, and the aphides which accompany or are consequent upon it, afford notable proof. It is, however, certain that, however much mistaken he might have been in this matter, full justice was never done to the acuteness of his observations, and even now the important though subsidiary part that aphides play in the destruction of the Potato, and which was first published by him, is hardly sufficiently recognised.

Alfred Smee was, indeed, a genuine enthusiast, actuated by the highest principle and deepest sympathy for science, but so hurried on by the fervour of his disposition that the careful and patient spirit which characterises the highest type of the man of science was overpowered by the rapid insight which characterises the man of genius. His sympathy with all plans for the increase and dissemination of knowledge was manifested in many ways, among others in the establishment of educational lectures at the London Institution, of which he was a Vice-President. In conjunction with Sir James Hannen, Mr. Justice Pollock, and other old Paulines, he succeeded, moreover, in modifying the scheme of the Educational Commissioners for the reorganisation of St. Paul's School. His love for Nature was a veritable passion. Many years ago the Fern-cases in his dwelling-house in Finsbury Circus were as remarkable, and attracted almost as much attention, as those of the late N. B. Ward. The writer of these lines well remembers the time when he was in the habit of passing and repassing the windows in Finsbury Circus, with the sole object of ascertaining what were the species that throve under such disadvantageous circumstances. In later years Mr. Smee became possessor of an extensive garden at Wallington, near Croydon, and here, having wider scope, he devoted himself with characteristic zeal to the formation of a garden, which, if such an expression may be used, is encyclopædic. It contains something of everything. Though the surface is flat, landscape effects and artistic surprises are numerous. The visitor passes in a moment from a bold bit of lake scenery to a tiny Fern-clad ravine, through which meanders a crystal stream laving as it goes a host of lovely bog-plants; a turn, and the visitor is in a Rose garden, or admiring a choice collection of alpines. Now long shady walks invite attention, now the treasures of the herbaceous border attract notice. Nor is the more utilitarian part of gardening omitted—on the contrary, it is in places somewhat too obtrusively prominent. Be this as it may, the collection of vegetables, and specially of fruit trees, is very remarkable. No mere amateur's collection within our experience rivalled this one in extent and variety. As to the houses and garden structures they are numerous and efficient. They have no architectural pretensions, indeed one object of the proprietor was to show how at a comparatively very slight expense men of very moderate means might enjoy the pleasures and luxuries of a greenhouse, a fernery, a stove, or a vinery. Mr. Smee's "poor man's houses" exactly realise this ideal. They are sufficient to give profit, pleasure, nay, luxury to the mere labourer. Of course it is not to be expected that the keeping or the condition of the houses, or of the plants in them, would satisfy a head gardener on a ducal estate, but from the point of view of the proprietor they are all that could be desired or expected, and relatively to the outlay we should not be surprised if the produce were larger, as the pleasure to the proprietor was certainly greater, than in establishments of greater pretensions.

Insects, fishes, birds, fossils, nothing came amiss to the hospitable proprietor of this garden. How keen his interest, how great his delight in these matters, is evidenced in his work, *My Garden*, reviewed in these pages at the time of publication. This work is illustrated with a profusion of excellent woodcuts, and in its wide extent of knowledge and genuine sympathy for all natural objects is a worthy exponent of the author's character. Its range is wide rather than deep, but it is impossible not to catch from its pages some of the enthusiasm of the writer. As an encyclopædic treatise for the amateur as distinguished from the professional gardener, we know of none to approach this.

At the Royal Horticultural Society, of which Mr. Smee was for a time member of Council, President of the Fruit, and member of the Scientific Committee, Mr. Smee's sympathies were always strongly and unmistakeably on the side of pure horticulture. Though his schemes and proposals were, we believe, not always sufficiently practical to commend themselves to his associates in the Council, yet no man had a sounder, juster notion of what the proper functions of a horticultural society should be. His public addresses on the scope and duties of the Royal Horticultural Society, and on the paramount necessity of making it a scientific and not a merely fashionable Society—of fostering its powers for the public good rather than for the frivolous pleasure of the few—were always no less sound and sensible than they were energetic. Hi



THE LATE ALFRED SMEE, F.R.S.

liberality of spirit and genial hospitality were marked characteristics, so much so, that few men had a larger circle of friends, or was more beloved by them than he. It may perhaps be allowable to allude to his garden parties, and to the much-appreciated hospitality he showed to his English fellow-jurors in Florence at the time of the Botanical Congress in that city.

Alfred Smee died on January 11, and was buried on January 16 at Beddington, within sight of the garden of which he has given a history, which may fairly compare with that which White gave of his parish at Selborne.

Mr. Smee leaves a widow, a daughter married to Professor Odling, the eminent chemist, and a son who follows with no uncertain step in his father's footsteps.

Foreign Correspondence.

BOTANIC GARDEN, GRAHAMSTOWN, SOUTH AFRICA: *Dec.* 13, 1876.—In an article on Encephalartos Altensteinii, which appeared in the *Gardeners' Chronicle* of September 23, 1876, it is stated that the trunks are "quite glabrous, and marked with three- or somewhat four-sided scars, *indicating the place from whence former leaves have fallen away.*" Now, I must beg to say that the words in italics are incorrect, as not more than a fourth part of the scars to be found on the trunks of the species in question ever bore [perfect] leaves. Quite half of the whole length of the trunks of those species of Encephalartus with which I am acquainted were formed in advance of the leaves; and in the case of E. Altensteinii, spaces of from 4 to 6 inches in length are to be found, at more or less regular intervals, the whole length of the trunk, which spaces were formed as stated.

It is pretty well-known that the Encephalarti have periods of partial rest after the production of a set of fronds, but the resting is more apparent than real. Close inspection will show that active work is going on the whole time. It will be seen that the bases of the last-formed leaves are receding from the apex of the trunk, and that a cone, clothed with woolly scales, is taking the place of the leaves.

At length the period for the production of new fronds again comes round, and one result of the growth of leaves will be, to force out into line with the older portion of the trunk the said cone of scales, thereby adding some 4 or 6 inches to the height of the plant.

It is obvious that the above facts have some bearing on the question of the great length of time that some newly-imported trunks of Encephalartos are before producing fresh leaves, and an importer may, from the position of the last set of fronds, and the width of the cone of scales from the base of the fronds to the apex of the cone, form some idea as to when new fronds may be expected to appear. *E. Tidmarsh, Curator.*

Florists' Flowers.

CYCLAMEN PERSICUM.—Do we fully realise the fact that the Persian Cyclamen is really and truly an autumn and winter flowering plant? Years ago, when the old system of drying-off in summer and almost roasting the bulbs to death in hot weather, in order, as it was supposed, to drive them into bloom in spring, it was thought to be a floral feat to have the flowers as early as February and March! A more judicious treatment has happily supervened, though it is as yet only imperfectly understood, for not long since a journal accustomed to include horticultural matters among its contents was found gravely asserting that the bulbs must be well dried off in summer if a quantity of flowers were looked for in spring. The roasting process is still followed in some gardening establishments.

In order to thoroughly appreciate the glorious decorative value of Cyclamen persicum it should be seen in quantity, as one can see it at Mr. H. B. Smith's, Ealing Dean Nursery, where, at the beginning of the month, some 10,000 plants were gathered together, a large majority of them for market purposes. There they were in the long, low, span-roofed houses peculiar to places where plants are grown for market, presenting an unbroken surface of varied colours, not in monotonous patches of white, purple, pink, &c., but mingled together, and presenting a most charming floral aspect. The greater number of the plants were in 48-pots, and they were blooming with great freedom; the number of flowers on some of them was perfectly astounding, plants sixteen months from the seed-beds were producing something like 200 blossoms. They were carefully counted, so that no error of calculation might occur. And not only does the Cyclamen remain a long time in flower, but it is also invaluable for furnishing cut blooms, and they last a considerable time in water.

As far as the improvement of the cyclamen is concerned in the direction of form and colour, Mr. H. B. Smith is doing good service to floriculture. He has originated some purple and crimson flowers of great richness of colours, the petals large, broad, and stout, some exceedingly pretty pink and pale rose shades, and some pure white flowers of high-class quality.

The culture of the Cyclamen, as followed at Ealing Dean, appears to be of a simple character. The seed ripened in June and July is sown in August, in pans of light rich sandy soil, plunged in bottom-heat, and by the end of November the seedlings are pricked off into 60-pots, about fifteen plants in a pot, and still kept in a warm moist temperature. In February they are potted singly into small "Long Toms," and still kept close under glass; the next shift is into 60-pots, and finally into 48's in the month of May. They then go out-of-doors into cold frames, where they are kept growing, being freely watered, shaded from hot sun, and sprinkled overhead. There is no resting space, and the plant does not require any. It was stated by Mr. Smith that he had this season raised 11,000 seedlings, and they abounded on every hand.

The soil used for the Cyclamen is a light loam and leaf-mould, and a little sand. If the loam be at all heavy, a little peat should be mixed with it to keep it open. Good drainage is indispensable. The first batch of plants is sent to market in November, and the supply is continued as long as there are plants to send. *R. D.*

The Villa Garden.

ORCHARD HOUSE.—There is no reason why an orchard-house should not form a part of the gardening arrangements of a Villa residence; and we make this statement while fully aware that the system of orchard-houses has not made the headway that it was at one time confidently expected it would. Orchard-houses, like almost every other horticultural venture, have found their advocates and their opponents; the *pros* and *cons* have been put with singular vigour, and they have been as vehemently supported as they have been contemptuously denounced, and probably, after all, the truth has lain somewhat midway between the two. It is very often the case in disputed matters that the happy medium is frequently the best point of advantage.

We are always contending that, the Villa Garden being generally restricted in extent, should yet be made as full of interest as possible. Thus it is we are found advocating the Villa orchard-house. High authorities have frequently been found writing and speaking against small orchard-houses, but in apparent defiance of these—high authorities are oftentimes not a whit more infallible than little ones—we yet advocate a small orchard-house.

What shall be the form of the orchard-house? It can be either span-shaped—that is, with an ordinary ridge roof sloping on either side from the middle of the ridge—or it may be a lean-to against a north, east, or west wall. The span-roofed house is perhaps to be preferred, but a very useful orchard-house can be had in the form of a lean-to. We do not decry large orchard-houses, but consider small ones the best for an ordinary Villa residence, where space is somewhat restricted.

The orchard-house need not be lofty. In a small house the trees would be in pots, as there would scarcely be accommodation for standard trees planted out, and as the pot trees should be as near the glass as possible, the roof should be low, for the fruit must not be too far from the glass, if we would have it finely flavoured and highly coloured. A certain height must be had, and the breadth of the house must be regulated as much by the necessities of free circulation within as by the strength of the house to bear gales of wind, if the house occupies an open and exposed position, or is subject to a weight of snow on the roof.

Whether the house have a framework of brick, or is wholly of wood, revolving wooden shutters should be fixed in the walls to admit of plenty of ventilation when it is desirable to give it. Whether it be a span-roofed or a lean-to house, let there be some 4 feet of supporting wall of brick or woodwork, and on the top of this a foot or 18 inches of a strong glass frame, from the top of which the roof should spring. Top ventilation, *i.e.*, means of ventilating in the ridge of the roof when required, must be provided. Such a house—of which this is but a bare outline—is simple in construction and efficacious when properly managed. It would not possess the architectural elegance found in a greenhouse or conservatory, but if kept clean and painted would never be an unsightly object from the dwelling-house.

In the case of a lean-to house the wall at the back might be utilised for cordon Peaches and Nectarines, Vines, &c., planted out at the proper time in a well-prepared border, but the Vines must not be allowed to cover too much of the roof to the exclusion of the sun from the plants beneath.

Supposing a house such as we have sketched be built, the next thing is the matter of furnishing it. Nurserymen invariably keep a collection of orchard-house trees in pots—for we are proceeding on the principle that the plants will be in pots—and the following varieties of Peaches are well suited for orchard-house culture:—Early York, Grosse Mignonne, and Royal George; Nectarines—Pitmaston Orange and Hunt's Tawny; Plums—Jefferson, Green Gage, McLaughlin's Gage, and Standard of England; and the Moorpark Apricot. This selection can be added to with desirable varieties, and also with suitable selections of Apples and Pears, if it should be desired to include these in the collection. The trees should (when purchased) be fairly well set with fruit-buds, and repotted in a suitable compost in October or November last.

At this time of the year the pots should be well bedded in leaves, as a protection from frost. We are dealing with a cold orchard-house; hence the necessity for keeping frost from the pots. The leaves may come just above the rims of the pots, and when it is desirable to examine the plants in case any require water, the leaves can be drawn on one side, and replaced when the task is finished.

Nothing has yet been said as to pruning the trees, and excepting that two or three of the early Peaches are put into a gentle heat of say 45°, to get them a little forward—in which case the necessary pruning must be done before the plants are removed there—the general pruning need not be done till the end of January. It should not be delayed later, for it is a law in practical horticulture "the sooner a shoot is pruned the stronger will it break." If any delay be made in the pruning, it should be in the case of plants that have put forth a gross growth; delay in this case has been found to impose a slight check on the plants, and, further, a well-known cultivator of orchard-house trees has remarked that "as a rule too much wood is left on orchard-house trees, and they produce too many flowers. Cultivators are far too anxious to secure a fine and plentiful show of bloom, forgetting that, the greater the quantity of bloom, the more trying it is for the plant, and the less likely are the flowers to set. A Peach tree in a 12-inch pot, for instance, with fifty or 100 flowers upon it, is just as good (if not better), and will produce as good a crop, as one with ten times the amount. In pruning, therefore, it is well to bear this in mind—that every flower-bud, if properly developed, will produce a fruit, and that only a few (if Peaches, one on each shoot) are required. Excepting where it is needed for the formation of the tree, the shoots of Peaches, &c., in pots, or all bush and pyramid specimens, should not be left more than 2 or 3 inches in length. Where the trees were closely pinched during the past year, the twiggy ends only require to be cut off. Care must be taken at all times to prune direct to a wood-bud, which may be known by being much more slender and pointed than the flower-buds. Where no wood-buds are to be found, the shoots must be kept at full length if they cannot be dispensed with."

And lastly, while the weather is so mild, and there is such a tendency on the part of plants of all kinds to come forward quickly, the house should be kept open night and day, so as to retard the trees as much as possible.

Garden Operations.

PLANT HOUSES.

PLANT STOVE. — Plants of Dracænas, Crotons, Theophrasta imperialis, Cupania filicifolia, Sphærogyne and Cyanophyllum, that were headed down at the close of last summer will now have broke sufficiently to permit of their being partially shook out. Two-thirds of the ball ought to be reduced, and a considerable portion of the small roots be cut away; they should then be put in pots about half the size of those previously occupied. Crotons with the colour best if potted in good yellow loam, for the others peat is preferable. These are all water-loving subjects, therefore the soil must have a liberal admixture of sand, and the pots be well drained. The whole of the above plants, with the exception of the Crotons, are far the best confined to a single stem, consequently the strongest and best placed shoots should be retained; and any others that have broke should be taken off with a small heel and struck. When potted from this time onwards they should be kept where they will get as much light as possible, otherwise they will be half spoilt by the young growth being drawn up weakly, and the leaves will have neither strength, colour, nor substance to retain their vitality more than half the time they ought to do, and the plants will soon become naked at the bottom and unsightly. The advantage of keeping down such things as these early in the autumn is that they break during the winter and are ready for the shaking-out process, repotting, and commencing growth as early at this time of the year as there is any increase of heat and light, and by this means have a much longer season and better opportunity of making handsome plants before the autumn; but any specimens of the above, or things of a similar character that require thus cutting down, and were not operated upon in the autumn, should be headed back without delay, otherwise the season will be passed allowing time to make them sightly objects. Where they want more root-room, such things as Ixoras, Francisceas, and others that are evergreen, should now be potted, but they must not be disturbed until their roots are at work. Repotting when the roots are not moving is the most likely to cause a plant to get into an unhealthy condition. Though these plants are not tender at the roots, still when potting it will not do to shake them out, or get away the soil to the extent requisite for plants that are deciduous; only remove such, particularly near the top, that is not connected with the roots. The state of the roots will of course regulate the increase in space given them, if they exist in plenty a larger shift should be given them than where they are not abundant. Let the soil used be quite as warm as the roots of the plants to be potted, give plenty of drainage, and add a good amount of sand to the soil; the quantity of water needed by stove plants makes it quite necessary that the soil should be of a description to let it pass off freely. The proportion of sand requisite to be added will, of course, depend upon what the peat does not naturally. Make the soil quite firm by the use of the potting-stick. For evergreen stove plants peat is to be preferred to a mixture of peat and loam. Any Gesneras of the exoniensis and zebrina section now coming into bloom should only have enough light to flower them open; if they receive more than this they will not be of much use for conservatory work. If G. Doncklaari and G. Cooperi were dried off in the autumn they may now be started. Pot them in a similar manner to Gloxinias, and put them at the warmest end of the stove. Where desirable they can be increased by division of the roots, like Gloxinias. Kegel Bouvardias in a nice warm temperature; by so doing they will not only bloom freely but make lateral growths, which will come into flower and succeed the main shoots. Stove Begonias ought to be kept at the driest end of the house, and not allowed to get wet overhead with the syringe, or it makes them soft and the flowers last badly in a cut state. Euphorbia jacquiniæflora will push a second lot of flowers if in cutting the first too much of the current season's growth is not removed. Keep the plants, as previously recommended, close to the glass. *T. Baines.*

FLOWER GARDEN.

In most gardens, especially large ones, there is always plenty of work on hand, and I have found it advantageous to suit the work to the weather, and to get on with what can be best and most expeditiously done. Should the present dry weather continue, push forward the ground work, which possibly may be in arrear; wheel manure and leaf-soil on the beds and borders, if the walks are dry and firm; give the beds a good dressing, and trench wherever it can be done: this is especially required if the soil is light, and in a dry locality the plants always succeed better and want less attention to watering during hot, dry weather in summer. Where the ground is more retentive, and the subsoil deeper, manure may be more sparingly used: leaf-soil mixed with sharp sand or road-scrapings will greatly assist in making the ground of a more pliable texture. As the days lengthen potting may be proceeded with; Coleus, Iresine, Alternantheras, Heliotropes, and things of that description which have been kept in store pots, had better be potted singly in small pots, and if placed in a moist warm pit or frame for a few days will soon root, when they should be gradually given a little more air; plants thus treated will give a plentiful supply of cuttings. Where a large stock of those plants are required continue propagating until the end of March, or even later; there will still be sufficient time to prepare and harden off the plants before bedding-out time. Ivy-leaved, variegated, and sweet-scented Pelargoniums may be potted off first, as they take longer time to fill their pots than the strong growing sorts, which may be left until the others are all finished. Make preparations for sowing seeds in pots or boxes according to the number required of Lobelias and Golden Feather; good strong stuff is always desirable at planting-out time. Attend to sweeping and rolling as circumstances demand. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

FIGS.—If the trees in pots which were introduced into the house about the middle of last month have had the treatment recommended they will be putting forth leaves and fruit simultaneously, and with the slightest degree of heat operating at the roots growth will progress rapidly. As soon as practicable thin the growths and pinch the shoots at the fourth or fifth eye, rubbing away those which issue from beneath the surface of the soil. At this stage advance the temperature to 55° as a mean at night, and 65° in the daytime. Ventilate early when the state of the house will admit, and plentifully when it is of importance; providing cold cutting air or wind does not prevail; syringe the trees and house twice every day, and moisten other surfaces if they become dry. These remarks will likewise apply to the succeeding batch of trees in pots, or otherwise. Should the forcing of this wholesome kind of fruit be contemplated where it is not already practised, no variety out of the numerous varieties in cultivation with which I am acquainted is equal to the Brown Turkey for this purpose, whether the trees be restricted to pots or otherwise, and a good proportion of it should be introduced, even if variety is wanting. Now is a good time to pot up plants which ultimately are intended for this object; such plants should be kept free from the effects of frost, and be gently excited in a temperate and dry house towards the end of next month. Use well drained pots, not too large, and soil consisting chiefly of loam, with a little road scrapings or sharp sand added thereto. *Geo. Thos. Miles, Wycombe Abbey.*

VINES.—Proceed with the removal of surplus bunches in the early house, get all thinning, stopping, and tying finished, and, if necessary, give the inside borders a good watering with tepid liquid manure at a temperature of 85°. Ventilation, particularly after so much dull weather, will require constant attention. Admit a little air every day when the thermometer reaches 70°, and if gentle fires are required to keep up the heat they may be stopped when the house is closed, and syringed about 1 o'clock P.M. Houses in bloom may be raised to 65° at night, allowing a few degrees more for Muscats. Maintain a steady circulation of dry warm air, and assist shy-setting sorts, including Muscats, Alicantes, Mrs. Pince's Black Muscat, &c., by artificial fertilisation with Hamburgh pollen, having previously turned the points of the bunches up to the light. Syringe the rods two or three times a day in succession-houses until the buds have all broken. Tie down the points of gross shoots where they do not break kindly. Discontinue syringing when the bunches are formed, but keep up moisture by damping the walls and mulching. Provide ammonia for all houses at work by the careful introduction of well worked horse-droppings, taking care to leave a chink of air on at night after its introduction. If fermenting material has been applied to outside borders, means must be taken for keeping up a steady warmth of about 80°, as injury often arises from the abuse rather than the judicious use of these materials. Where a suitable Grape-room has been provided, late fruit which has been properly ripened will keep better in bottles of water than on the Vines. Pruning may be completed without the danger of bleeding; the Vines may receive a short rest, and the house be utilised for other purposes. Put in Vine eyes; use well-ripened wood, pot firmly, and let them stand a fortnight before placing them in bottom-heat. *W. Coleman.*

MELONS.—The early Melons which have been sown singly in small 60's should receive a shift into pots a size or two larger when they have made the first rough leaf, and if they can be again plunged into bottom-heat near the glass they will soon be strong enough for turning out on the hills, or, what is still better, into large pots or boxes, for producing the first supply of fruit. When space can be found for partially plunging or placing the pots over bottom-heat in Pine stoves the vines may be trained over the paths without detriment to the Pines. The most suitable soil for the Melon through all its stages is a strong, turfy loam from an old pasture, with a fair admixture of lime, rubble, burnt earth, or charcoal to keep it open. The drainage should be perfect, and, if dry, the compost may be firmly pressed into the pots, leaving sufficient space for the reception of topdressing and liberal supplies of water as the plants advance in growth. Although Melons grow freely in light soils they do not set and swell off their fruit as well as when a stiff sustaining compost is employed; neither does the foliage so well withstand the attacks of red-spider when the fruit is ripening. Particular attention must be paid to the preparation of fermenting materials intended to produce a steady bottom-heat without the aid of hot-water pipes, as the flavour of early Melons is very often deficient through the beds becoming cold when the fruit is ripening, and it will therefore be well to have strong plants ready for removal from the nursing pit or frame where the fruiting bed is made up. *W. Coleman.*

HARDY FRUIT GARDEN.

The almost incessant rains that have prevailed for a long time past have rendered the soil in such a soft sloppy state that the planting of hardy fruit trees has, in many places, been quite out of the question. Now, however, that the land is in a somewhat better condition, no time should be lost in carrying out the above operations, or in effecting any changes, such as the renewal of soil to those in an unsatisfactory state, or any matters of that kind involving the least interference with their roots. It is the practice with many, on receiving young trees from the nurseries, especially such as Apricots, Peaches, Plums, &c., for walls, to head them back considerably, but never was there a greater mistake perpetrated, as by so doing a whole season's growth is cut away; and, worse than that, it induces a number of gross watery shoots, that it is almost impossible to get ripened. If, instead of this barbarous custom, the young shoots are laid-in intact, or as many of them as may be required to form the frame of the tree, it would cover much more space, and get thoroughly established and in a fruit-bearing state in half the time it takes when the system of shortening back is resorted to, as the root-action is in a corresponding ratio with the leaf surface and the number of branches the tree possesses. To those who like those who still treat their young trees in the above objectionable manner, that they do so with a view to induce them to break back, but I never yet saw a healthy plant, put in at the proper time and treated to suitable soil, that did not start every bud, and make a much more satisfactory growth than any that had been cut-in. In all cases, before planting any of the above choice fruits, suitable preparations should be made for them, the extent and nature of which must be decided on according to circumstances, and the kind of soil the planter has to deal with. In order to give them a fair start each young tree should have a few barrowloads of fresh turfy yellow loam, and the same covered in with 6 inches or so of the old soil, which should then be mulched over, to keep out frost. Pruning, tying, and most other garden operations, has been unavoidably deferred to an unusually late period, and it will now be necessary to take advantage of every favourable opportunity and set to work in real earnest to bring up arrears. With the roughest part of the orchard to cover, Pears and espalier Apples will be the next demanding attention, following on with Plums, Cherries, Apricots, and Peaches, in the order in which they are named. It is not an uncommon thing to see the spurs of the former sticking out from the branches to such a distance as to receive but little or no benefit in regard to shelter from the wall on which they are trained, and not only is this the case, but the fruit borne by such trees bears no comparison in size or quality with such as have them close home. As all Pears are unusually well set with bloom-buds this season, an excellent opportunity is afforded to thin out and reduce to proper limits all such superfluous growths, leaving only just sufficient to carry a crop, when after another year or so they may be removed in the same manner. It is surprising what a remarkably beneficial effect this taking away of old gnarled spurs has on the health of all fruit trees, and how vigorous they become, and especially so with Pears, if at the same time they have their main branches and stems thoroughly freed from any rough excoriated bark, moss, or lichen, by scraping it off with a blunt instrument. This should be followed up by painting them over with hot fresh-slaked lime, which will finish up the work of eradicating mossy growths and settle accounts with scale or any other insect pests with which they may be afflicted. *J. Sheppard, Woolverstone Park.*

THE
Gardeners' Chronicle.

SATURDAY, JANUARY 27, 1877.

APPOINTMENT FOR THE ENSUING WEEK.

THURSDAY, Feb. 1—Meeting of the Linnean Society, at 8 P.M.

THE subject of the desirability of a more extended CULTURE OF HARDY FRUITS is one of those questions which, like the condition of Kensington Gardens, crops up at tolerably regular intervals to disappear in due time and to be no more heard of till the swing of the pendulum once more brings it under notice. It may be because the statements made are usually obvious and do not admit of argument that nothing comes of them. If they roused opposition or antagonism people would be stimulated to do something, whereas now they hear or read and nothing comes of it all.

Many years ago Mr. ROACH SMITH took up the question, not being by any means the first to do so, but we do not know that anything more cogent has been since urged. Now, again, the question has been ventilated at the all-embracing Society of Arts, where Mr. G. C. T. BARTLEY has been illustrating his favorite topic of thrift by pointing out how much is lost to the country by allowing pieces of waste ground, railway embankments, and the like, to remain unused. Mr. BARTLEY's propositions, like those of his predecessors, will be unanimously assented to—viz., that the supply of fruit is less than it ought to be, and that it would be advantageous to increase it. How is this to be done? Mr. BARTLEY advocates, amongst other things, the reclamation of waste pieces of ground and of railway embankments. Why not cultivate these, and make them productive? We believe the reason is that, under most circumstances, fruit culture would not be remunerative in such places. If they could be thrown into the allotment-gardens of the poor well and good, but in most instances they are detached pieces removed from habitations or ready means of access, and naturally ill adapted by site or soil for fruit-cultivation.

It will not pay to stick in a fruit tree in any description of soil, as if one were merely sticking a stake into the ground. To be made profitable the ground must be trenched and manured, and fruit trees of a kind suitable for the locality planted. This being so, there can be no doubt that, on the small disjointed scale we are now alluding to, fruit culture would not be profitable. Where fruit is grown for culture as a commercial investment it requires an outlay of capital and labour. If that capital and labour are to return a fair interest they must be intelligently directed and used under certain conditions, but if these conditions be unattainable, then fruit culture will involve a serious loss. Now we cannot help thinking, looking at the matter from a practical point of view, that such would be the result if Mr. BARTLEY's plan of utilising waste scraps of land were adopted. Add them to the adjoining fields, grow Jerusalem Artichokes on them which require no special preparation or care—though like everything else, much improved by care, or let them remain as common pasturage for village cows and geese. The question of railway banks is different. There are doubtless miles of embankment which might be profitably used, as one sees them on the Continent, for growing Osiers, or for coppice-wood. Filberts and nuts might be used for this purpose, and in some places Strawberries might, as has often been pointed out in these columns, be most advantageously grown, their runners serving to keep up the banks, while their fruit would be sure to find a market.

The culture of fibre plants, such as the common Nettle and other fibrous "weeds," might be profitably undertaken in the neighbourhood of paper mills. Indeed, there are various means of utilising railway banks which might be adopted, and, as we believe, with generally better results than fruit-growing. The experiment of growing fruit trees on either side of the line, has been tried in Belgium, and we gave an illustration of the plan adopted in that country in our volume for 1869, p. 277. Subsequent enquiries made by ourselves in Belgium from competent authorities, have, however, led us to doubt whether the experiment is worth repeating in this particular direction.

For the domestic supply of fruit or for culture on the small scale, infinitely more might be done in our cottage gardens and on our cottage walls. We have often urged this subject on the attention of country gentlemen, and of the local horticultural societies. The cottagers want the instruction, which any good gardener could give them, as to what to plant and how to plant it. The Grantham Horticultural Society, at the instigation of Mr. W. INGRAM, if we mistake not, offers to successful cottagers competing for prizes at the show approved kinds of fruit trees for the situation and aspect on which their gardens and houses are placed. This is an example worthy to be followed, as there is no reason why the great majority of our cottages might not be clothed with Apricots or Pears, and why Apples and Gooseberries should not be found in every cottage garden.

If the Society of Arts can bring about so desirable a result, it will add to the obligations it has already conferred on the country, and it will perhaps shame the Horticultural Societies of the kingdom into a wider sense of the duties they owe to the community.

WE have on more than one occasion called attention to the recent appointment by Her Majesty's Office of Works of an ex-military gentleman as Bailiff, or Chief Superintendent, of the Royal parks, and we are constrained to do so again through an article which appeared in our admirably conducted contemporary, the *Builder*, on the 13th inst. The *Builder* is usually so averse to jobbery, so anxious to uphold the dignity of art and the rights of the workman, that it is a little surprising to see it sanctioning an article so contrary to its usual high sense of what is fit and becoming. The writer of this article, which seems to have been officially inspired, first makes certain insinuations of a grave character against the present Superintendents as a justification for the appointment, and then offers an apology for the selection of an ex-officer of Engineers instead of a practical man.

We would remark that if the office of Park Bailiff is a good or necessary one—which is open to doubt—it cannot require the casting of aspersions on the character and efficiency of faithful public servants, who have no means of defending themselves before the public. Such insinuations are unwarrantable and unjust. The present Superintendents are men of ability and integrity, and were appointed to their respective positions as being the best qualified, and we maintain they have executed their trust well. It is a distinct breaking of faith with them, therefore, to suddenly usurp their powers and reduce their status, which the appointment of this new office and the new regulations do.

We join issue with our contemporary as to the wisdom of appointing a military gentleman to the office. The new Bailiff may be, for aught we know, a gentleman of very correct taste, and he is reputed to be a good maker of roads, but we never heard of him as a horticulturist or a landscape gardener, or a forester, or, indeed, as possessed of any knowledge fitting him for such an office. How, then, is he to superintend or satisfactorily control the actions of the Superintendents under him who are possessed of that knowledge?

According to the *Builder*, such knowledge is not requisite "when it is considered that each of the Royal parks has Superintendents who are practical gardeners, &c. . . . It may be urged that special horticultural knowledge was not particularly requisite in the holder of the new appointment." This is strange doctrine, not likely to be accepted. What, then, we would ask, are the new Bailiff's qualifications, or what the duties that he can perform that could not be done quite as well without him? He cannot direct the actions of the Superintendents, in practical matters, but he can thwart and impede them. What service is the new official likely to render, from a gardening point of view, to Mr. ROGER, of Battersea, who, treading in the steps of JOHN GIBSON, has made Battersea Park a model, to which, year after year, the horticultural critics point with just pride and admiration? Of what advantage will it be to Victoria Park, so ably managed by Mr. MCINTYRE, to receive instructions as to matters of gardening details from an ex-officer of Engineers? How is such an officer to set about regenerating the plantations in Kensington Gardens? If this style of appointment is to prevail, we may expect to see the Royal Gardens at Kew, Edinburgh, and Glasnevin superintended by a nominee of the Government with no special knowledge of the work of his department. The Superintendents will now, instead of consulting with the Secretary or First Commissioner direct, have, we believe, to receive the sanction and approval of this new official even to the merest trifle. More red-tape! more economy!

The cost of this new office, including clerks and assistants, cannot be reckoned at less than £1000 per annum, so this is what the country will have to pay for this new deputy official. Will the "Office" be able to show any return for this great expenditure? We doubt it, but we again quote the *Builder*:—

"It is reported that the holders of the larger privileges in connection with the Royal parks, such as the ownership of boats let out for hire for rowing or pleasure parties, at so much an hour, and those other privileges, as in the East-end parks, in the matter of swings and merry-go-rounds, will be subject to a change. In the Crystal Palace grounds, and other public places of entertainment, large sums are paid yearly by owners of like appliances to those seen in the Royal parks."

So here we have shadowed forth, not very lucidly, some of the duties which it is considered desirable for a military gentleman to accomplish. Seeing that this department has always been under the direct control of the Office itself, we fail to see why the Park Superintendents should be made the scapegoats for such an appointment.

The solution of the whole case seems to be, that the appointment of a practical man as Chief Superintendent of the Royal parks, which was first proposed by Mr. AYRTON, and lately sanctioned by the Treasury, has been so arranged by the present Office of Works as to secure a mere official deputy, instead of a general surveyor of parks, as was originally intended. We doubt if the public will be satisfied with the change.

WE are glad of the opportunity of figuring the magnificent Australian DENDROBIUM SPECIOSUM VAR. HILLII (fig. 18), for its merits are less known than they deserve to be. Few more glorious sights have met our eyes than that which greeted us on opening a package lately from the Hon. and Rev. J. T. BOSCAWEN. Our page will only allow us to give a portion of one spike, but it may suffice to give an idea of its massiveness and beauty. The variety Hillii, figured in the *Botanical Magazine*, 5261, differs from the old speciosum in its narrower and longer sepals and petals, as pointed out by Baron VON MÜLLER. The stems also are more elongated. The plant is a native of tropical Australia, Queensland, but the species extends into the cooler southern latitudes of New South Wales and Victoria. The flowers are of a creamy white colour, and have a pleasant fragrance.

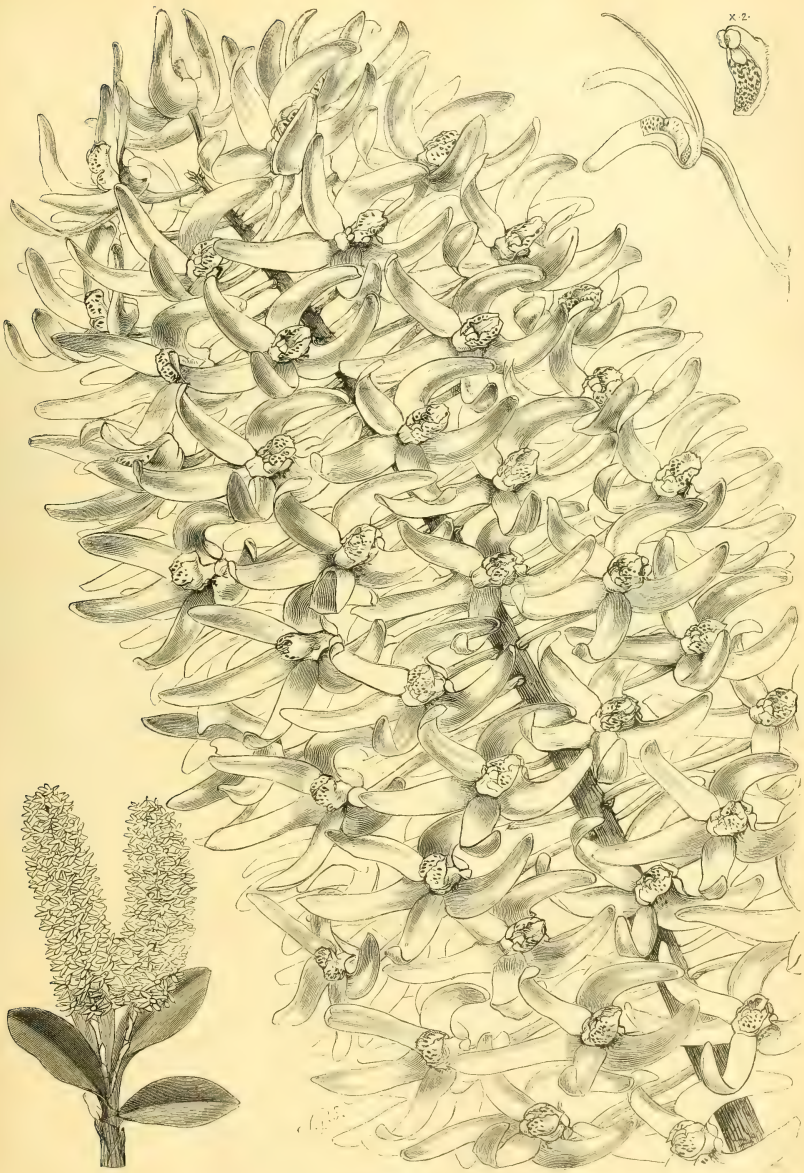


FIG. 18.—DENDROBIUM SPECIOSUM VAR. HILLII.

Compared with its Indian allies the present plant requires but little heat, and it usually flowers freely every year from the same bulb. Sometimes it flowers twice in the year, and last year Mr. BOSCAWEN's plant flowered a third time from the same pseudobulb—a very unusual occurrence. Nothing could be finer and more healthy than the foliage which accompanied these magnificent spikes. Mr. BOSCAWEN's plan of culture, however, is very simple. After flowering the plant is allowed to rest for a month or six weeks; it is then placed in an intermediate house and copiously watered every day till the pseudobulbs are formed, when it is placed out-of-doors or in an orchard-house in the sun.

—— The proposed SOUTHERN SHOW OF AURICULAS is, we are glad to say, likely to be successfully carried out. A meeting of the committee is to be held on January 31, to approve the prize schedule, which has been drawn up by Messrs. TURNER, DOUGLAS, and DODWELL. We understand that upwards of £60 will be offered as prizes, and that some £10 more of subscriptions are necessary to meet this outlay and the necessary expenses, so that any supporter of florists' flowers or patron of horticulture who has not subscribed may yet have an opportunity of doing so. Subscriptions should be sent direct to the Hon. Secretary, Mr. E. S. DODWELL, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W.

—— The successful candidates at the recent election of pensioners in connection with the GARDENERS' ROYAL BENEVOLENT INSTITUTION were Mr. JAMES GOSTLING, Mrs. W. P. AYRES, and Mrs. MARY ANN ADDISCOTT.

—— MILLA LEICHTLINII, a new and quite distinct species, is flowering in the Royal Gardens, Kew, both under glass and in the open ground. It was sent hither by Herr MAX LEICHTLIN, who received it from the Chilian Andes. In structure it approaches M. porrifolia, but agrees in habit only with M. sessiliflora, another Chilian species, not yet introduced. The peduncles and pedicels are so extremely short that the flowers appear low down among the leaves, and just above the ground. The leaves are about six to a corn, erect, bright green, 3–4 inches long, and ¼ inch broad. The flowers are fragrant, pure white, each segment with a greenish keel, and rather more than 1 inch in diameter. Two or three umbels are produced to a corm, and each umbel has two or three flowers. This interesting plant we know of now only in the Kew collection. It is quite hardy, and will doubtless be as easily grown as the other species. A figure was published in the *Botanical Magazine* of June last, and in our volume for 1875, p. 234, will be found the original description by Mr. BAKER.

—— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, Jan. 29, when the adjourned discussion on the paper read by Mr. W. T. MARRIOTT at the last meeting, entitled "Riparian Rights," will be resumed.

—— A winter made up of mild muggy weather and an excess of rainfall is certain to prove one of unusual difficulty to the Potato grower. The present season has proved to be one of remarkable difficulty in STORING POTATOS in such a way as shall check that premature growth invariably so detrimental to the future crop. The great heat and drought of the past summer ripened off the Potato crop prematurely, and left the tubers in a most excitable condition. These causes, combined with the mildness of the winter, have tended to generate an early starting of shoots, especially where the tubers are stored in bulk, or influenced by the prevailing moisture. The most effective remedies are found in storing thinly on airy shelves, where on dry days an abundance of air can be admitted, and where also there is sufficient space to admit of a frequent overhauling of the stocks to pick out all diseased or decayed tubers. Seed Potatos cannot have too much light and air during the resting season consistent with the exclusion of moisture and frost, and, if shoots are induced, these will never become attenuated or be otherwise than stout and healthy as long as there is an abundance of light and the small rootlets emitted at the base of each shoot are unable to find moisture. We recently saw at the Aston Lower Grounds, Birmingham, an admirable arrangement for storing a large quantity of seed tubers in a most effective way, and yet in a small compass. Mr. SPINKS had imported the idea from France, and put it into successful operation. A series of shallow wooden trays, all of the same size, each one having legs at each corner about 3 inches in length was provided. As these were filled with a single layer of tubers closely set together they were stood one on the other, and thus air was enabled to freely circulate amongst them. It is a capital arrangement for the storing of many kinds in small quantities.

—— We understand that Mr. J. H. BURTON has been appointed successor to the late Mr. P. STEWART as gardener to CHARLES TENNANT, Esq., The Glen, Peebleshire.

—— At a meeting of the Metropolitan Board of Works held on the 12th inst. Mr. LAMMIN introduced a deputation from the parish of FULHAM, who presented a memorial on the subject of the recent INUNDATIONS in their parish. The memorial was stated to emanate from certain proprietors who had received great damage to their stock and property by the recent high tides. They were last year subject to a similar calamity, since which time they had raised a portion of their banks at their own cost; but, although anxious to do all in their power, they found the work of greater dimensions than they could attempt, and concluded by asking the immediate assistance of the Board. Mr. HARRY VEITCH, in support of the memorialists, said he represented the most immediate sufferers, amongst whom the principal were the better class of market gardeners of London, raising the more delicate descriptions of vegetables, acres of which crops had been destroyed. His (the speaker's) own firm last year estimated their losses at £2000, and had to burn 12,000 young trees from their plantations. At a meeting of the Fulham Board of Works held subsequently, Mr. VEITCH, together with Mr. WALDEN, an owner of Osier beds, and several other occupiers of land adjacent to the Thames subject to inundations, made a statement of the grievous losses to which they have been subjected, and to which they are still liable by the rising of the water. Mr. VEITCH said the destruction to his property and consequent loss in business would amount to £2000; Mr. STEELE, market gardener, would lose £3000; Mr. MATHER, who had been drawing £20 a week for Mushrooms, has had all his stock and plant washed away; Mr. WALDEN has had all his cut Osiers washed away. There were altogether 180 acres of land under water.

—— The spring, summer, and autumn flower shows of the ROYAL CALEDONIAN HORTICULTURAL SOCIETY will be held on the following dates:—March 28, July 11, and September 12.

—— Some of the WINTER FLOWERING SUCCULENTS are extremely showy, and seem too little appreciated for floral decoration. In the succulent-house at Kew Crassula lactea was prominent in flower a short time since. Echeveria fulgens is just now very attractive, and likely to be so for some time. Kalanchoe laciniata has been very ornamental for several weeks. The bright yellow flowers remind one of Chlora perfoliata, and these, with the peculiarly cut leaves, form a novel and striking specimen. Senecio macroglossus is much to be valued among succulents as a winter-flowering climber. The flower-heads are bright yellow, and in point of size perhaps second only to S. pulcher. The leaves so closely resemble Ivy as to afford much interest from that circumstance.

—— The HOLLYHOCK DISEASE has proved so destructive to the stock of Hollyhock plants at the Saffron Walden Nurseries, that Mr. CHATER has been driven to adopt means to mitigate as far as possible the severity of its attacks. Last season Mr. CHATER adopted a plan which, he reports, has answered admirably; and indeed the results far exceeded his most sanguine expectations. In the early autumn of 1875 large trenches were dug, similar to Celery trenches. The bottom was forked up, and a good dressing of decomposed manure was worked in, and the soil laid up rough, to be pulverised and rendered workable by the winter frosts. In these trenches the Hollyhock plants, to stand the summer, were planted out, but previous to doing so the soil in the trenches was again forked over, mixing in with it the sides of the trenches also. Here the plants grew rapidly, and with great freedom, and, as Mr. CHATER remarks, "I obtained from them some of my finest flowers, which quite reminded me of past seasons, before the fungus made its appearance. Several of my new varieties came from these rows. The growth of the plants during the season was worth seeing." These plants were free from the disease, and at taking-up time they were quite healthy, have kept so all the winter, and they are furnishing a supply of young plants for sale in the spring, and Mr. CHATER is depending on these for material on which to found a spring catalogue. By some such perseverance, by thinly planting the Hollyhocks, by putting the plants in exposed situations, and mulching them during summer, Mr. CHATER hopes to be able to overcome the disease eventually. It does appear true that the moister the season the less marked is the disease, and the more vigorous the growth of the plant the greater is the resistance to its advance. This system of growing the plants in highly manured trenches supplies an invigorating soil, coolness and moisture at the roots, and the mulching maintains a surface assistance which must exercise a beneficial influence.

—— The question of the EFFECT OF COLD SPRING WATER ON PLANTS growing in a high temperature has again been raised by a correspondent of the *Revue Horticole*, whose experiments convinced him that plants thrive equally well under cold-water treatment, as when water at the temperature of the atmosphere of the house is given to them. He conducted his experiments during the months of January and February last year. Two pans each of the seeds of a variety of plants, ranging from hardy indigenous species to tropical ones, were sown at the same time and subjected to exactly the same conditions with the exception of the difference in the temperature of the water. In the one case it was taken from the tubs exposed to the outside temperature, and in the other it was applied at the same temperature as the atmosphere of the house. The writer adds that his experience leads him to prefer spring water to water taken from the river Seine, for syringing, especially for soft-wooded plants. How far this treatment will answer, practical experience alone can prove, but there is no doubt that plants will flourish under widely different conditions in respect of the temperature of the soil. We have seen, for example, one part of a large Grape Vine, whose roots were all outside, in a house where it was usually started into growth at the beginning of the year, and the other part outside on a raised trellis on a slate roof, each bearing a good crop of fruit in its season. Another remarkable fact is the very high temperature some plants will bear without injury. The *Botanische Zeitung* lately called attention to the almost forgotten observations bearing upon this subject recorded by HUMBOLDT in his *Reise in die Aequinoctialgegenden des Neuen Continents*. Carefully read, the temperature of the water of a hot spring in Caraccas was 90°.03 of the Centigrade scale, or above 194° Fahrenheit, and the travellers were not a little surprised at the luxuriant vegetation immediately around and overhanging this almost boiling cauldron. Fig trees, delicate feathery-leaved Mimosas, and a variety of other plants continually exposed to the vapour, and whose roots extended into mud at a temperature of 185° Fahrenheit, exhibited the most beautiful verdure. An arborescent Aroid was actually growing in the centre of a pool of slush which gave a temperature of 158°. We might add that some individuals of the human family swallow, with apparent impunity, beverages at almost any temperature between the freezing and scalding points.

—— At a recent meeting of the Horticultural Society of Berlin a report was read on the results of the deliberations of a committee previously appointed to consider the means of providing YOUNG GARDENERS with a more complete EDUCATION than is at present within their reach. The report includes a scheme of a course of practical and theoretical instruction, which if carried out must prove a great boon to the gardening community. Even now probably no country can produce a better educated set of gardeners than Germany, and there is no doubt that there are fewer quite illiterate men among her good practical gardeners than would be found in this and some other countries. The

committee, consisting chiefly of some of the foremost gardeners of Berlin, whose report was unanimously adopted, recommended the Society to petition the Minister for Agricultural Affairs to assist them in founding a high school for gardeners. It is unnecessary to say more than that the course of instruction proposed should confer a very liberal education. Candidates must have previously worked at least twelve months in some garden or nursery, and, after three years' instruction at the high school, undergo an examination—those who pass the examination to have the preference in filling up vacancies in all state appointments. Another subject before the Society was the formation of an arboretum and shrubbery in the vicinity of Berlin, with a special view to the instruction of the public in the selection of trees and shrubs suitable to the climate and other conditions. This is real horticultural work, and of more service than an extravagant number of expensive shows. Reading the history of our own Society, we are struck with the fact that too much wealth has been the cause of most of its disasters, as well as the neglect of the more modest yet more useful duties of such a society.

—— The WEST OF ENGLAND ROSE SHOW is fixed to take place at Hereford on Thursday, July 6.

—— We hear that the NATIONAL ROSE SOCIETY is making good progress, and there is no doubt that after the next meeting, when the schedule for the show is arranged, and a fuller programme of its intended operations is circulated, it will have a large accession of members. Several well-known rosarians in different parts of the country have consented to act as local secretaries, and to advance the interests of the Society in their neighbourhoods.

—— An excellent example of a highly successful MUSHROOM BED can now be seen at The Elms, Acton, the residence of C. O. Ledward, Esq. Mr. J. HEPPER, the gardener at The Elms, is a well-known exhibitor at the meetings of the Royal Horticultural Society, and at the one held on the 17th inst. he sent some baskets of Mushrooms of fine quality. They were grown in an ordinary Mushroom-house, the bed having been spawned on November 23, and the first crop of Mushrooms was gathered the week after Christmas. The bed presented an extraordinary sight a few days ago, for the Mushrooms were produced all over it in dense clusters. It is said that the mild, close weather has been eminently favourable to the production of heavy crops of Mushrooms; still there were evidences that the bed had been skilfully managed, and the large crop was owing to its excellent construction. Mr. HEPPER's method may not differ materially from that of other growers, but it may perhaps be useful to some to set it forth. The manure from the stable is mixed with three or four barrowsful of road scrapings, and then shaken up well three or four times till thoroughly heated; it is then taken into the house, placed in the wooden bed, and well rammed down into it. This occupies one day. The next day the bed is spawned by placing the pieces of spawn in the hot dung to the depth of 3 or 4 inches, and then the usual covering of soil is spread over it. A good loam is used, not sifted as is recommended by some, but simply crumbled small. Directly the bed is spawned it is at once put to work, and the temperature kept up to 90° for three weeks, and then altered to 65° or 70°, and ultimately reduced to 55°. This bed affords a constant supply, for two months at least, of such Mushrooms as a gardener may be proud to place on his employer's table.

—— The annual exhibition of the RICHMOND (Surrey) HORTICULTURAL SOCIETY is announced to be held in the Old Deer Park on Thursday, June 28.

—— We hear that Mr. WILLS has retired from his post as Floral Director of the WESTMINSTER AQUARIUM. The permanently planted specimens have had to suffer about as great hardships and torture as ever fell to the lot of plants, and the destruction from the effects of gas and a dry dusty atmosphere on the costly Tree Ferns, Palms, and other plants, is lamentable to witness. In spite of these disadvantages Mr. WILLS has contrived to the last to make a bright display of flowering plants, and a few days since the place was gay with Hyacinths and other spring flowers. About 40,000 flowering plants have been used during the season. Certainly the Aquarium is not the place to grow plants in, and it is no better adapted to show them in.

—— There was again a very full attendance at the monthly dinner of the HORTICULTURAL CLUB, at 4, Adelphi Terrace, on Wednesday last. Subjects of interest were discussed, and the following members elected:—George P. Hawtrey, Lanley Place, Slough; James Boyd, Paisley, N.B.; and E. Dixon, Covent Garden.

—— We learn from M. LINDEN, of Brussels, that the ADIANTUM SPECIOSUM noticed and figured by us at p. 41, and described as having been sent out by Messrs. VEITCH & SONS, was introduced by him. It came from the neighbourhood of Huancabamba, in Peru, and the stock was disposed of to Messrs. VEITCH & SONS, by whom it was distributed. M. LINDEN also informs us that another fine species of Maidenhair Fern, A. peruvianum, imported by him from Moyobamba, was disposed of in a similar way to the Messrs. VEITCH. We are glad to be able, in making this rectification, to give more definitely the habitats of the plants, which are two of the finest species of Adiantum in cultivation.

Home Correspondence.

The Royal Horticultural Society.—Since I was illegally deprived by the Society of a Life Fellowship granted for horticultural services, I have seldom adverted to its doings, or those of its supporters. It seemed more consistent with one's sense of self-respect to retire into the background and allow time to do its work in renovating the old Society or launching a new one. However, your oft-repeated remarks upon the devotion of horticulturists to the old Society as assumed to be proved by the good display at the little or great shows at South Kensington, suggests the utterance of some serious thoughts that have often occurred to me. You have been strong in the condemnation of the policy of the old Society. Even its last advance of policy—the admission of guineas Fellows—denuded of all power or honour but that of admission to see the wonderful sight the two and four guineaers who have brought the Society to its present disreputable condition shall in their superior wisdom provide for them—has met from you the condemnation which it deserves; and yet, running parallel with this, every year or other attempt to bolster up the Society in its present state receives the fullest, some call it fulsome, praise. How is this? Can a wrong be righted by supporting the wrong and praising all who support men or societies in wrong-being or wrong-doing? Is it, or is it not true that the Royal Horticultural Society has sacrificed the credit or the interests of horticulture to gratify a faction or conciliate fashion? If not this, where is the justice or the wisdom of the charges that are being constantly made against it by yourselves and others? And if these charges are true, why should the wisdom or public spirit of all those who support the Society in its said courses be held up to admiration or imitation? All such praise and such support seem to many of us to render reform more difficult, and reconstruction almost impossible. It seems quite a work of supererogation virtually to advocate that the best way to remedy an evil is to support it to the utmost of your ability. This is what all those who are making efforts to uphold the Society as it is seem to many of us to be doing. The public in this matter will stand aloof from the shows are probably better friends to horticulture than the horticulturists who, no doubt with the best intentions, hasten to make the exhibitions successful. There can hardly be a doubt that, as long as these and other sources of revenue are available, the Society will adhere to its present policy. Now that all other legitimate means of reforming have been tried to little purpose, the time seems opportune and ripe for a new policy on the part of horticulturists, which might be formed thus:—Either make the Society in fact as in name, horticultural in government, fellowship, policy, or no more horticultural products shall be forthcoming to support it; this would quickly starve the Society into submission or ruin. We have heard about the old ship *ad nauseam*: if she will consent to be overhauled, and if need be new manned, and above all will take a new tack, well; but if not, the sooner she founders the better. A larger vessel, with sounder timbers, tauter rigging, and much wider spread of canvas, is needed to do justice to the horticultural wants and capacities of the present day. Adaptation, enlargement, or reconstruction, these call for the earnest consideration of every true horticulturist. But all attempts at tinkering or bolstering up a Society simply because it exists, and that wholly by its own faults—which it still persists in—got into bad repute, is a policy wholly unworthy of the commanding genius and wonderful business and common-sense capacities of horticulturists. *D. T. Fish.*

—— "Oh, most lame and impotent conclusion!"—after all that is past, the Council thrown back into the arms of the South Kensington ensnarer, and the Society to continue its existence as a parasite on a rich London district. Is it not about time to form a new Society—a national society of horticulture—which will be maintained by the now great and every-day-increasing body of the horticulturists of the country? I have too many ties to the old Society, and too many friends among those who work it, to make me like to take an active part in raising a new one; but if any competent, energetic man will come forward, who, partly for the love of horticulture, and partly for an occupation and a post, is disposed to work the matter, I will show him that there is abundance of power and will through the country, which only wants being brought together and organised to make a great Society; and meanwhile, as there may be another turn of the wheel, and the Council may be driven to seek their main support from the more earnest horticulturists, let me beg those who are collecting names of would-be guinea Fellows of the Society when free, to increase rather than relax their exertions. *George F. Wilson.*

—— I have noticed a few remarks from the pen of Dr. Hogg in the *Standard* of January 20, and presume they may be taken as the official utterances of the Council, and there are one or two points in them that appear to be of very considerable interest at this moment. I will assume that the statement respecting the debentures having a charge against the surplus income after payment of its expenses only is a satisfactory one. This leads me at once to ask, What have our Councils in times past been doing? Should not the first moneys they had have been placed to the credit of their rent account? I know my landlords have always given me pretty clearly to understand that the first duty of the tenant is to provide for their calls to the moment, but here, according to the Secretary's own words, the Council have been guilty, to say the very least, of a great piece of folly in paying the interest of the debentures on some occasions, which is tantamount to an after-charge, and leaving the whole of the Society's property at South Kensington at the mercy of our landlords, whom he sees reason to think will assert their authority, and bid us depart bag and baggage. Viewed in the mildest light, it is about as unbusinesslike a way of acting as one can conceive, and I feel pretty sure they must have great doubts as to the real status of the debenture-holders to have acted in this way; for if not, they would seem to have acted disloyally in paying an after-charge, and leaving a debt unpaid on which, it might be said, the very existence of the Society seems to depend. The Secretary further states that the Council, in total opposition to the vehement and oft-expressed opinion of the great body of the horticultural Fellows, are again coquetting with the South Kensington interest. Why once more to have the gardens kept up in their dreary splendour—we are to have promenades, bands, &c. All this has been tried before, and did not pay. Why, then, will they try to exist on the traditions of the past? Why do not they recognise the necessity of moving with the times? Are Fellows to go over again all the old sores, heartburnings, and discontents without a satisfactory issue from them seeming possible. I sincerely hope in Mr. Wilson's scheme of reconstruction he will not forget to make some proper provision for the nomination, as well as the election, of members for the Council, &c. Our present form of receiving a printed notice of the names whom the Council recommend to fill the vacancies has long been a source of irritation and discontent to a large body of Fellows, who feel they are led by the nose without the proper power of resistance. A full nomination prior to the election would change all this, and give some real life and vitality to the impulses of the Society's affairs. *Robert Fence Glendinning.* [The remarks of the Secretary above alluded to have struck consternation into the breasts of the well-wishers to the old Society. We know not what to think, but we trust some explanation may be forthcoming. If not, the labour of the past few years has been indeed labour in vain. EDS.]

Double White Hepatica.—In the *Gardeners' Chronicle*, Oct. 14, 1876, p. 494, reference is made to the double white Hepatica. It has been for many years rumoured amongst growers of herbaceous plants that such a variety existed, but scarcely any one ever saw it. The late Mr. Donald Beaton frequently asked me if I had met with it. I think I can clear away the mystery respecting it. Some years since, when in the employment of Messrs. Hugh Low & Co., the late Mr. Hugh Low requested me to pot a quantity of double blue Hepaticas just to hand. I did so, and they were plunged in coal-ashes on the north side of a wall; most of them flowered, showing they were the right variety. Some time in

June or July following many of them threw up a second lot of flowers, every one of which were pure white and double. I remember showing some of them to Mr. Low. This I think does away with the double white Hepatica as a distinct variety, as all the plants that were not sold produced double blue flowers the next spring at their natural season of flowering. *William Heale.*

The Rainfall at Dynevor Castle, Llandilo.—It may interest some of your readers to see the amount of rain we have had in the west part of Carmarthenshire :—January, 3.83 inches ; February, 5.84 ; March, 3.93 ; April, 3.35 ; May, 0.60; June, 2.59 ; July, 2.43 ; August, 6.35 ; September, 6.40 ; October, 7.65 ; November, 5.96 ; December, 10.69—total number of inches, 59.62. The number of days on which 0.01 inch or more fell was 201, the greatest fall was on August 2, when 2.48 inches fell ; 2.28 inches also fell on October 8 ; and over 1 inch fell respectively on eight other days in the year. *J. Tyrhurst, Llandilo.*

Blackberries. — I think I before have recommended your readers to set up a Blackberry bed. The last year I had such a splendid crop, and so much enjoyed them, that I again most warmly recommend all who have not yet done so to at once get a stock from Fisher, Holmes & Co., Handsworth, Sheffield, from whom I had mine, with directions for their growth. With the addition of one-third Berberries, or a Lemon or two, they make a delicious tart ; and for a month or six weeks the beds here are always occupied by youngsters (and oldsters also) picking the fruit at a time when there is not much to be had in the garden. In your columns of September 4, 1875, Blackberries were so much commended, and again in number for November 6 "J. J." gives such excellent recipes for jelly, &c., that I feel sure many would much enjoy a row or two of the right sort in their gardens. Fisher & Co. call them "Parsley-leaved," and their leaves are so prettily cut that they are almost worth growing as an ornament, independent of their fruit. The last summer and autumn were with us so dry and burnt up that all bush fruits failed except the Blackberry bed. I should be glad if any of your readers would give their experience of the American kinds, and where they were procured from. *W. D. F.*

Fruiting of Trachelospermum jasminoides.—I have sent to you a few pods of seed of this plant, best known as Rhynchospermum jasminoides (fig. 19). We have several large plants on balloon trellises, they bloomed profusely last April and May, and as the flowers went off large numbers of these pods remained on all the plants. I have grown and flowered these same specimens for some years, and have not noticed their fruiting before, nor do I recollect having seen them in fruit elsewhere ; but for all that the occurrence may not be singular. When the pods are first seen, and for some time after, the tip ends of each pair are united, as in the specimens you will see marked ; after a time they disunite and grow apart. *John Wallis, The Gardens, Orwell Park, near Ipswich.*

How to Preserve Seeds.—Nearly every one knows to his cost the sad havoc made amongst early sown Peas and Broad Beans by rats and mice ; but, perhaps, all do not know that these pests will not touch any seeds that have been mixed with a little red lead and water before sowing. I have never known this treatment fail to protect Peas, Beans, Radishes, Broccoli, Lettuce, Mustard and Cress, &c., from the ravages of rats, mice, as well as of all kinds of birds. No nets are required for seeds of any kind where red lead is used, and it does not affect the germinating power of the seed in the least. It must be powdered lead that is used, and the cost is about 4*d.* per lb., but the cheapest way of purchasing it is to get a small barrel, and a propagating glass is a handy thing to mix it in. Just enough water should be used to make the lead stick to the seeds ; stir it round until it dries on and sow at once. *Robert Cocks, Edenthorpe.*

Fair Dealing in the Seed Trade.—The conduct of one of our old customers, who succeeded his father, an equally good man, has been so exceptional in a matter of business, and so thoroughly what an Englishman's dealings in business ought always to be, that I consider it is quite worthy of a place in your columns. Your readers may be aware that it has of late years, through absurd competition, been customary for the seed trade, long before they can possibly know what the harvest may produce, to sell their Peas, Beans, and all kinds of seed at a speculative price, by which legitimate trade is seriously damaged, and, as in this year of a generally deficient harvest, seeds have been sold in the summer at prices considerably less than their real value. The seed has, however, to be delivered at the price sold, whether the seedsman loses by it or not, but if the seeds have been sold at a higher price than they can be bought at after an abundant harvest, the seedsman is expected to reduce his price, so that he has to suffer in either case. And now for the case of our old customer. He had bought very cheaply and fairly in the autumn at a given price, the harvest has been short and the Peas he bought are worth double the price they were sold to him at. In settling his quarterly account he writes thus :—"January 10, 1877.—As your imperfect knowledge of the value of the Peas in the autumn caused you to put too low a price on them, I see no reason why I should derive an advantage from the circumstance, and therefore I request to be allowed to pay the worth of them. I have added £— to your account." If every man in business would treat his fellow with the same upright, generous, honourable spirit, that our old friend (who has little idea that we are writing of him) has done us, trade would be far more honest, and peaceable, and profitable, and the knaveries and trickeries of business would be unknown. *A Seed Merchant.* [Surely the names of those who act thus honourably should be made known. EDS.]

The Rainfall at Dale Park, Arundel.—The rainfall here for the past year was as follows :—January, 0.60 inch ; February, 2.73 ; March, 3.85 ; April, 2.20 ; May, 1.12 ; June, 1.28 ; July, 0.86 ; August, 3.28 ; September, 6.04 ; October, 1.77 ; November, 3.47 ; December, 8.76—total, 35.96 ; being an excess of 4.38 inches on the previous year. *E. Sandford.*



FIG. 19.—TRACHELOSPERMUM JASMINOIDES.

A, B, Fruit with plumose silky hygrometric pappus. A, Pappus in moist air. B, Pappus in dry air.

The Rainfall at Alnwick Castle in 1876.—As the fall of rain during the last year has been in this part much above the average of former years, it may be interesting to some of your readers to know the quantity fallen during the various months, as recorded in the gardens here :—January, 0.88 inch ; February, 4.23 ; March, 3.13 ; April, 4.40 ; May, 1.35 ; June, 3.42 ; July, 1.44 ; August, 2.60 ; September, 3.74 ; October, 1.06 ; November, 3.99 ; December, 8.38 : total rainfall in the year, 39.52 inches. The rain gauge stands 178 feet above the level of the sea, and 4 inches above the ground : the funnel is 5 inches diameter. The rain is measured always at 9 A.M. *Alex. Ingram, The Gardens, Alnwick Castle, Jan. 15.*

The Best Late Grapes.—Herewith I send you a bunch of each of the three sorts of late Grapes that, in my opinion and experience, have proved to be best—Muscat of Alexandria, Lady Downe's, and Gros Colman. You will observe that Gros Colman is extraordinarily thin-skinned for a late Grape, and that the flavour is by no means second-rate. *W. Wildsmith.* [The sample of Lady Downe's was first-rate. Gros Colman was tender and agreeable, but not equal to it in flavour. As always, Muscat of Alexandria comes first. EDS.]

Dracæna indivisa.—"J. G. M., Penzance," has mistaken what I wrote respecting this fine plant. I did not say that a specimen 9 feet high was only two years old, but that it was "about as many (*i.e.*, nine seasons) old." Nor was that other plant which stood

two winters out on an exposed cliff only two years old, for it was previously a well-established pot-plant, five or six years old, which, as the winds prevented its increasing in height, naturally subdivided into half-a-dozen easily detached portions. We have, in the garden, a very lovely D. australis which has twelve stems, all about equally tall, and spreading outwards. Such a plant as this would be much remarked anywhere. But I am pleased to hear that Dracæna indivisa reaches to 12 feet high in Cornwall, for, if so, then here in the Channel Islands we may also look to see it quite as lofty. As yet it is, comparatively, unknown in the islands. Attention has been lately drawn to the beauty of this plant in a contemporary, and young specimens are now being offered for sale at very high prices, so that, considering how readily some parts of the Scilly Isles could be made into nurseries of it, there may be persons willing to do so. But the particular reason of my mentioning the fact of its doing fairly well on the seashore was to show how much less delicate its habit is than is supposed, while on lawns its peculiarly striking appearance would be a desirable feature, even if a little protection were given during the severest weather only. *Thos. C. Brehaut.*

The Gros Guillaume Grape.—At the autumn fruit show of the Royal Horticultural Society of Ireland, held in the Exhibition Palace, Dublin, on November 9 last, Mr. Roberts, gr. to the Countess of Charleville, exhibited some very fine examples of this Grape, three bunches of which weighed 45 lb. 6oz. Mr. Roberts has kindly favoured us with a photograph of the heaviest of the three bunches, which weighed 16 lb. 6 oz., and the form and massive character of this excellent example of Mr. Roberts' skill as a Grape grower is well pourtrayed in the accompanying illustration (fig 20). Mr. Roberts considers his the true variety of Gros Guillaume, which is different to the ordinary forms in cultivation. At the same exhibition Mr. Roberts staged three bunches of Child of Hale, weighing 18 lb., and also a fine sample of Gros Colman. For these highly meritorious productions the Council of the Society subsequently awarded Mr. Roberts a silver medal. EDS.

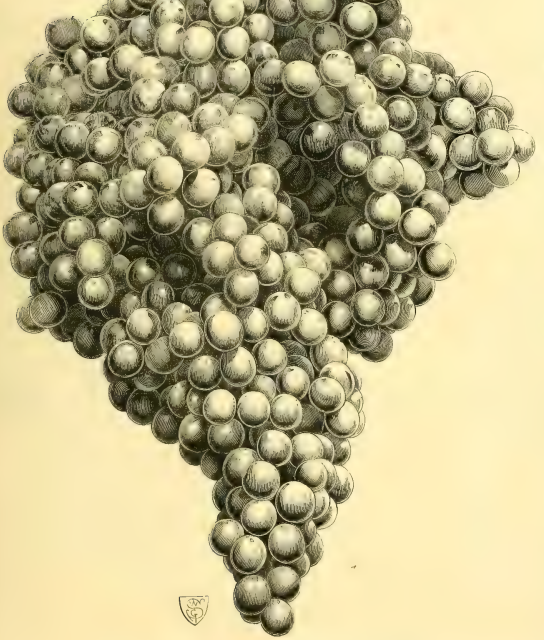


FIG. 20.—GROS GUILLAUME GRAPE GROWN BY MR. ROBERTS.

Poinsettia Culture.—A simple and successful mode of Poinsettia cultivation that may suit "Enquirer's" convenience came under my notice about twelve years ago, and up to the present time I have not seen a better. Commencing with the ripened plant, which generally swells up its buds about April and May, let these buds be taken off with an inch of the old wood attached and put into 3-inch pots horizontally, in a similar manner to Vine eyes, with the point of the bud just level with the surface of the soil. Then plunge into a bottom-heat of about 75° or 80°; round the sides of a Cucumber or Melon frame is a capital position. Care should be taken not to let them get too wet until growth commences, which will be in about three weeks. When fairly rooted they should be removed to a cold frame, always kept close to the glass, and never be overcrowded. They may be potted in July into 4 or 5-inch pots, using good loam, with a little well-rotted manure and sand, again placing them in a cold frame close to the glass, and exposed to the light and air till the end of September, when they should be housed and receive a little fire-heat on cold nights. The temperature should never fall below 55°. A little weak guano-water may be given weekly when the pots become filled with roots. Plants grown in this way are stout and very short-jointed, retain their leaves to the pot's edge, and rarely exceed 12 inches in height, with scarlet heads 8 to 12 inches in diameter. If very dwarf plants are required they may be had by later propagation. *J. H. Goodacre, Elvaston.*

A Question for Vine Growers.—I should feel very much obliged to any of your correspondents who occasionally favour us with their useful and practical remarks on Vine culture in your columns, if they would give me their advice in the following case. I have some very long ranges of Vines, Black Hamburghs and Muscats, which have been forced for early work for twenty-five years past and have borne good crops during that time. They have received good treatment and have not been over-cropped, but the last few years they have shown signs of getting tired of the forcing, breaking weaker and with less fruit, this being more especially the case with the Hamburghs, the Muscats producing much stronger wood. The borders are outside and on the side of a hill, with porous rocky bottom. They are mulched each year with stable-manure, and now and then the surface-earth is peeled off and replaced with fresh, but the main roots have gone deep, so that this only seems to affect the surface ones. Would there be a chance of bringing them once more into bearing if the old rods were cut down so as to allow a young cane to take their place, or will it be necessary to root out the worn-out Vines and plant young canes? The latter course would be expensive, on account of the loss of crop. I feel sure there must be many whose houses are in a somewhat similar state to mine, and I shall be grateful to any one who will give me a practical hint as to the best course to pursue. *E. P., Jersey.*

Luminous Mycelium.—With reference to the letter of "W. G. S." in your last number, I had hoped to have sent him a piece of the luminous mycelium with the fungus upon it. Unfortunately the recent rains have caused a landslip, which brought the whole stump down and covered it with earth; there were some fragments of luminous wood, but only a small piece of fungus could be recovered. *H. King, Chithurst, Jan. 22.*

Euonymus japonicus.—I herewith send you two small branches of fruit of the Euonymus japonicus, or Japanese Spindle Tree. The plant from which I gathered them is 10 feet high and nearly as much through. It is covered with the berries, which have proved useful during the past festive season in the absence of Holly berries. My attention was called during the past summer to a plant growing at Havre des Pas, near the sea, which was then covered with clusters of small greenish white flowers. I have watched that and other plants, all growing in very sheltered situations, and seeing the pretty fruit in such abundance on this particular plant this morning I send it to you. Although I have known this plant more than forty years I never recollect to have seen it in flower or fruit before. It, as well as the golden-leaved variety, is used extensively here for planting hedges with, and answers the purpose admirably where no particular power of resistance is required. *Charles B. Saunders, Jersey.*

Cedars of Lebanon.—In Mr. Evershed's interesting article on the Cedar of Lebanon he observes, at p. 40 of the *Gardeners' Chronicle*—"In Evelyn's *Silva* of 1664 he does not mention the Cedar of Lebanon, and we may, therefore, be sure that it had not then descended from its Syrian mountain to the congenial level of the banks of the Thames," but though Evelyn in the pages which he devotes to the tree he loved so well by reputation, points to his knowledge of it as not growing then in England, it seems due to his great desire to introduce it to note his endeavours towards its growth. In the opening sentence of vol. ii. of the *Silva* he mentions its power of enduring cold "on the mountains of Libanus, from whence I have received cones and seeds of those few remaining trees. Why, then, should it not thrive in Old England? I know not, save for want of industry and trial." Having got his cones Evelyn appears to have been in no way backwards in his own exertions, for at p. 9, after a description of the trees on "Mount Lebanon," he observes relatively to the

culture :—"The seeds drop out of the cones as the Fir and Pine kernels do when the air, sun, or moisture open and unglue the scales, which naturally it else does not in those of the Cedar till the second year, but which after all the preparations of burying in holes in the earth and sand in which they are after to rot, may more safely be done by exposing the clogs discreetly to the sun, or before a soft and gentle fire, or, I think best of all, by soaking them in warm water." How he succeeded he does not mention in his paper dedicated to the Cedar, and in his letter on the "damnage" to his trees by frost of the preceding winter, written April, 1684 (see *Philosophical Transactions*, 1684), and printed in the collection of his miscellaneous writings, his remark, when speaking of his "Exotics"—"My Cedars, I think, are lost," may refer to other species. Still whether or not Evelyn was, as Loudon thinks probable, the introducer of the Cedar into England, there is much of interest in the certainty of his having himself imported the cones from Lebanon, and experimented on their treatment. *O.*

—— We have here an old Cedar of Lebanon, variously estimated at from 200 to 260 years old, and which at 4 feet is 19 feet 9 inches in circumference. It is in perfect preservation, and the spread of the two longest lateral branches is 92 feet. *G. Crowhurst, Gr. to A. Duncan, Esq., Holbrook, Childhurst.*

Weather Folk-lore.—It is an old saying with the people round here (Atherstone), "Where the wind is on Martinmas Eve (November 11), there it will be the rest of the winter." It has proved true so far—it was south on the Eve, and it has been there most of the time ever since. Another saying is, "Where there are two full moons in one month there are sure to be large floods." This also has proved true—there were two full moons in December, and disastrous floods. *W. Brown, Merivale.*

Condition of Vine Roots.—I am glad to be able to send you some information respecting the condition in which I found the roots of some Vines that I uprooted here in June, immediately after the fruit was cleared off, in order to replant with young Vines the same season. These Vines were started at the end of November, and were planted in an inside border with apertures in the front wall to enable the roots to ramble outside at pleasure. When clearing out the old border we found very few living roots inside the house, the greater part, and by far the healthiest, were outside—the roots were only just starting, apparently in both inside and out at the same time. The outside border had been covered with a slight hotbed to protect it from severe weather. The Vines were tolerably healthy, and produced a moderate crop of fruit. Had I the opportunity to build vineries as I pleased, experience teaches me to have inside borders for (very) early and (very) late Grapes only, for Vines planted in small inside borders flourish only for a short time. Ordinary season Grapes, say from July till November, are much more satisfactory, and of much longer duration, especially where there is good drainage. The finest house of Black Hamburghs I ever saw was where all the roots were outside, and the best finished Muscats were all inside. As a constant reader of the *Gardeners' Chronicle*, I can answer for myself that I do not wish in any way to discourage Mr. Wildsmith from putting his views before the gardening world, but shall be ever ready to accept them at their worth. It would be well, however, for him to remember that Heckfield is very favourably situated, as many things only half-hardy flourish there, while in other places things very hardy will only just live. *J. H. Goodacre, Elvaston.*

Reports of Societies.

Botanical, of Edinburgh : *Jan.* 11.—Dr. Cleghorn in the chair. The following communications were read :—

1. Obituary Notices of Members Deceased during 1875-76. By Professor Balfour and Mr. F. M. Webb.

2. Account of an Excursion made to Ben Nevis, in Inverness-shire, in July last, by the Scottish Alpine Botanical Club. By Mr. John Sadler, Secretary to the Club. (This paper we shall publish shortly.)

3. Notice of some British Plants in the University Herbarium, at the Royal Botanical Garden, part 3. By Mr. F. M. Webb.

Of Elodea (the American Water-weed) Mr. Webb mentioned that the earliest specimens contained in the collection were from Dr. Johnston, 1848. Of Najas, he showed a series of the Irish plant sent by Professor Oliver, its discoverer, in 1852, to Professor Balfour, in 1874; and of the Scotch plant the original specimens picked August 13, 1875, by Messrs. Robb and Sturrock, with Mr. Robb's letter asking identification. The collection of Potamogetons he stated to be very good, including many from Mr. Kirk, and their value increased by the whole having passed through the hands of Dr. Boswell in the preparation of *English Botany*. Of Salix he stated the Herbarium contained a very fine series, including the original and recent issues of Rev. J. E. Leefe, a rich collection of alpine forms of Dr. Greville's gathering, and a valuable set of specimens obtained many years ago by Professor Balfour from Sir W. J. Hooker, being duplicates probably of those mentioned by Hooker in his introductory remarks to the Willows in *Flora Scotica*, consequently types of the plants therein described, besides representing the determinations of Mr. Crowe and Sir J. E. Smith. In speaking of S. Grahami, he quoted Mr. Watson's statement, that Dr. Graham assured him the plant as brought from Sutherlandshire was only herbacea, and stated that if the plant now labelled S. Grahami in the Edinburgh Botanic Garden was the same, it had certainly again reverted to S. herbacea, for it undoubtedly was nothing more. Perhaps, however, the original had been lost. Of the latest addition to the British Willows, viz., S. Sadleri, Mr. Sadler had given his original specimens to a collector. Of S. Oakesiana, Mr. Webb said the collection could fairly challenge competition, it numbered some eighty sheets of specimens, the bulk being the material Dr. Greville accumulated as the basis of his paper read to the Society, March 11, 1841, in which he showed that the bond botanical characters by which Quercus pedunculata, intermedia, and sessiliflora are distinguished pass insensibly and completely into each other. Reverting to the genus Rumex, he showed specimens, and gave a list of localities in the three Lothians, Fife, and Roxburgh, for R. pratensis, which is not mentioned in *Cybele Hibernica*. He also spoke of R. conspersus as likely to be found where R. domesticus (aquaticus) prevailed, and mentioned its occurrence in large quantity by the Tweed above Kelso, along with that species ; and of R. rupestris, only recently brought into the British list, but found by Mr. Sadler, and visiting Oban, another plant by the Rev. W. W. Newbould in 1841. Mr. Webb exhibited two sheets of specimens collected by Professor Balfour at Babbicombe in 1839, which, with queries and interrogations, had lain undetermined from that time in the Rumex folios of the Herbarium.

4. Notes on the Localities for Erica vagans in Scotland. By Professor Balfour.

Dr. Balfour stated that he had lately received a letter from Mr. James Bagnall, Birmingham, informing him that a gentleman (Mr. John Docura) had gathered in September last specimens of Erica vagans growing on the hillside within half-a-mile of the inn at Stronachlachar near the head of Loch Katrine, Perthshire. There was no doubt as to the plant (a specimen of which was exhibited) and the locality, but the question was as to its being in a wild state and a native in the locality. This has not been proved, and Dr. Balfour looked upon it as an accidental escape from some garden. Erica vagans seems in Britain to be confined to the county of Cornwall. Out of it, never been reported from other counties, but the localities are all very doubtful. The English counties mentioned are Devon, Gloucester, Worcester, Glamorgan and Derby, and the Scotch counties Argyle and Inverness, and now Perthshire. Some years ago Dr. Balfour was informed by the late Mr. Robert Traill, of Aberlady, that the plant grew on the hills near Lochgilphead, and accordingly visited the district in September in 1868, but failed in finding it. After visiting the hills he went to Sir John Orde's house at Kilmory, and there, in the district, met to saw abundance of the Erica vagans both in the garden and outside of it. The plant seeds well, and is scattered far and wide.

In 1836 Mr. George Dodds, then a student of medicine, sent Dr. Balfour a specimen of the Heath from the neighbourhood of Inverness. In the *Proceedings of the Botanical Society* for 1837, the following statement occurs :—"Mr. W. H. Campbell read a letter from Mr. Robert Ball, of Dublin, to Sir W. J. Hooker, mentioning that Erica vagans had been discovered by Dr. Burkett on an islet on the coast of Waterford, near Tramore, in Ireland." In Baker and Tate's *Flora of Northumberland* it is stated that there are fine specimens of the plant in Robertson's collection in the Newcastle Museum, labelled "Near Corbridge, July 1844, T. Johnson." In his *Cybele*, vol. ii., p. 150, Mr. H. C. Watson says that Erica vagans is only known, with certainty, in a few localities in Cornwall, chiefly on the Lizard. In his *Topographical Botany* of 1873 he mentions only Cornwall for the plant, and refers to the other stations as misreported or planted.

5. Holly in Flower at Christmas. By Mr. M'Nab.

At the last meeting of the Botanical Society I called attention to the great scarcity of Holly berries on the trees and bushes round Edinburgh. Since that time I have received numerous letters on the subject from correspondents in various parts of the kingdom. From these I learn that the scarcity has been very general, and different causes are assigned for it. The only places where an abundant supply of berries was noticed were in some of our Highland districts, such as at the Trosachs and Loch Katrine, also at Lochard in Aberfoil. One correspondent, at Ranelagh, near Dublin, informed me that, on sending into the garden before Christmas to collect what sprigs of Holly could be got with berries, instead of berries, of which only a few could be procured, they found that several of the trees were covered with clusters of white and cream-coloured flowers. I immediately wrote for specimens, which I now place before the Society, on which all the flowers, both open and past, are hermaphrodite. The cause assigned for this early blooming was, that the blossoms must have been destroyed by snow and frost on April 14 last year. During the past summer many of the plants had nothing to do in the way of maturing fruit, so flower-buds had been formed and the blooms opened before their time. What effect this early blooming will ultimately have on the Holly, another year will tell. On looking over the Holly bushes now in the garden young buds are observed to be very abundant, but so backward that flowers cannot be expanded for months to come ; so there is a fair appearance of fruit for next Christmas, if no untimely frost should occur. Some correspondents allege that the late wet autumn had much to do in causing the berries to fall off while in a green condition. This may have been the case in some places, but here they were not in such quantities as to fall. The few which did ripen are those which must have been in the best condition, and partially sheltered at the time the general blooming was destroyed.

6. Effects of the Late Moist Autumn on Certain Plants. By Mr. M'Nab.

The autumn of 1876 has been particularly unsuitable for ripening the flower-buds of many of those plants which are generally lifted from the open air during the months of October, November, and December, for the purpose of subjecting them to artificial heat, and thus bringing them into flower during the winter season, both for conservatory and table decoration. Rhododendrons, particularly the early flowering varieties, known and cultivated as the R. Nobleanum breed, are exceedingly useful for this purpose. They are lifted in flower-bud, and forced almost every year. Although many of those lifted last autumn were apparently well-budded, few of them seem to have been properly ripened, as few flowers have been developed. The scarcity of Rhododendron flowers at this season seems very general, particularly in the gardens and nursery establishments round Edinburgh, and I am inclined to think, from the high prices of flowers quoted in Covent Garden Market, that the scarcity is not alone confined to this district. Judging from the unmatured state of those Rhododendrons already experimented on, I have no hesitation in saying that the number of imperfect blooms has in a measure been caused by the unusually great deficiency of sun during the autumn and winter months, and the almost incessant rains experienced during that time. At this period the effect is well marked on all the early flowering Rhododendrons, but what it will be on the late-flowering varieties, as well as on the blossom of the more valuable kinds of standard, it is difficult as yet to say. Rhododendrons, as a rule, particularly if the buds are well ripened in autumn, and even under an ordinary clear sky, are generally much more easily forced into bloom than those specimens put into heat, and which have not been subjected first to a certain amount of autumn or winter frost. Even the frost of last November has had no effect on those already tried, the buds not being sufficiently matured beforehand for this purpose. The early flowering Hyacinths, Tulips, and Narcissus, as well as many other plants, are also observed to be far from strong, probably owing to the late useless weather experienced since they were subjected to heat.

Dr. Paterson mentioned that at Airthry Castle the Peach blossoms this season were all white instead of pink, which was probably for want of sun.—Mr. Dunn stated that such was the case more or less in Peach-houses at Dalkeith, and moreover the flowers were small and thin in the petals, nevertheless they were setting well.

Miscellaneous Notices.—1. A letter was read from Mrs. Dalziel stating that the Holly bushes in the neighbourhood of Lochard had this season a heavy crop of berries. Specimens of fruiting branches were exhibited. Mr. Dunn stated that at Drumlanrig, in Dumfriesshire, the Hollies had fruited abundantly this season.

2. Mr. John M'Kerron presented specimens of Cyclopteris flabellata, Goldenhead, and Leprodendron from Wigan coal-field.

3. Dr. Paterson, Bridge of Allan, exhibited a large growing plant of Lycaste Skinneri with monstrous flowers.

4. Dr. Cleghorn presented dried specimens of Eremostachys superba, the stems and leaves of which when pounded up are used for poisoning fish in some parts of India. Also specimens of Reptonia buxifolia from Peshawar Valley. The tree, which grows from 6 to 12 feet in height, yields a small edible berry. It is called Gürgüran.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, JAN. 24, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading reduced to 32° and corrected from Average Local Error	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure from Mean of 15 years	HYGROMETRICAL DEDUCTIONS FROM GLAISHER'S TABLES 5TH EDITION. Dew Point.	Degree of Humidity Sat. = 100.	WIND. Average Direction.	RAINFALL.
Jan.	In.	°	°	°	°	°	°			In.
18	29.59	48.5	28.8	19.7	41.8	+ 7.9	40.2	93	S.S.E.	0.60
19	29.73	50.8	38.4	12.4	46.0	+ 12.2	43.9	89	S.W.	0.04
20	31.85	49.0	30.9	18.1	41.7	+ 7.9	43.5	88	E. to N.E.	0.00
21	30.45	47.2	40.2	7.0	43.7	+ 9.9	42.3	96	N.W. to Calm	0.00
22	30.40	46.2	36.3	9.9	41.8	+ 8.1	40.2	93	S.	0.00
23	30.14	49.0	39.4	9.6	44.2	+ 10.6	42.0	89	S.	0.00
24	29.56	48.1	40.2	7.9	44.2	+ 10.7	43.5	96	S.E. to S.W.	0.16
Mean	30.07	48.5	36.5	12.0	44.2	+ 9.5	42.4	85	S.	sum 0.80

Jan. 18.—A dull overcast day. Occasional rain. Mild.
— 19.—A very cloudy day. Rain fell in morning. Strong wind. Very mild.
— 20.—A dull gloomy foggy day. Mild.
— 21.—A fine cold day. Bright and clear. Fog in morning.
— 22.—A very fine clear day. Cool. Hoar-frost and fog in morning.
— 23.—A very fine bright day. Hoar-frost and slight fog in morning.
— 24.—A fine day, light clouds. Cool. Rain fell in early morning.

LONDON: *Barometer.*—During the week ending Saturday, January 20, in the vicinity of the metropolis the reading of the barometer at the level of the sea decreased from 30.07 inches at the beginning of the week to 29.56 inches by the morning of the 14th, increased to 30.14 inches by the evening of the 15th; decreased to 29.78 inches by the evening of the 18th, and increased to 30.55 inches by the end of the week. The mean reading for the week at sea level was 29.97 inches, being 0.22 inch above that of the preceding week, and 0.06 inch above the average.

Temperature.—The highest temperatures of the air observed by day ranged from 58½° on the 19th to 45¾° on the 15th; the mean for the week was 51¾°. The lowest temperatures of the air observed by night varied from 33¾° on the 15th to 47¾° on the 19th; the mean value for the week was 39¾°. The mean daily range of temperature for the week was 12¼°, the greatest range in the day being 14¾° on the 20th, and the least 9½° on the 17th. The mean daily temperatures of the air were as follows:—14th, 43°.9; 15th, 38°.8; 16th, 46°.2; 17th, 48°.3; 18th, 44°.8; 19th, 53°; 20th, 43°.5; and the departures in excess of their respective averages were—7°.4, 2°.3, 9°.5, 11°.5, 7°.9, 16° and 6°.3. The mean temperature of the air for the week was 45°.5, being 8°.7 above the average of sixty years' observations.

The highest reading of a thermometer with blackened bulb in vacuo placed in sun's rays, were 81½° on the 15th, and 65° on the 19th; on the 14th 51° was the highest reading. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 30¾° both on the 15th and 20th, and 34° on the 16th; the mean reading for the week was 35½°.

Wind.—The direction of the wind was S.W., and its strength brisk at times. The weather during the week was generally dull, cloudy, and showery, but still very mild. Fog prevailed on Saturday the 20th.

Rain fell on five days during the week; the amount collected was 0·47 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 58½° at Blackheath and 57¾° at Cambridge; at Plymouth 54° was the highest temperature. The mean value from all stations was 56½°. The lowest temperature of the air observed by night was 31° at Manchester; at Portsmouth and Liverpool 36½° was the lowest temperature. The mean from all stations was 34½°. The range of temperature in the week was the least at Brighton and Portsmouth, both about 19¾, and the greatest at Manchester, 26°. The mean range of temperature in the week from all stations was 22½°.

The mean of the seven high day temperatures was the highest at Truro, 53°, and the lowest at Hull, 48°; the general mean from all stations was 50½°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 34½, and the highest at Portsmouth, 43½; the mean value from all stations was 39°. The mean daily range of temperature in the week was the greatest at Birmingham, 14¼°, and the least at Bradford, 8¼°; the mean daily range from all stations was 11½°.

The mean temperature of the air for the week from all stations was 44½°, being 5¼° higher than the value for the corresponding week in 1876. The highest was 47½°, at Portsmouth, and the lowest 41°, at Wolverhampton.

Rain fell on every day in the week at Plymouth, Nottingham, and Bradford, and on five or six days at most other stations. The amounts measured during the week varied from an inch and six-tenths at Plymouth, an inch and four-tenths at Truro, and an inch at Liverpool, to three-tenths of an inch at Cambridge and Norwich; the average fall over the country was seven-tenths of an inch.

The weather during the week was cloudy and dull, showery, but very mild. At Brighton on January 19 the highest temperature was 54·7°, and is the highest temperature in January during thirty-seven years; and Saturday, January 20, was the first day without rain since December 24, 1876, at Brighton.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 53° at Leith to 48° at Dundee; the mean from all stations was 50¾°. The lowest temperatures of the air varied from 27° at Perth to 34° at Dundee; the mean value from all stations was 32°. The mean range of temperature from all stations was 18¾°.

The mean temperature of the air for the week from all stations was 40¼°, being 4° lower than that of England, and 3° higher than the value for the corresponding week in 1876. The highest occurred at Paisley and Leith, both 42°, and the lowest at Perth, 38¾°.

Rain.—The amounts of rain measured during the week varied from 2½ inches at Greenock and 2¼ inches at Paisley to rather more than three-quarters of an inch at Aberdeen and Leith; the average fall over the country was 1¼ inch nearly.

DUBLIN.—The highest temperature of the air was 54½°, the lowest 29¾°, the range 25°, the mean 43¾°, and the fall of rain 1.05 inch.

JAMES GLAISHER.

Obituary.

IT is our sorrowful duty to announce the death of Mr. ALEXANDER CAMPBELL, which took place at his residence, 11, Thyrsa Street, Chorlton Road, Manchester, at the advanced age of four score and two years. Mr. Campbell, who some fifty years since was gardener to the Comte de Vandes at Bayswater, left that situation in December, 1831, to take charge of the Botanical Gardens, Manchester, and right faithfully did he discharge his trust for nearly thirty years; for not only was there a rich collection of flowering plants, Palms, &c., got together, but at one time there was also a fruit department in the gardens, and Pine-apples, Grapes, and Peaches "claimed kindred there;" and as the "olive branches" of our merchant princes were constant visitors to the gardens, and childlike craving information, the curator was always a centre figure in the group, for—

"A man he was to all the country dear."

How many grown-up amateurs have dated their first knowledge of plants from Mr. Campbell may never be known, but the seeds were sown, and we are happy to say the crop is heavy, for the gardens within thirty miles of Manchester are at this day rich in floral wealth, as the grand annual exhibitions amply testify. Mr. Campbell, by his extensive acquaintance with the great growers of new and rare plants in London and in the provinces, collected a mass of choice specimens with which the gardens were enriched. Mr. Campbell's kindly welcome to strangers visiting the gardens may have had much to do with their making him presents of plants and seeds in return, for friendship's sake, for he was passionately fond of plants, and seemed always thankful for any addition to his collection, which he had loved so long and so well; and now that he has gone to his last resting-place in the Salford Cemetery (Mrs. Campbell had gone before him some years since), loving hands placed a wreath of flowers upon his coffin.

Mr. Campbell, who by his name, as one would suspect, was a native of Scotland, having been born in the parish of Contin, Ross-shire, never wholly discontinued the northern form of speech. His name may yet be found in the Gaelic Family Bible, as is the customary register of that time and place. His long and extensive experience made him like a book of reference to those who sought information on plant lore. He was a corresponding member of the Horticultural Society in its palmy days; and the late Mr. J. C. Loudon constantly consulted him when he was his neighbour at Bayswater. He has left a valuable library of books on botany, natural history, &c., to his son and heir, who has been the prop to his honoured parent in his declining years. Mr. Campbell was able to walk until within a few months of his decease; he had no particular ailment, and died from decay of Nature. The writer saw him only one day before he died, in his last peaceful sleep, breathing calmly as a child. *A. F.*

Enquiries.

He that questioneth much shall learn much.—BACON.

162. CHARCOAL FOR VINE BORDERS.—Which is the best way of putting charcoal in Vine borders for assisting Grapes to colour? Is it any use putting charcoal into old borders for that purpose? If so, what quantity is required for a border 15 feet by 20 feet? *E. B.* [See Mr. Wildsmith's communication at p. 718, vol. vi. EDS.]

163. RAISING STOCKS IN SCOTLAND.—What month do they usually sow Cherry stones, Apple and Pear pips, for stocks in Scotland? *W. H.*

164. ROMAN HYACINTHS.—*M. M.* asks if any one can tell him the early or late early-flowering white Roman Hyacinths, which have been largely cultivated for winter-flowering during the past few years. They seem quite constant to the diminished growth and loose spikes of smaller flowers which have characterised them from the first, and their odour is different—sweeter than that of the common Hyacinth, and suggestive of specific difference. The flower, too, is different in form, being shorter and broader in the tube than the blue specific types of Hyacinth grown in botanic gardens. They have been sometimes referred in gardens to Bellevalia romana, but have nothing to do with that plant, being true Hyacinths. Do they come from any distinct wild stock? Or are they reversions selected and perpetuated by the Dutch florists?

165. DIGGING MACHINE.—Has such an implement as a digging machine, capable of being worked by a small steam-engine, or in fact, any other form of digging machine, ever been invented and brought into practical use? *G.* [Mr. J. H. Knight, Weybourne House, Farnham, is the inventor of a digging machine, which was tried, and we believe successfully, in one of the Kentish Hop-gardens last autumn. EDS.]

Answers to Correspondents.

BONE DUST: *North Lincoln.* 8 to 10 cwt. per acre of bone-dust is a common dressing in Cheshire. It would probable be a more economical, and equally permanent improvement of the land if you were to get a growth of grass by applying 2 cwt. per acre of nitrate of soda at two dressings, in March and April respectively, and then feed off the growth with sheep and cattle, giving them decorticated cotton-cake on the land all the summer.

CINERARIA LEAVES: *Cor.* The markings are the work of a grub which tunnels through the substance of the leaf. Watch in the evenings, and pick off and burn every affected leaf.

CHIMONANTHUS FRAGRANS: *J. M.* Hardy against a wall, and will grow well under ordinary treatment.

CORNUS ALBA, ETC.: *G. F. M.* The red stems of this shrub are more ornamental than those of Cornus mas, which are green. C. alba should not be planted under trees. Ivy will keep rain from falling on a wall, and will so far tend to dry it; but if the damp arises from an imperfectly built foundation it will not stop the damp from rising, nor will any other plant. Cement it.

CREEPERS: *North Lincoln.* Crataegus pyracantha, Hedera Regnieriana, Smilax rotundifolia, Lonicera brachypoda (nearly evergreen), Bridgesia spicata.

DARLINGTONIA: *J. M., Dublin.* The Darlingtonia of De Candolle, not a Leguminous, is the name to be abandoned, as it is a mere synonym of Decumanthus. Darlingtonia of Torrey, nat. ord. Sarraceniaceæ, is to be retained as correct, according to the latest views.

GARDEN ENGINE: *A. B.* See engine you inquire about is sold by Messrs. Barnard, Bishop & Barnard, Norwich. See our last vol., p. 175.

LOVE IN A MIST: *J. F.* The popular name of Nigella damascena.

MILDEW: *F. B., Sunk Island.* A low temperature in conjunction with a moisture-saturated atmosphere will produce mildew on Vines. The remedy is to be found in keeping the air in the house brisker and drier, and in dusting the affected parts with flowers of sulphur.

MONSTROUS MUSHROOM: *J. Hopkins.* A not very unusual occurrence.

MOSSES: *J. B.* Try Berkeley's *Handbook* (Reeve & Co.).

NAMES OF FRUITS: *J. G.* The name of Black Gilliflower is quite correct. See American fruit lists.

NAMES OF PLANTS: *H. D.* 1, Libonia floribunda; 2, Justicia speciosa; 5, Nephrodium molle. Of the others, send better specimens.

*** Numerous communications are unavoidably post poned.

ERRATA.—At p. 80, col. *c*, for "M. Pringsheim," read "M. Prillieux." At p. 89, col. *a*, for "Thuja Cavendishii," read "Musa Cavendishii."

PUBLICATIONS RECEIVED. — The Various Contrivances by which Orchids are Fertilised by Insects, by Charles Darwin, M.A., F.R.S , &c. 2d edition, revised. Murray.—We have received from M. Rothschild, Paris, the following new publications and reprints :—Les Aliments ; Guide Pratique pour Constater les Falsifications des Farines, Fécules, Cafés, Chocolats, Thés, Epices, Aromates, &c. Translated from the German of A. Vogl by Ad. Focillon.—Les Ravageurs des Vergers et des Vignes avec un étude sur le Phylloxera, par H. de la Blanchère.—Les Ravageurs des Forêts et des Arbres d'Alignement, par H. de la Blanchère et le Docteur Eugène Robert. Fifth edition. — Les Papillons ; Organisation, Chasse, Classification ; par A. Depuiset. 2d edition. — Les Champignons. 4th edition. Par F. S. Cordier. — Les Prairies Artificielles, par Ed. Vianne.—Stormouth's English Dictionary. 3d edition. W. Blackwood & Sons, Edinburgh and London.—Proceedings of the Academy of Natural Sciences of Philadelphia. Part 2, 1876. Philadelphia : Academy of Natural Sciences.—The Popular Science Review. Hardwicke & Bogue, 192, Piccadilly.—Dictionnaire de Botanique, par M. H. Baillon. Paris : Hachette et Cie.—Bulletino della R. Società Toscana di Orticultura.—Illustration Horticole.—An Essay on South Wales, the Mother Colony of the Australias, by G. H. Reid (Trübner & Co.)—Forage Plants and their Economic Conservation, by T. Christy, jun. 155, Fenchurch Street.—Design and Work. Part 1, vol. 2. — The Cactus and other Succulents, by H. Allnutt. 200, Fleet Street.

CATALOGUES RECEIVED : — William Henderson (86, Hamilton Street, Birkenhead), Gardeners' Calendar and Catalogue of Garden, Farm, and Flower Seeds.—Messrs. Carter & Co. (237 and 238, High Holborn, London), Catalogue of Select Vegetable and Flower Seeds.—Messrs. W. Samson & Co. (Nurserymen, Kilmarnock), Spring Catalogue of Seeds, Plants, and Implements.—Messrs. Vilmorin-Andrieux & Co. (4, Quai de la Mégisserie, Paris), General Catalogue of Vegetable and Flower Seeds. — Messrs. Ireland & Thomson (20, Waterloo Place, Edinburgh), Descriptive Catalogue of Vegetable and Flower Seeds, Gladioli, Implements, &c. — Messrs. J. Farrar & Co. (86, Golden Lane, Barbican, London), Wholesale Trade Catalogue of Garden, Agricultural, and Flower Seeds.

COMMUNICATIONS RECEIVED.—H.—A. B. P.—R. Hall.—C. E. —J. B.—G. L. D.—H. E. O.—H. G. R. J. H. (thanks).—T. Reid.—W. H.—R. W.—J. S.—W. J.—A. S. K. (many thanks).—S. J.—N. F.—J. L. L.—C. A. L.—R. M.—W. E.—Young Gardener.—M. S. D. M.—J. V. V. (with thanks).—W. W., Adelaide.—C. E. W.—E. P.—J. C. B.—A. E., Munich.—W. T.—C. E. W.

Markets.

COVENT GARDEN, January 25.

The supply of Apples is now confined to Golden Knobs, Blenheim Orange, and Wellingtons, with moderate consignments from America, all of which are now making good prices. Early forced vegetables are arriving in fair quantities ; dulness of trade causing prices to be low. Cucumbers are in good demand. Kent Cobs scarcely asked for. *James Webber, Wholesale Apple Market.*

VEGETABLES.

	s. d.	s. d.
Artichokes, per bush.	4 0	--
— Eng. Globe, doz.	4 0	6 0
Asparagus, Fr., bun.	20 0	--
— English, p. bun.	6 0	10 0
— Sprue, per bun.	1 6	--
Beans, French(new), per 100	1 6	3 0
Beet, per doz.	1 0	2 0
Brussels Sprts. bush.	7 0	--
Cabbage, per doz.	1 0	2 0
Carrots, per bunch.	0 6	--
Cauliflowers, per doz.	2 0	4 0
Celery, per bundle	1 0	2 0
Chilis, green, per 100	3 0	--
Cucumbers, each	1 6	3 0
Endive, per doz.	1 0	2 0
— Batavian, p. doz.	2 0	3 0
Garlic, per lb.	0 6	--
Herbs, per bunch	0 2	0 4
Horse Radish, p. bun.	4 0	--

	s. d.	s. d.
Leeks, per bunch	0 2	0 4
Lettuces, per score	1 6	2 0
— French, per doz.	1 0	2 0
Mint, green, bunch	1 0	--
Mushrooms, per pot	0 6	--
Onions, per bush.	5 0	8 0
— young, per bun.	0 8	0 10
Parsley, per bunch.	0 4	--
Peas, green, per lb.	1 6	--
Potatos, new, per cwt.	2 0	--
Radishes, per bunch.	0 1	0 3
— Spanish, doz.	1 0	--
— New Turnip, doz.	2 0	--
Rhubarb, per bundle	1 0	--
Salsafy, per bundle	1 0	--
Seikale, per punnet	2 0	3 6
Shallots, per lb.	0 6	--
Spinach, per bushel	3 0	--
Tomatas, per doz.	2 0	3 0
Turnips, per bundle	0 4	0 6

Potatos.—Kent Regents, £5 to £6 ; Essex Regents, £4 10s. to £5 ; Kidneys, £8 per ton.

FRUIT.

	s. d.	s. d.
Apples, per ¼-sieve	1 6	6 0
Cobs, per lb.	--	1 0
Grapes, per lb.	3 0	8 0
Lemons, per 100	8 0	14 0
Melons, each	1 0	3 0

	s. d.	s. d.
Oranges, per 100	8 0	12 0
Peaches, per doz.	0 0	--
Pears, per doz.	2 0	12 0
Pine-apples, per lb.	1 6	4 0

PLANTS IN POTS.

	s. d.	s. d.
Azaleas, per dozen	24 0	60 0
Begonias, per doz.	6 0	12 0
Bouvardias, do.	12 0	24 0
Cinerarias, per doz.	9 0	18 0
Coleus, per dozen	3 0	9 0
Cyclamen, per doz.	12 0	30 0
Cyperus, do.	6 0	12 0
Dracæna terminalis	30 0	60 0
— viridis, per doz.	18 0	24 0
Epiphyllum, per doz.	18 0	42 0
Ferns, in var., p. doz.	6 0	9 0
Ficus elastica	2 6	15 0
Heaths, variety, doz.	9 0	24 0

	s. d.	s. d.
Heliotrope, per doz.	6 0	12 0
Hyacinths, per doz.	8 0	12 0
— Roman, per doz.	9 0	18 0
Lily of Valley, each	2 0	5 0
Mignonette, do.	6 0	9 0
Myrtles, do.	3 0	9 0
Palms in variety, each	3 6	21 0
Pelargoniums, scarlet, per doz.	6 0	12 0
Primula sinensis, doz.	4 0	9 0
Solanums, per doz.	6 0	24 0
Tulips, per dozen	8 0	12 0
Valotta purpur., doz.	12 0	18 0

CUT FLOWERS.

	s. d.	s. d.
Azaleas, 12 sprays	1 0	4 0
Bouvardias, per bun.	1 0	4 0
Camellias, 12 blooms	2 0	12 0
Carnations, per dozen	2 0	4 0
Cyclamen, per doz.	2 0	9 0
Epiphyllum, 12 blms.	1 0	3 0
Eucharis, per doz.	6 0	12 0
Euphorbia, 12 sprays	2 0	9 0
Gardenia, per doz.	3 0	18 0
Heliotropes, 12 spr.	1 0	2 0
Hyacth., Rom., 12 sp.	2 0	6 0
Lily of Valley, 12 spr.	1 6	9 0

	s. d.	s. d.
Mignonette, 12 bun.	4 0	9 0
Narcissus, 12 sprays	3 0	6 0
Pelargoniums, 12 spr.	2 0	4 0
— zonal, 12 sprays	1 0	2 0
Poinsettia, 12 sprays	4 0	12 0
Primula, dbl., p. bun.	1 0	2 0
Roses, indoor, p. doz.	2 0	12 0
— Christmas, bun.	0 6	1 6
Stephanotis, 12 spr.	9 0	15 0
Tuberoses, 12 bun.	2 0	4 0
Violets, 12 bun.	1 6	4 0

*** Stephanotis and Gardenia blooms are very scarce.

SEEDS.

LONDON : *Jan.* 24.—Our seed market this week has been fairly attended, and more disposition to operate has been shown by country buyers. From America (in which country this season the chief interest is centered) the arrivals of red Clover seed continue on a most limited scale, and values in consequence, both here and there, exhibit remarkable steadiness ; indeed, the firmness which characterises this leading article imparts a strong healthy tone to the whole trade. A good quantity of the Clover seed shipped from New York finds its way direct to Continental ports. Of home-grown samples of red Clover seed there is a fair number offering, but they mostly represent exceedingly small quantities. There has been more business doing in Alsike at increased rates. White Clovers well sustain the late advance. Trefoil is quiet. The bulk of the Trefoil stock, available for the spring consumption, is held in London ; the unprecedented rise last autumn, and the tempting profits consequently offered, induced country farmers to let go their holdings. For foreign Italian currencies point upwards. Perennial grasses, although not at present much dealt in, are quietly hardening in value. For Sainfoin and Lucerne occasional buyers are found at full rates. Rape seed must be noted 2s. to 3s. per qr. dearer. There is more enquiry for spring Tares, and quotations in Konigsberg are a good shilling higher. Canary seed is unchanged, and Hemp is still decidedly neglected. Blue boiling Peas, owing to the colder weather, are in somewhat improved request. Linseed is without alteration.—*John Shaw & Sons, Seed Merchants, 37, Mark Lane, London. E. C.*

CORN.

At Mark Lane on Monday millers operated very cautiously in Wheat, and quotations were much the same as on Monday last. Fine dry samples of English Wheat, new, with a steady demand, while inferior and ill-conditioned samples were dull. The same remarks apply to Barley and other classes of spring corn. In flour there was a tendency towards further improvement.—Average prices of corn for the week ending January 20 :—Wheat, 51*s.* 11*d.* ; barley, 39*s.* 7*d.* ; oats, 24*s.* 11*d.* For the corresponding week last year :—Wheat, 44*s.* 9*d.* ; barley, 34*s.* 2*d.* ; oats, 23*s.* 10*d.*

CATTLE.

At Copenhagen Fields on Monday prices for beasts advanced a little, although trade was not very brisk. The number of sheep was much smaller, and prices rather higher. Choice calves made a high price. Quotations :—Beasts, 4*s.* 6*d.* to 5*s.* 2*d.*, and 5*s.* 6*d.* to 6*s.* ; calves, 5*s.* 6*d.* to 5*s.* 10*d.* ; sheep, 5*s.* 6*d.* to 6*s.* 4*d.*, and 6*s.* 8*d.* to 7*s.* 4*d.* ; pigs, 4*s.* to 5*s.* — Thursday's market was moderately supplied, and a quiet tone prevailed, at barely Monday's rates for beasts, but steady prices for sheep. Prime calves continued to bring high prices.

HAY.

At Whitechapel market on Tuesday there was a steady demand for fodder, and with only a moderate demand previous quotations were maintained. Prime Clover, 100*s.* to 140*s.* ; inferior, 85*s.* to 95*s.* ; prime meadow hay, 90*s.* to 130*s.* ; inferior, 70*s.* to 85*s.* ; and straw, 40*s.* to 54*s.* per load. —There were fair supplies on Thursday, but a steady, the weather being against demand. Quotations : — Clover, best, 100*s.* to 144*s.* ; inferior, 85*s.* to 95*s.* ; hay, best, 100*s.* to 135*s.* ; inferior, 65*s.* to 75*s.* ; and straw, 44*s.* to to 56*s.* per load.—Cumberland market quotations :—best meadow hay, 130*s.* to 138*s.* ; inferior, 110*s.* to 118*s.* ; superior Clover, 138*s.* to 147*s.* ; inferior, 115*s.* to 130*s.* ; and straw, 50*s.* to 58*s.* per load.

POTATOS.

That the Borough and Spitalfields markets reports state that the quotations for Potatos were firm, and that of the better class there was only a moderate supply. A fair demand prevailed. Kent Regents, 100*s.* to 160*s.* per ton : Essex do., 100*s.* to 140*s.* ; Scotch do., 95*s.* to 170*s.* ; rocks, 80*s.* to 100*s.* ; flukes, 140*s.* to 180*s.* ; Victorias, 110*s.* to 160*s.*—Last week's imports into London comprised 21,457 bags 2lb tons 55 sacks and 25 cases from Antwerp, 22,808 bags Hamburg, 1617 bags 495 packages Brussels, 600 bags Harlingen, 394 Rotterdam, 156 bags 100 sacks Boulogne, 136 bags 12 barrels and 100 bags Rouen.

To the Trade.

W. P. LAIRD AND SINCLAIR, NURSERYMEN, Dundee, N.B., have to offer :—

TRANSPLANTED.—Larch, 2-yr. to 3 feet ; Scots Fir, 2-yr., 2-yr. out ; Silver Fir, 9 to 15 inches ; P. Laricio, 2-yr., 2-yr. out ; Limes, 3 to 4 feet ; Walnuts, 4 to 6 and 6 to 8 feet ; Green Hollies, 4 to 6, 12 to 18, and 18 to 24 inches ; Irish Junipers, 4 to 5 feet ; Laurustinus, 12 to 18 inches ; Irish Yews, 4 to 5 feet.

SEEDLINGS.—Larch, 1-yr. and 2-yr. ; Scots Fir, 1-yr. ; Silver Fir, 2-yr. and 3-yr. ; Pinus austriaca, 2-yr. ; P. Strobus, 2-yr. ; Beech, 1-yr. ; Spanish Chestnut, 2-yr. ; Hazel, 1-yr. ; English Oak, 1-yr. ; Turkey Oak, 3-yr. ; Sycamore, 2-yr.

RHUBARB.—Johnstone's St. Martin's.

SEED POTATOS.—Garden sorts.

Special offer of above may be had on application.

MANURE.—Composed of the blood, bone, &c., of animals, which are boiled down and carefully manufactured into a splendid manure on the premises of a large slaughterer. This now famous manure, possessing as it indisputably does all the properties essential to a first-class manure, has been used in the greatest success by upwards of 500 Florists, Nurserymen, Market Gardeners, and Farmers. Many testimonials. Sent in stout bags free to rail or wharf, 11*s.* per cwt., 45*s.* per ton. Sample free.

M. H. BENTOTE, Lausanne Road, Nunhead (near Junction), London, S.E.

ODAMS' MANURES,

FOR ALL CROPS.

Manufactured by the NITRO-PHOSPHATE and ODAMS' CHEMICAL MANURE COMPANY (LIMITED), consisting of Tenant-Farmers occupying upwards of 150,000 acres of Land.

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WESTERN COUNTIES BRANCH—Queen Square, Bristol.

Particulars will be forwarded on application to the Secretary, Or may be had of the Local Agents.

COCOA-NUT FIBRE REFUSE, newly made.—Reduced price, 20 bushels, 6*s.* 8*d.* ; 100, 20*s.* ; or Truck-load, 40*s.* Delivered free to any rail in London. J. STEVENS AND CO., Fibre Works, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE,

FOR POTTING and PROPAGATING.

3d. per bushel ; 100 for 20s. ; truck, 40s ,

Free to Rail or Wharf.

Supplied in the principal Nurserymen.

M. H. BENTOTE,

FIBRE MAKER, LAUSANNE ROAD, NUNHEAD, S.E.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 4*s* 6*d.* per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17*s.* per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5*s.* 6*d.* each.

Fresh SPHAGNUM, 10*s.* 6*d.* per sack.

WALKER AND CO., Farnborough Station, Hants.

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. For smart, condensed, 6*d.* ; per punt, 3*s.* 6*d.* Supplied to Seedsmen and Chemists.

Prepared by JOHN KILINER, Wortley, near Sheffield.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1839, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Most positively many times stronger than any imitation it. Sold Retail by Seedsmen, in BOXES, 1*s.* 3*d.*, and 10*s.* 6*d.* Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

GENUINE TOBACCO PAPER of best quality, price 10*d.* per lb., or £4 per cwt.

WM. KENYON, Tobacconist, 4, Pollard Street, New Town, Leeds.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60*s.* to 100*s.* per 100 ; superior do., 120*s.* to 150*s.* per 100. Reed and Cocoa Mats at 20*s.*, 30*s.*, and 35*s.* per 100 ; and all other descriptions of Mats at equally low rates, at

J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

RUSSIA MAT MERCHANTS.—Seedsmen, Growers, and other large Buyers, can have the Wholesale Prices for MATCHING, and all kinds of PETERSBURG MATS, RAFFIA MATS, &c., on application to

MARENDAZ AND FISHER, James Street, Covent Garden, London, W.C.

RUSSIA MATS, for Covering from Frost, from 30*s.* per 100. Superior, per 200. GUINEA BAGS, from 3*d.* each, delivered free to any Station in London.

SUTHERLAND, SON AND CO., 121, Fenchurch Buildings, Fenchurch Street, London, E.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post-free on application.

JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London, E.C.

HORTICULTURAL WINDOW GLASS. —A large variety of sizes, 15 oz., 22*s.* 6*d.* ; 21 oz., 16*s.* 6*d.* per 100 feet. Large sizes, in Cases, for Cutting up, 15 oz. 41*s.*, 36*s.* ; 25*s.*, 21*s.* per 100 ft. ; 21 oz. 48*s.*, 36*s.* ; 38*s.*, 46*s.* per 200 feet. Prices forwarded for large and special quantities.

ALFRED SYER, Glass, Lead, Zinc, Oil, and Colour Merchant, 8, Pentonville Road, London, N.

To Nurserymen, Florists, &c.

FOR SALE, a well-built and nearly new FLORIST'S VAN, suitable for stout pony or cob. To be sold for little more than half its cost.

Address, FLORIST, 102, High Street, Godalming, Surrey.

THE BEST BUILT HOTHOUSES, CONSERVATORIES, &c., AT THE LOWEST PRICES.

Plans and Estimates given for Horticultural Buildings of every description, either in Wood or Iron.

H. Ormson's Work, on an extensive scale, both Building and Heating, may be seen at the Royal Gardens, Kew, and at many of the Seats of the Nobility and Gentry throughout the Country.

CAST-IRON AND SLATE FOUNDATIONS, IF PREFERRED TO BRICKWORK.

PLAIN AND INEXPENSIVE HOTHOUSES

Designed and Built with a strict regard to Economy in Price, the best of Materials and Workmanship, and Practical Adaptation.

ORMSON'S PATENT TUBULAR CORNISH BOILER and Ormson's Patent Divisional Hot-water Apparatus

SURPASS ALL OTHER SYSTEMS OF HEATING BY HOT-WATER.

HOT-WATER PIPES, BOILERS, &c., AT WHOLESALE PRICES.

Surveys made and Gentlemen waited on in any part of the Country. Plans and Estimates on application. Tenders from Drawings prepared by Architects.

HENRY ORMSON,

HORTICULTURAL BUILDER and HOT-WATER APPARATUS ENGINEER,

STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.

HARRISON'S NEW DWARF LATE BROCCOLI.

A VALUABLE INTRODUCTION.

We have much pleasure in introducing our NEW DWARF LATE WHITE BROCCOLI, which is undoubtedly the best variety of its class. It is the hardiest Late White Broccoli extant. The heads are close, compact, and beautifully white, remaining longer fit for use than any other variety known, coming into use the beginning of May. The footstalk being so remarkably short (the heads almost resting on the ground), affords greater protection from frost, and also enables a much larger quantity to be grown on a given space of ground; thus proving a great acquisition to those possessing small gardens. The quality is excellent, and embraces everything to be desired in a Broccoli, either for a Gentleman's table or for Market purposes. We have received numerous flattering Testimonials from all parts of the kingdom, where it was grown last season, testifying as to its invaluable merits, a few extracts from which we subjoin:—



TESTIMONIALS.

From Mr. T. RASONE, *Gr. to the* Earl of Shrewsbury, *May* 10, 1876.

"Broccoli thus far north has not done well this season, but yours has done the best. Nice compact heads, very white and tender, and worthy of a place in every garden, as it takes so little room."

From Mr. G. BRIGHTON, *Gr. to* Earl Mount Edgcumbe, *May* 11, 1876.

"I have no hesitation in pronouncing your Dwarf Late Broccoli as being the best late Broccoli I have ever grown. I have had it planted with other late varieties, and it has proved infinitely superior to them all. At the present we have some splendid heads."

From Mr. J. SIMPSON, *Gr. to* Lord Wharncliff, *May* 5, 1876.

"We have been cutting your New Broccoli for the last week or ten days, and find it an excellent variety, and one which I shall add to my list in future. There is not a single plant of yours injured; it may, therefore, be put down as the hardiest. The heads are good sized, of a clear, creamy white colour, compact, and in flavour excellent."

From Mr. J. RENSHAW, *Gr. to the* Marquis of Anglesea, *May* 30, 1876.

"Your New Dwarf Late Broccoli is very good. Dwarf compact habit, with remarkably solid heads of medium size—just the thing for a gentleman's table."

From Mr. GRIMSDALE, *Gr. to the* Duke of Somerset, *May* 9, 1876.

"Your New Dwarf Broccoli is the best I ever had. I never saw anything to equal it. It is perfectly hardy, with fine flavour. I cannot speak too highly of it, and am thankful to get it. All that have seen it growing have greatly admired it, with many others."

From Mr. GEO. BEECH, *Gr. to the* Marquis of Northampton, *May* 5, 1876.

"I am now cutting your New Broccoli. It is a very late one. I have had it cooked, and pronounce the flavour all that can be desired in a Broccoli. The heads are very firm and of average size, quite hardy, and calculated to stand the winter well. The footstalk of the leaf is very short, it is exceedingly dwarf, and the most compact Broccoli I am acquainted with."

The Stock being limited, we would impress upon our Customers the necessity of sending in their Orders early to ensure a supply for this season.

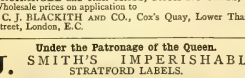
Price, Retail, 1s. 6d. per Packet,

or may be had of HURST AND SON, 6, Leadenhall Street, E.C.

HARRISON & SONS, Seed Growers, LEICESTER.

WOOD TRAINING STICKS and TALLIES, commended by Royal Horticultural Society. BAMBOO CANES, RAFFIA for tying, VIRGIN CORK, ARCHANGEL and other MATS, PACKING MATS, &c. Wholesale prices on application to
C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

Under the Patronage of the Queen.
J. SMITH'S IMPERISHABLE STRATFORD LABELS.



The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.
The *Gardeners' Magazine* says :—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.

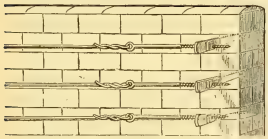
Indestructible Terra-Cotta Plant Markers.
MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens, sent post-free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c.
MAW AND CO., Benthall Works, Broseley.

LABELS.
Secure Tree and Plant Labels.
PARCHMENT or CLOTH LABELS, TREE or PLANT LABELS. Punched parchment, 4 inches long, 3*s.* 6*d.* per 1000, or 30*s.* per 10,000; if eyeleted, 4*s.* per 1000. Vellum cartridge, 4 inches long, 3*s.* per 1000 for 10,000. Sample Labels sent on receipt of postage stamp. Orders delivered free in London.
FISHER, CLARK AND CO., Label Works, Boston.

FLOWER WIRE,
Manufactured by the Undersigned.
This most suitable and commended Wire is the best for the Fastening of Flower Stems; it is as soft as silk and quite clean, free from rust and fat. It is forwarded, in not less than three circles of 4½ lb. each (but three different sizes may be selected), on application to
Mr. E. SCHULZ, Berliner Drahthandlung, Fennstr 14, Berlin, N.
N.B.—Set of samples sent free for 6*d.*

E. T. ARCHER'S "FRIGI DOMO."—Patronised by Her Majesty the Queen, for Windsor Castle and Frogmore Gardens, the late Sir J. Paxton, and the late Professor Lindley, &c.
MADE of PREPARED HAIR and WOOL.
A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for Pits and Forcing Frames.
PROTECTION from COLD WINDS and MORNING FROSTS.
"FRIGI DOMO" NETTING, 2 yards wide, 1*s.* 4*d.* and 1*s.* 6*d.* per yard.
"FRIGI DOMO" CANVAS.
2 yards wide .. .. .. 1*l.* 10*d.* per yard run.
3 yards wide .. .. .. 3*s.* per yard.
4 yards wide .. .. .. 3*s.* 10*d.* per yard.
ELISHA T. ARCHER, only Maker of "Frigi Domo," Brockley Road, Forest Hill, London, S.E.; and of all Florists and Seedsmen. All goods carriage paid to London.
NOTICE—REMOVED from 3, CANNON STREET, CITY.

THOMAS'S
FITTINGS for WIRING WALLS.
NEW and IMPROVED SYSTEM.



The following prices give the total cost of each line of wire, including holdfasts, straining bolt, intermediate guiding eyes, 10 feet apart, and best quality galvanised wire.

Length of Wall :—	20 yds.	40 yds.	60 yds.	80 yds.	100 yds
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
No. 14 Gauge Wire	1 1	1 8	2 2	2 8	3 2
No. 13 "	1 4	1 11	2 6	3 1	3 8

Illustrated Lists, with full particulars of the above, and Fittings for Espalier Trainers, on very economical principles, free on application.
Five per cent. discount allowed for prompt cash on orders amounting to 20*s.* and upwards.
Special quotations for larger quantities.
J. J. THOMAS & CO.,
PADDINGTON WIREWORKS,
285 and 362, EDGWARE ROAD, LONDON, W.

Metallic Hothouse Builder to Her Majesty.
HENRY HOPE (late Clark & Hope, formerly Clark),
HOTHOUSE BUILDER and HOT-WATER APPARATUS ENGINEER.
55, Lionel Street, Birmingham. Established A.D. 1818.
BOOKS of DESIGNS, 5*s.* each.
☞ The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.

NOTICE. NOTICE.

THE GREAT METROPOLITAN SEED ESTABLISHMENT,
BOROUGH END LONDON BRIDGE, S.E.

R. TANTON
Begs to announce that his usual EXHIBITION of the SEEDS OF THE HARVEST of 1876 will commence on the 29th instant.
Terms : Discount of 5 per Cent. upon all Orders for 20s. and upwards, and carriage free to any Railway Station in the United Kingdom.
AN ILLUSTRATED AND DESCRIPTIVE CATALOGUE
WILL BE READY IN A FEW DAYS, AND SENT POST FREE.
Seed Warehouses : 16 and 17, HIGH STREET, BOROUGH, LONDON, S.E.

THE HUNTINGDON NURSERIES.

WOOD & INGRAM'S
CATALOGUE OF SEEDS FOR THIS SEASON
Is now ready, and will be forwarded free on application.

THE NURSERY AND SEED BUSINESS
So successfully conducted for a number of years by the late Mr. JOHN INGRAM, will be continued to be carried on in its various branches, as heretofore, by his Widow and Two Sons, in the name of WOOD AND INGRAM, who respectfully solicit a continuance of the kind and liberal patronage which has been given for a lengthened period to their Establishment.
THE NURSERIES, HUNTINGDON.—January, 1877.



JEFFERIES' LITTLE QUEEN COS LETTUCE,
Per Packet, 1s. 6d.,
Is the Earliest, Best Flavoured and Best Coloured Lettuce in cultivation.
MR. EARLEY, *The Gardens, Valentines, says :*—"Your Little Queen Lettuce proved a good selection, although the weather was very adverse to the trial."
MR. MEADES, *Gr. to the* RT. HON. Viscount Barrington, *Becket Park, says :*—"Your Little Queen Lettuce is a capital variety, as hard as a stone, and has kept well from running to seed this dry summer."
MR. FARR, *Gr. to* Sir R. Knightley, Bart., *Fawsley Park, says :*—"Your little Lettuce has proved a very useful one, although the season has been very trying for that class of stuff; its early heartening and crisp sweet flavour are sufficient to recommend it to all who are desirous of a small but good Lettuce."
A Packet of this excellent Lettuce will be included in all our Collections of Vegetable Seeds.

JEFFERIES' HALF GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' TWO GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' THREE GUINEA COLLECTION OF VEGETABLE SEEDS,
Are the best obtainable. For particulars, obtain our "Illustrated Garden Guide."

JNO. JEFFERIES & SONS,
CIRENCESTER.

ESTABLISHED A CENTURY.

NOW READY,

WM. ROLLISSON & SONS'

NEW AND GENUINE

Flower Seeds, Vegetable Seeds, Farm Seeds,

CAREFULLY SELECTED FROM

THE BEST ENGLISH AND FOREIGN STOCKS.

SEED CATALOGUE FOR 1877

GRATIS AND POST FREE ON APPLICATION.

Also TENS of THOUSANDS of

WELL GROWN STOVE, GREENHOUSE and HARDY PLANTS

OF EVERY DESCRIPTION ARE ALWAYS TO BE SEEN AT

THE NURSERIES, TOOTING,

LONDON, S.W.

MESSENGER & COMPANY,

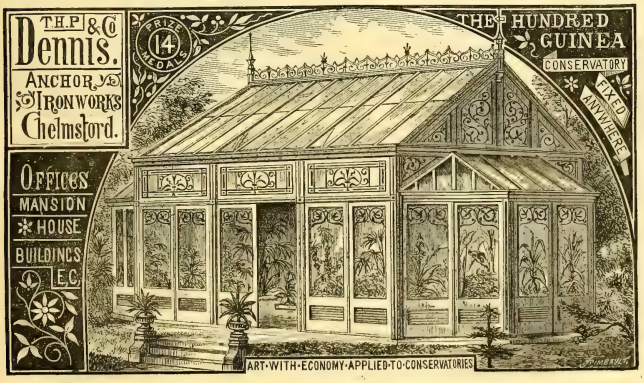
CONTRACTORS, MIDLAND HORTICULTURAL BUILDING AND HOT-WATER ENGINEERING WORKS, LOUGHBOROUGH,



Beg to call attention to the above illustration, which shows a very advantageous arrangement of Glasshouses which has been adopted for several important Works on M. & Co.'s recommendation.

Only thoroughly well-seasoned timber used. Glasshouses erected on Messenger's patent principles are, owing to mechanical arrangements, very strong, *most durable*, light, *elegant*; *perfect efficiency* for purpose intended is *guaranteed*; are economical in cost and maintenance. Messenger's Patent Boilers, Flexible Jointed Hot-water Pipes and Valves, are now in use in many thousands of instances, with the greatest success. Particulars on application.

Plans and Estimates forwarded. Ladies and Gentlemen waited upon. The Plans of Architects and others carried out. Illustrated Circular Free.



In consequence of the increasing demand for Conservatories, in which pure art is combined with moderate cost, T. H. P. DENNIS & Co. have been led to introduce designs of a character hitherto unknown. One of these designs, showing a house 22 feet 6 inches × 13 feet 6 inches, is annexed, and the result, as regards the extremely low price (which includes fixing, glazing, painting, carriage, &c.), has been attained only by special machinery and a system of interchangeable parts.

T. H. P. DENNIS & Co. are also prepared to provide and fix Hot-water Heating Apparatus and Horticultural Buildings of any dimension or description.

Full-sized specimens of Greenhouses, &c., and Hot-water Apparatus in work, can be inspected at Mansion House Buildings, London, E.C.

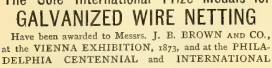
Gentlemen waited upon at their residences by experienced designers.

Estimates and Plans free.

SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW AND CO., 29, Oxford Street, Manchester.

The Sole International Prize Medals for GALVANIZED WIRE NETTING

Have been awarded to Messrs. J. B. BROWN AND CO., at the VIENNA EXHIBITION, 1873, and at the PHILADELPHIA CENTENNIAL and INTERNATIONAL EXHIBITION, 1876.



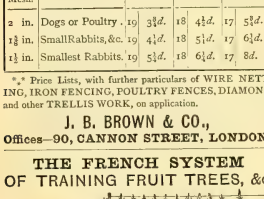
Prices per Lineal Yard, 24 inches high :—

Size of Mesh.	Mostly used for	Gauge, or Light.		Gauge, or Medium.		Gauge, or Strong.	
2 in.	Dogs or Poultry .	19	3½*d.*	18	4½*d.*	17	5½*d.*
1⅔ in.	SmallRabbits,&c.	19	4½*d.*	18	5½*d.*	17	6½*d.*
1½ in.	Smallest Rabbits.	19	5½*d.*	18	6½*d.*	17	8*d.*

** Price Lists, with further particulars of WIRE NETTING, IRON FENCING, POULTRY FENCES, DIAMOND and other TRELLIS WORK, on application.

J. B. BROWN & CO.,
Offices—90, CANNON STREET, LONDON.

THE FRENCH SYSTEM OF TRAINING FRUIT TREES, &c.



Extreme standards of T or angle iron, for ends or angles, for straining the wires from, self based; also stays for these standards, at prices as under :—

Intermediate Standards, 10 ft. apart, at half these prices.

	Painted.	Galvd.		Painted.	Galvd.
4½ ft. high..	*5s. 6d.* ..	*7s. 6d.*	7 ft. high	*8s. 6d.* ..	*11s. 0d.*
5 ft. high....	6 0 ..	8 6	8 ft. high	9 0 ..	12 0
6 ft. high....	6 9 ..	9 6	9 ft. high	10 0 ..	13 0

RAIDISSEURS, for Tightening Wires, one to each wire, *2s. 6d.* per doz. Key for winding, *4d.* each.

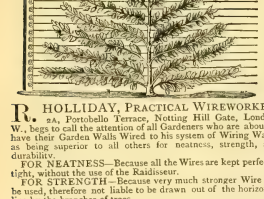
SCREWS and NUTS, neater than Raidisseurs, *3s. 6d.* per doz.

No. 13 WIRE, 10 inches apart, *2s. 6d.* per 100 yards.

** Prices of Material for WIRING GARDEN WALLS on the FRENCH SYSTEM on application.

J. B. BROWN & CO.,
90, CANNON STREET, LONDON, E.C.

Garden Wall Wiring.



R. HOLLIDAY, PRACTICAL WIREWORKER, W., 92, Portobello Terrace, Notting Hill Gate, London, W., begs to call the attention of all Gardeners who are about to have their Garden Walls Wired to his system of Wiring Walls, as being superior to all others for neatness, strength, and durability.

FOR NEATNESS—Because all the Wires are kept perfectly tight, without the use of the Raidisseur.

FOR STRENGTH—Because very much stronger Wire can be used, therefore not liable to be drawn out of the horizontal line by the branches of trees.

FOR DURABILITY—Because, being able to use the strong Wire, it is not so likely to be eaten through with the galvanism as the thin Wire, as used in the French system.

The above engraving is an Example of our system of Wiring Garden Walls. We have recently completed the Wiring of the New Garden Walls for the Marquis of Salisbury, Hatfield House. The Walls are 12 feet high and 753 yards long, wired on both sides ; making a total length of 1506 yards—our system being chosen in preference to any other.

Illustrated Catalogues of Garden and Conservatory Wirework, Rabbit-proof Hurdle Fencing, &c., may be had on application as above.

R. H. HAMPSON, Egerton Mills, Stockport, Manufacturer of HORTICULTURAL SHADINGS for protecting Wall Trees from Frost and Insects, &c. 54 and 60 inches wide, any length up to 100 yds. Prices on application.

Established over a Quarter of a Century.

FRANCIS MORTON & Co's (LIMITED) LIVERPOOL NAYLOR STREET CABLE FENCING

Is in use over many thousand miles,
And has been awarded the Medals and highest Commendation of all the leading Agricultural Societies.
It is constructed with
POWERFUL WINDING STRAINING PILLARS, RIGID INTERMEDIATE IRON POSTS,
STRONG and DURABLE WIRE CABLE STRANDS,
Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

Continuous Bar Iron Fencing,



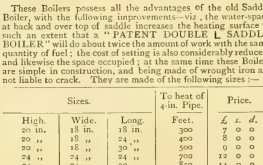
With bars secured by F. M. & Co.'s Patent Self-locking Joints, which effectually prevent the uprights being pushed aside, and are independent of loose pins, wedges, or staples.

IRON ENTRANCE and FIELD GATES,
IN WROUGHT AND CAST IRON,
Designed for the Mansion, Villa, or Farm,
WICKET AND GARDEN GATES,
In Great Variety of Patterns.

Iron Hurdles, Railing, Tree Guards,
FRUIT ESPALIERS, WALL FRUIT TRAINERS, &c.
☞ *Illustrated and Described in F. M. & Co.'s New Catalogue, sent on application.*

LONDON BRANCH :
1, DELAHAY ST., WESTMINSTER, S.W.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel ; the cost of setting is also considerably reduced, and likewise the space occupied ; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes :—

Sizes.			To heat of 4-in. Pipe.	Price.
High.	Wide.	Long.	Feet.	£ *s. d.*
20 in.	18 in.	18 in.	300	7 0 0
20 ,,	18 ,,	24 ,,	400	8 0 0
20 ,,	18 ,,	30 ,,	500	9 0 0
24 ,,	24 ,,	24 ,,	700	12 0 0
24 ,,	24 ,,	30 ,,	850	14 0 0
24 ,,	24 ,,	36 ,,	1,000	16 0 0
24 ,,	24 ,,	48 ,,	1,400	20 0 0
28 ,,	28 ,,	60 ,,	1,800	25 0 0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May 29, 1873.*

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers ; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes ; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.
When ordering Boilers please refer to the above advertisement.

THE PATENT "EXCELSIOR" LAWN MOWER,

The simplest and best ever introduced.

Waite, Burnell, Huggins & Co.,

228, UPPER THAMES STREET, LONDON, E.C.,
Sole Consignees for Great Britain, Ireland and France, have pleasure in submitting the "Excelsior" as possessing the following advantages over other Mowers :—

It cuts longer grass,
Wet or dry.
The gearing is all encased.
It cannot clog.
Its draft is lightest.
It needs less repairs.
Its adjustments are more simple.
It rolls the ground.
It cuts the borders.
Is a perfect mower.

Has never been beaten in Competitive Trials.

PRICES :
(Including Collecting Boxes)

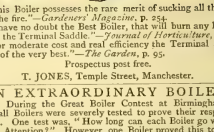
To cut 8 inches	£2 10 0	To cut 14 inches ..	£5 15 6
,, 10 inches ..	3 10 0	,, 16 inches ..	6 16 6
,, 12 inches ..	4 10 0	,, 18 inches ..	7 17 6

To cut 20 inches, £8 18*s.* 6*d.*
Larger Sizes for Pony and Horse Power.

Catalogues and Trade Terms on application to
WAITE, BURNELL, HUGGINS & CO.,
228, UPPER THAMES STREET, LONDON, E.C.

Silver Medal. 1874.

THE TERMINAL SADDLE BOILER.—First-class Certificate, 1867 ; Highly Commended, 1873 ; and First-class Certificate, 1875.



"This Boiler possesses the rare merit of sucking all the heat from the fire."—*Gardeners' Magazine*, p. 631.

"I have no doubt the Best Boiler, that will burn any kind of fuel, is the Terminal Saddle."—*Journal of Horticulture*, p. 377.

"For moderate cost and real efficiency the Terminal Saddle is one of the very best."—*The Garden*, p. 95.

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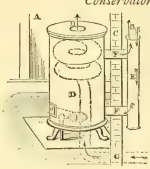
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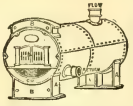


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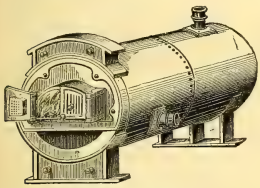
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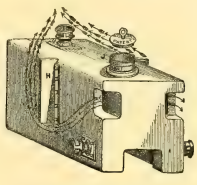
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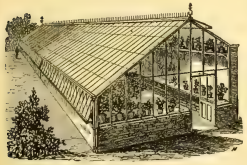
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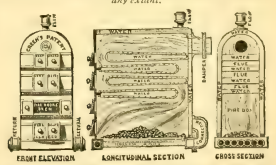
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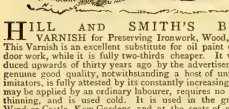
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THE

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Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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For a Large Garden.

SUTTON'S £5 5s. and £3 3s. COLLECTIONS of CHOICE VEGETABLE SEEDS. Carriage free to any Railway Station in England or Scotland, also to any Irish Port.

For a Moderate-Size Garden.

SUTTON'S £2 2s. and £1 11s. 6d. COLLECTIONS of CHOICE VEGETABLE SEEDS. Carriage free to any Railway Station in England.

For a Small or "Amateur's" Garden.

SUTTON'S £1 1s. COLLECTION of CHOICE VEGETABLE SEEDS. Carriage free to any Railway Station in England.

Every one who has a Garden should read

SUTTON'S AMATEUR'S GUIDE IN HORTICULTURE. Now ready, post-free for 14 stamps.

The Formation and Improvement of Garden Lawns. SEE

SUTTON'S AMATEUR'S GUIDE IN HORTICULTURE.

SUTTON'S SPRING CATALOGUE and PRICE CURRENT is also ready. Gratis and post-free on application.

SUTTON'S CHOICE SEED POTATOS. —For Particulars and Prices see "Sutton's Descriptive List," which may be had, gratis and post-free, on application.

SUTTON AND SONS, The QUEEN'S SEEDSMEN, Reading.

SYMPHYTUM ASPERRIMUM (Prickly Comfrey).—Whole Roots Purchased at per cwt, after examination. Sticklings delivered at Halsey Station.

F. CHRISTY AND CO., 155, Fenchurch Street, E.C.

Winter-flowering Orchids.

CALANTHE VESTITA RUBRA OCULATA. Price, 9s. per dozen, or 50s. per 100.

S. WOOLLEY, Nurseryman, Cheshunt, Herts.

CARNATION, Souvenir de la Malmaison, 18s. per dozen; PINK, Souvenir de la Malmaison, 15s. per dozen: fine healthy stock, plants well rooted.

IRELAND AND THOMSON, 20, Waterloo Place, Edinburgh.

SPIRÆA PALMATA.—Fine crowns for forcing, 75s.; smaller, 25s. to 50s. per 100,

CHARLES NOBLE, Bagshot.

SILVER FIR.—Fine clean grown and clean leaders. Transplanted Silver Fir, 9 to 12 inches, 20s. per 1000; 12 to 18 inches, 25s. per 1000.

W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

HAWS, or THORN QUICK SEED.—Sound Haws, fit for sowing at present, or spring coming, guaranteed free from soil or other mixture, and thoroughly well preserved. About 30 tons on hand. For lowest prices apply to GRANT AND CO., Park Nursery, Portadown, Ireland.

Grape Vines.

FRANCIS R. KINGHORN has still to offer strong planting and fruiting Canes of most of the leading sorts. Particulars on application.

Sheen Nursery, Richmond, Surrey.

POT VINES.—3000 Pot Vines, of all the best varieties, on Sale at the Garston Vineyard, 6 miles from Liverpool. Price LISTS post-free.

COWAN PATENTS COMPANY, Garston, near Liverpool.

Vines, Vines, Vines.

B. S. WILLIAMS begs to announce that his GRAPE VINES this year are unusually fine, and are now ready for distribution.

For Detailed List, see Bulb Catslogue.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

To the Trade.

VINES, extra strong Fruiting Canes, all the leading varieties.

DICKSON AND ROBINSON, Nurserymen, 12, Old Millgate, Manchester.

Johnstone's St. Martin's Rhubarb.

EARLIEST and BEST in CULTIVATION for Open Ground, has a splendid colour and excellent for Forcing. Strong roots, 5s. per doz. Trade price on application.

W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

SALES BY AUCTION

Odontoglossum crispum (Alexandræ) (Blunti), ODONTOGLOSSUM GLORIOSUM, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 7, at half-past 12 o'Clock precisely, very fine unspotted plants of Odontoglossum crispum (Alexandræ) (Blunti), Odontoglossum gloriosum; also established plants, mostly with flower-spikes, of Phalænopsis Schilleriana, P. amabilis, P. Luddemanniana, P. rosea, and P. grandiflora; good plants of Lælia Dayana, Odontoglossum cirrhosum, O. hastilabum, Cypripedium, Saccolabium, Dendrobiums, &c.; an importation of Dendrobium superbiens, comprising the whole stock at present received of this striking novelty; also good plants of Odontoglossum Rallii, Brickhuan, Rogersii, Cattleya percivaliana, &c.; some fine Orchids from Messrs. J. Backhouse and Son, including three plants of the rare and beautiful Odontoglossum Lindenbergianum; also many other rare Orchids either in flower or showing flower-spikes; and an importation of a rare hardy Tree Fern from Belgium.

On view the morning of Sale, and Catalogues had.

Valuable Lilies.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 8, at half-past 12 o'Clock precisely, an importation of good BULBS of the beautiful LILIUM NEIGHERRENSE. The white flowers of this magnificent Lily are deliciously fragrant, and of great substance. It bears several flowers on a stem, each flower nearly a foot long. Also some excellent Bulbs of the following new varieties of Lilium neilgherrense, viz. :—

LILIUM NEILGHERRENSE ROSEUM—the exterior of the flower-tubes of this variety is pink, the interior white.

LILIUM NEILGHERRENSE FLAVUM—a handsome variety, yellow-coloured from the exterior.

LILIUM NEILGHERRENSE TUBIFLORUM—a magnificent pure white Lily, with very long flowers: figured in Wight's *Icones Plantarum Indiæ Orientalis*.

LILIUM NEILGHERRENSE TUBIFLORUM LUTEUM, a very handsome yellow-flowered variety of tubiflorum.

And some splendid flowering bulbs of other CHOICE LILIES, including Bloomerianum ocellatum, purpureum, Humboldtii, giganteum, pardalinum, parvum, californicum, and Walkirshanum. Also a quantity of CHOICE BULBS and TUBERS from California, including Calochortus, Cyclobothræa, Brodiæa, Triteleia, Calliproas, Erythroniums, Bloomerias, &c.; and some fine BLOOMING BULBS of the handsome Crinum brachynema, C. australe, C. pratense canaliculatum, tuberous-rooted Begonias, Pancratiums, Amaryllis, North American Cypripediums, with a variety of other Bulbs and Tubers, and a large quantity of fine Bulbs of Lilium auratum.

On view the morning of Sale, and Catalogues had.

Plants and Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, February 10, at half-past 12 precisely, Standard and Dwarf ROSES, FRUIT TREES, HARDY and ORNAMENTAL TREES and SHRUBS, LILIUMS, GLADIOLI, RANUNCULI, &c., for planting; RUSTIC GARDEN WORK, &c.

On view the morning of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'Clock precisely, part of the Collection of ESTABLISHED ORCHIDS, the property of Mr. F. W. Walker, Esq., and sold in consequence of removing. Amongst them will be found many rare and choice varieties.

On view the morning of Sale, and Catalogues had.

Auction Mart, Tokenhouse Yard, London, E.C.

SALE of 6000 LILIUM AURATUM, just arrived in splendid condition from Japan; an unusually fine importation of TREE FERNS from New Zealand, nearly the whole of which are starting into growth, including magnificent trunks of Cyathea dealbata, Dicksonia squarrosa and Smithii, together with a quantity of GLADIOLI and other Hardy Bulbs.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the Mart, London, E.C., on MONDAY, February 12, at 12 o'Clock precisely.

On view the morning of Sale. Catalogues may be had at the Mart, and of the Auctioneers, 98, Cracechurch Street, E.C., and Leytonstone, E.

Edgware, N.W.

IMPORTANT CLEARANCE SALE OF VALUABLE NURSERY STOCK, comprising a great variety of Lawn Trees, including some splendid specimens of Cedrus Deodara, Pinus maximiana, Lowii, grandis, nobilis, magnifica, Douglasii, 4 to 20 feet high; a valuable collection of other Conifers and Evergreen Shrubs, recently transplanted, and adapted for Ornamental Planting; also a fine collection of Orchids, in all the choice varieties, and a number of Camellias and other Greenhouse Plants.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, on the Premises, the Whitchurch Rectory, Edgware, N.W., on SATURDAY, February 17, at 12 o'Clock precisely.

May be viewed prior to the Sale, and Catalogues had on the Premises, and of the Auctioneers as aforesaid.

Tooting, S.W.

PRELIMINARY NOTICE.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, the Exotic Nursery, Tooting, S.W., on THURSDAY, February 22, a general assortment of healthy and thriving young HARDY STOCK.

May be viewed prior to the Sale, and Catalogues may be had on the Premises and of the Auctioneers.

TO BE LET, a NURSERY, with Immediate Possession, seven miles from London, containing a seven-roomed Dwelling-house, in good repair, Water and Gas laid on; four newly-erected Greenhouses, Heated with Hot-water, with Range of Pits, stocked with a choice collection of Plants (can be sold with or without the Nursery). Lease 17 years unexpired; all at the low rental of £25 per annum. The above to be Disposed of, on account of ill health, on moderate and liberal terms.

Apply personally, on the Premises, to W. HOWITT, Ilford, Essex.

Productive Fruit and Vegetable Gardens.

TO BE LET, with possession, the WALLED-IN GARDENS of a MANSION, distant about 7 miles from Reading, comprising Gardener's Cottage, Vineries, Forcing Pits, Potting Sheds, Pasture-land and Premises, embracing an area of nearly 8 acres, and well-adapted for producing early Fruit and Vegetables for London, Reading, or other markets. The Garden is well-stocked with all varieties of Fruit Trees. The tenant will be required to pay the valuation to the out-going tenant. For further particulars, apply to Messrs. RAWLENCE AND SQUAREY, Salisbury; and 22, St. George Street, Westminster, W.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION. — At a General Meeting of the Members of this Institution, held on January 18, for the purpose of ELECTING THREE PENSIONERS on the Funds, the following was the result of the Ballot :—

CANDIDATES.

Name.	Age.	Votes.
HENRY BUTCHER	72	605
JOHN BLACKSHAW	63	202
MARY ANN ADDISCOTT ..	64	752
HENRY ASHTON	69	286
WILLIAM BLACK	82	427
JAMES GOSTLING	72	875
STEPHEN SEPT	67	338
WILLIAM TRUSTY	68	719
ELIZABETH AYRES	69	834
GEORGE B. LINTON ..	63	77
GEORGE MCKAY	65	63
JAMES MAJOR	60	52
MATTHEW ROBERTS	70	39
ELIZABETH ROGERS	69	333

The Meeting then declared JAMES GOSTLING, ELIZABETH AYRES, and MARY ANN ADDISCOTT, the three greatest in number of Votes, duly ELECTED PENSIONERS of this Society.

EDW. R. CUTLER, Secretary.

14, Tavistock Row, W.C.—January 20, 1877.

HARRIET SCOTT, WOODBROKER, BROOM-MAKER, and DEALER in all kinds of Garden Materials, has removed to her only that Mr. W. Twine, late Manager, is now NO LONGER IN HER EMPLOY, and requests that all Orders may be sent and ACCOUNTS PAID TO HER SON, who will call in a few days.

Woodside, S.E.—February 1, 1877.

Transit Agency for Plants, Seeds, &c.

C. J. BLACKITH AND CO. (established 1822), Cox's and Hammond's Quays, Lower Thames Street, London, E.C.—Prompt Agents to all parts of the World.

The Best Cucumber in Cultivation.

SUTTON'S DUKE OF CONNAUGHT.

—*From* Mr. ROBERT DRAPER, *Gr. to the* Right Hon. Earl Vane, *July 29.*—"Your new frame Cucumber, Duke of Connaught, is the best I ever saw—a beauty for exhibition."

Price, *2s. 6d.* per packet.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

To the Trade.

BROCCOLI SEED (Purple Sprouting).—Several Cwts., saved from Stock that has been carefully selected for the last fifteen years. For price, &c., apply to H. PAGE, Market Gardener, Teddington, S.W.

SEED POTATOS in several excellent Garden varieties, grown specially for Seed. List, with prices per cwt. or ton, on application. A change of Seed is always advantageous.

W. P. LAIRD AND SINCLAIR, Seed Merchants, Dundee.

To the Trade.

TELEGRAPH CUCUMBER SEED, fine true stock, price per oz. or lb on application. A few Bushels of Seed DALKEITH POTOS, 4*s.* per bushel for Cash, put on to railway station.—J. AND G. LOWE, Uxbridge.

Genuine Garden Seeds.

WM. CUTBUSH AND SON have for many years held some of the finest Stocks of SEEDS in the Trade, and they believe that no houses possibly supply better quality. CATALOGUES post-free on application.

HIGHGATE, LONDON, N. ; and BARNET, HERTS.

To the Trade.

STANDARD and DWARF ROSES of the leading sorts—splendid Plants, no better in the Trade, well-rooted and healthy. Also Standard and Dwarf Fuchsias, Dwarfs, guaranteed true to name. For lowest prices apply to GRANT AND CO., Park Nursery, Portadown, Ireland.

Roses, Fruit Trees, Evergreens, &c.

WILLIAM FETCHER'S CATALOGUE is now ready, and may be had post-free on application. The Nursery Stock generally is very fine, healthy, and well-rooted. Early orders are respectfully solicited.

Cottenham Nurseries, Cambridge.

Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS (by THOMAS RIVERS) is now ready; also CATALOGUE of Select ROSES. Post-free on application.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

DOWNIE AND LAIRD, Royal Winter Gardens, Edinburgh, are now Booking Orders for Dwarf ROSES, for Spring delivery, in cultivation, at the following prices, left to D. & L.: also HOLLYHOCKS, best sorts, 18*s.* and 24*s.* per dozen—to the Trade at £5 per 100; PHLOXES, finest early, 6*s.* per dozen; do., late, 6*s.* and 12*s.* per dozen; PENTSTEMONS, finest, 6*s.* and 12*s.* per dozen.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden.—"Gee's superior Bedfordshire-grown Plants and Seeds have attained much celebrity."—*Vide Bedford Mercury*, July 29, 1876. "The soils of the district offer facilities enjoyed at few places for bringing away plants, &c., and under the skill and perseverance of Mr. E. Gee they are turned to good account."—*Vide Agricultural Gazette*, July 31, 1876. See other opinions of the Press, also a Treatise on the Cabbage. CATALOGUES, lowest prices, &c., on application to FREDERICK GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

Now Ready.

CHARLES TURNER'S Descriptive CATALOGUE of SEEDS. Post-free on application.

The Finest Dwarf Marrow Pea is

TURNER'S DR. MACLEAN. See CATALOGUE, now ready.

New Early Prolific Pea,

ALLAN'S CHAMPION Full description in CATALOGUE, now ready.

Schoolmaster.

FINEST ROUND POTATO. Description, with testimonials, in CATALOGUE, now ready.

CHARLES TURNER, The Royal Nurseries, Slough.

LARCH, 2 to 3, and 3 to 4 feet, extra fine; English OAK, strong, 3½ to 4½ feet; SYCAMORE, 2½ to 3½ feet; Silver FIR, 1½ foot. Price on application.

W. HALSTEAD, The Nurseries, Lancaster.

To the Trade.

WM. WOOD AND SON, The Nurseries, Mansfield, Uckfield, Sussex, have to offer :—

AUCUBA JAPONICA, fine bushy plants, 9 to 12, 12 to 18, and 18 to 24 inches.

CEDRUS DEODARA, splendid stuff, each plant a specimen, 1 to 1½, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.

Price on application.

Spring Seed Guide.

LITTLE AND BALLANTYNE, the Queen's Seedsmen, Carlisle, respectfully intimate that their illustrated CATALOGUE of SEEDS is now ready, and may be had post-free. It contains every requisite for the Garden and the Farm, and much valuable information to Amateurs.

Fox and Game Covert.

ENGLISH FURZE, 1-yr. old, fine, 5*s.*; 2-yr., extra fine, 10*s.* per 1000. ENGLISH BROOM, 2 to 3 feet, 15*s.* per 1000. MANDA'S AQUIFOLIA, extra bushy, 25*s.* per 100.

WILLIAM MAULE and SONS, The Nurseries, Bristol.

To Fruit and Fish Salesmen, &c.

GREEN'S PATENT.—Five Tons to be Disposed of. Parties wishing to purchase the same, to be delivered weekly, will do well to apply to JOHN SALSBURY, Market Gardener, King's Newton, near Derby.

To the Trade.

HAND F. SHARPE'S Special Priced LIST of HOME-GROWN GARDEN and AGRICULTURAL SEEDS of 1876 growth, is now ready, and may be had on application.

Seed Growing Establishment, Wisbech.

ARECA BAUERI (Seaforthia robusta).—Of this rare species, one of the finest of Greenhouse Palms, a fine stock can be supplied, well-hardened off at unprecedentedly low prices, viz. :—

Nice young Plants, in single pots, 32*s.* per dozen.

1-yr. seedlings, in 48's pots, 48*s.* per 100.

Early orders solicited by

JEAN NUYTENS VERSCHAFFELT, Ledeberg, Ghent, Belgium.

Green Ivies of Sorts in Six Kinds.

ROBERT PARKER, having a Surplus Stock of fine Plants in pots of the above-named, will be pleased to Dispose of them in quantities, at very low prices. Names, sizes, and prices per dozen, 100, or 1000, will be given on application.

Exotic Nursery, Tooting, Surrey, S.W.

R. AND A. MORRISON beg to offer :—

LARCH, transplanted, 2 to 3½ feet, at 25*s.* per 1000; 12 to 18 inches, 17*s. 6d.* per 1000.

1-yr. seedlings, 6*s.* per 1000.

FIR, Scotch, 9 to 18 inches, at 17*s. 6d.* per 1000.

True Native SCOTCH FIR SEED, price per lb. or cwt. on application.

Pinefield Nurseries, Elgin.

Pelargoniums, Pelargoniums.

JAMES HOLDER AND SON have a fine healthy Stock of the above to offer, at the following low prices for Cash, viz., 35*s.* per 100, distinct sorts, hamper and package included; also extra strong plants, in 32-pots, 18*s.* per dozen, in 48-pots, 9*s.* per dozen, 60*s.* per 100, basket and packing extra. Crown Nursery, Reading.

GARIBALDI STRAWBERRY. — This variety was awarded a Cultural Certificate by the Fruit Committee of the Royal Horticultural Society on December 6. The Raiser can supply for cash strong plants at 25*s.* per 100, package free. See *Gardeners' Chronicle* for Jan. 6, page 31.

THOS. ARMSTRONG, Nurseryman, Moorville, Carlisle.

GARRYA ELLIPTICA. — Healthy, well-grown plants of the above, from open ground, 1½ to 2 feet, 12. each, 6*s.* per dozen. Also LIMES, extra fine, 7 to 8 feet, 6*s.* per dozen, 30*s.* per 100; 6 to 9 feet, 9*s.* per dozen, 60*s.* per 100. Other Stock as per List.

J. J. MARRIOTT, Mellish Road, Walsall.

Notice.

EDMUND PHILIP DIXON'S CATALOGUE of NEW and CHOICE SEEDS is now ready, and will be forwarded gratis and post-free on application.

EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

Large Evergreen Trees for Screens.

WILLIAM MAULE AND SONS offer Norway SPRUCE and CEDRUS DEODARA, 10 to 15 feet high, well-rooted—the former at 5*s.* each, the latter 10*s. 6d.*

The Nurseries, Bristol.

The Best Late Broccoli.

BROCCOLI, Christie's Self-protecting Late White.—Pronounced by all who have seen it as the finest self-protecting Broccoli in cultivation. Price per packet, 2*s. 6d.* A limited quantity to offer to the Trade, price on application.

EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

Shallot Seed.

DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild; with ordinary treatment bulbs have been grown to and even 12 inches in circumference—by far the best method of growing the Shallot. Treatment same as Onions. Price 12. per packet. May be had of all Seedsmen in sealed packets, and Wholesale of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C., or

B. R. DAVIS, Nursery and Seed Warehouse, Yeovil.

Superb Ridge Cucumber.

CUCUMBER, Foster's N.L. Superb Ridge. —This variety is a remarkably fine hardy, long, dark green Cucumber, and one that can be recommended with the greatest confidence. It is very prolific, and keeps its colour to the last; all who have seen it growing are satisfied that it cannot be surpassed, and those who have tried its flavour are convinced of its excellent quality: length, 12 to 18 inches. Price 6d. and 1s. per packet; price to the Trade on application.

EDMUND PHILIP DIXON, The Yorkshire Seed Estab lishment, Hull.

NEW DRACÆNAS.—Twelve of the finest in cultivation for 21s., well established young plants, growing freely. If potted on now will do for exhibition in the autumn—D. Baptisti, D. Youngii, D. Imperialis, &c., included. Packages gratis for cash with order.

JOHN H. LEY, Royal Nursery, Croydon.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Best Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Spring Flowers. LIST on application.

Mr. WEBB, Calcot, Reading.

Garden Seeds, Gladioli, &c.

IRELAND and THOMSON have much pleasure in intimating that their Descriptive Priced CATALOGUE of VEGETABLE and FLOWER SEEDS, GLADIOLI, IMPLEMENTS, &c., is now ready, and will be sent post-free on application.

CELOSIA PYRAMIDALIS PLUMOSA, AUREA and RUBRA, per packet, 1s. and 2s. 6d. each.

EAST LOTHIAN INTERMEDIATE STOCK, in three colours, per packet, 1s., 2s. 6d., and 5s. each.

WHITE WALL-LEAVED EAST LOTHIAN INTERMEDIATE STOCK, per packet, 1s., 2s. 6d., and 5s. each.

Seed Warehouse, 99, Waterloo Place, Edinburgh.

SEEDS—SEEDS—ALL KINDS.—Before ordering your Seeds, send for Illustrated CATALOGUE, which contains full Directions,

When and What to Sow,

PENGILLEY AND POOL (successors to the Haseldine Nurseries Company), 59, Queen Victoria Street, London, E.C.

WILLIAM HOLMES has to offer the following:—

JASMINUM NUDIFLORUM, in pots, strong, 50s. per 100.

" common White, in pots, strong, 50s. per 100.

IVIES, Irish, in 32's, extra fine, 100s. per 100.

" " from ground, fine, 25s. per 100.

CLOVES, old English, true, 20s. per 100 pairs.

" And in the spring—

ALTERNANTHERA AMŒNA, 12s. per 100.

" ACONYCHOIDES, 8s. per 100.

" MAGNIFICA, 8s. per 100.

Frampton Park Nursery, Hackney, London, E.

EAST LOTHIAN INTERMEDIATE STOCK (true).—New Seed of the above splendid Stock, for present sowing, in the colours of White, Purple, Scarlet, and White, wall-leaved, at 1s., 2s. 6d., and 5s. each colour. Price per ounce to the Trade on application.

THOMAS METHVEN AND SONS, 15, Princes Street, Edinburgh.

PYRUS or CYDONIA, the NEW JAPAN APPLE or QUINCE.—This gorgeous hardy scarlet May flowering fruit supplied a fine crop of its golden, delicously-scented fruit in September last, notwithstanding the general failure of our common Apple crop. The jam made is most delicious, which may be tasted at the nursery, or sample sent to those who really take an interest in the delicacies of the dinner-table.

Original plants 21s. and 15s. each; younger, 10s., 7s. 6d., and 5s. each.

WILLIAM MAULE AND SONS, The Nurseries, Bristol.

To the Trade.

CELERY, Calderstone's, the finest old grown, 10s. per lb.; also GOOSEBERRIES, Lancashire Prize, 3-yr. old, 26s. per 100.

N.B.—Remittance must accompany orders from unknown correspondents.

N. CREWS, Nurseryman and Seedsman, St. Helens, Lancashire.

From Paris.—Roses, Pæonies, Camellias.

LÉVÊQUE AND SON, NURSERYMEN 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand ROSE TREES, Standards, Half-standards, Dwarfs, and on own root—New and Old sorts.

LÉVÊQUE & SON respectfully solicit Gentlemen and Nurserymen visiting Paris to inspect their Stock, the largest in Paris.

SPLENDID PYRAMID CAMELLIAS, price 12s. to 50s. each; small, 2s. 6d. to 10s.

CATALOGUES and LISTS on application.

From Paris.—Large Bulbs of Gladioli Seedlings, and NAMED SORTS.

LÉVÊQUE AND SON, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand strong, healthy Flowering BULBS of GLADIOLI. The Seedling Bulbs are particularly recommended—their flowers equal to the named sorts (seeds have been taken from the best sorts of the collection). GLADIOLI, Seedlings, 8s. per 100, 5.5 per 1000, 5.46 per 10,000; mixed white, red, pink. Separate colours, 12s. to 20s. per 100; yellow, 24s. per 100. Named sorts per 100, 10 sorts, 10s.; 25 sorts, 20s.; 50 or 100 sorts (the best), from 25s. to 5.6, less or more, according to the novelty. All good flowering bulbs. English Cheques on London, or Post-office Orders on Paris accepted in payment.



New and Choice Seeds for 1877.

R. AND G. CUTHBERT'S Select CATALOGUE of the above, containing only the best varieties in cultivation, is now ready, and may be had post-free on application.

Southgate Nursery and Seed Establishment, Southgate, N.

BEST PLANTS for GAME COVERTS. — Evergreen Privet, Snowberry, Beech, Mahonias, Portugal and Common Laurels, Yew and Box Trees, Spruce Fir, Austrian Pines and Cotoneaster Simmonsii. Great stock of good plants to be sold cheap. Larch, 2 to 3 feet, and 3 feet.

W. JACKSON AND CO., Nurseries, Bedale, Yorkshire.

SMITH'S BERKSHIRE CHAMPION ONION is undoubtedly the finest Onion in Cultivation, either for Market or Exhibition; grows to a large size, very handsome, with excellent flavour; a long keeper. New seed, own growth, 10d. per oz., free by post, with Hints on Cultivation.

THOMAS SMITH, Seed Grower, Long Wittenham, Abingdon.

To Wholesale Potato Merchants.

SNOWFLAKE POTATO. — Notwithstanding the large demand for the above, the undersigned begs to state that he has still from 20 to 30 Tons of his own Growing still on hand. Price LIST will be forwarded only on receipt of Trade Card.

CHRISTMAS QUINCEY, Potato Grower and Merchant, Peterborough.

GROS GUILLAUME GRAPE. (Roberts' Variety).

The largest Black Grape in cultivation.

Eyes or Scions from fine, strong, well-ripened wood, 10s. 6d. each

Ditto ditto extra fine, strong ... ... 7s. 6d. ,,

For particulars of this remarkable New Grape see *Gardeners' Chronicle* of January 27, pages 102 and 117, or apply to

Messrs. W. ROBERTS AND CO., Seed and Nursery Establishment, 45, Capel Street, Dublin.

GLOXINIA CRASSIFOLIA GRANDIFLORA.—Magnificent strain, quite distinct: sown now will flower in autumn. Flowers erect and horizontalis, separate or mixed, 1s. and 2s. 6d. per packet.

PETUNIA, double large-flowered.—Yields a large percentage of double flowers. 2s. 6d. per packet.

STEPHANOTIS FLORIBUNDA.—Remarkably free-flowering variety from the Mauritius, 1s. 6d. per packet.

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To the Trade.

W. P. LAIRD AND SINCLAIR, NURSERYMEN, Dundee, N.B., have to offer:—

TRANSPLANTED.—Larch, 2 to 3 feet; Scots Fir, 2-yr., 1-yr. out; Silver Fir, 9 to 15 inches; P. Laricio, 2-yr., 1-yr. out; Limes, 3 to 5 feet; Wallalba, 4 to 6 and 6 to 8 feet; Green Hollies, 4 to 6, 12 to 18, and 18 to 24 inches; Irish Junipers, 4 to 5 feet; Laurustinus, 12 to 18 inches; Irish Yews, 4 to 5 feet.

SEEDLINGS.—Larch, 1-yr. and 2-yr.; Scots Fir, 1-yr.; Silver Fir, 2-yr. and 3-yr.; Pinus austriaca, 2-yr.; P. Sirobus, 2-yr.; Beech, 1-yr.; Spanish Chestnut, 2-yr.; Hazel, 1-yr.; English Oak, 1-yr.; Turkey Oak, 3-yr.; Sycamore, 2-yr.

RHUBARB, Myatt's and Sutton's St. Martin's.

SEED POTATOS.—Garden sorts.

Special offer of above may be had on application.

ISAAC DAVIES, NURSERYMAN, Ormskirk, has to offer the following:—

RHODENDRON PRÆCOX.—Raised by me and sent out eighteen years ago, is still a great favourite with all lovers of early-blooming plants. I can now supply good bushy plants, covered with flower-buds, at 18s. per dozen.

SWEET-SCENTED RHODODENDRONS.—Also raised by me, and which, when established, fleering children's family will be highly esteemed for many years, being of a bushy habit, early, and very free-blooming, the flowers large, white, and most deliciously fragrant.

I am happy to state that these plants have been found to withstand the winter in the open ground without the least injury. In respect of the undoubted value of these novelties, I should be glad to give references to many Noblemen's Gardeners of high standing, also to the Curator of the Botanic Gardens, Manchester.

Prices and full descriptions of these and other novelties post-free to any address on application.

To the Best Scarlet-fleshed Melon.

SUTTON'S HERO OF BATH. —*From* Mr. W. Wildsmith, *Gr. to* the Right Hon. Viscount Eversley.—"I consider your Hero of Bath the best scarlet-fleshed Melon in commerce, being A 1 in quality, appearance, and productiveness. His Lordship, who previously had a prejudice against scarlet-fleshed Melons, pronounces this variety superb."

From Mr. Thomas Lockie, *Gr. to* the Right Hon. Lord Otho Fitzgerald, *August 27.*—"I consider your Hero of Bath Melon the best I have ever grown of the scarlet-fleshed class. It is very handsome, of good constitution, and excellent in flavour."

Price 2s. 6d. per packet.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

Special Offer.

GEORGE FARNSWORTH has to offer large quantities of the following:—

ASH, Mountain, 2½ to 3½ feet, 16s. per 1000; 4 to 5 feet, 30s. per 1000.

BIRCH, 1½ to 2½ feet, 20s. per 1000.

BERBERIS AQUIFOLIA, bushy, 1 to 2 feet, 40s. per 1000

" 2 to 3 feet, 8s. per 100.

CHESTNUT, Horse, 7 to 9 feet, 10s. per 100.

ELMS, 3 to 4 feet, 25s. per 1000.

LARCH, 2 to 3½ feet, 35s. per 1000.

LIMES, 2-yr. layers, 1-yr. transplanted, 3 to 5 feet, 9s. per 100; 6 to 8 feet, 25s. per 100.

LAUREL, Common, 1 to 3½ feet, 30s. per 1000.

POPLARS, Balsam, 5 to 7 feet, 8s. per 100.

" Black Italian, 2½ to 3½ feet, 12s. 6d. per 1000; 4 to 5 feet, 30s. per 1000; 5 to 6 feet, 6s. per 100.

RHODODENDRONS, Hybrid and Pontica, mixed, 3-yr. seedling, fine, 5s. per 100; do. and 2-yr. bedded, 18s. per 100; extra transplanted, 8 to 12 inches, 30s. per 1000; 1 to 1½ foot, 110s. per 1000; 1½ to 2 feet, 20s. per 100, 180s. per 1000.

SYCAMORE, 2 to 3 feet, 20s. per 1000; 3½ to 5 feet, 30s per 1000.

Also other Nursery Stock as per LIST.

The Nurseries, Matlock.

RICHARD SMITH'S
GUINEA COLLECTION OF VEGETABLE SEEDS

Contains the following excellent sorts

(Carriage Free):

PEAS, Ringleader	1 quart
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,, Fortyfold	1 ,,
,, Prizetaker	1 ,,
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BEANS, Johnson's Wonderful	1 ,,
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BRUSSELS SPROUTS	1 ,,
BROCCOLI, Adams' Early	1 ,,
,, Snow's Winter White	1 ,,
,, Purple Sprouting	1 ,,
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CABBAGE, Early Nonpareil	1 ,,
,, Enfield Market	1 ,,
,, Worcester Incomparable	1 ,,
,, Red Pickling	1 ,,
CARROT, Early Horn	1 oz.
,, James' Intermediate	1 ,,
,, Improved Altringham	1 ,,
CAULIFLOWER	1 pkt.
CELERY, fine Red	1 ,,
,, fine White	1 ,,
CRESS, Broad-leaved	2 oz.
,, Curled	1 ,,
,, Australian	1 pkt.
CUCUMBER	2 pkts.
ENDIVE, Moss Curled	1 pkt.
LEEK, Musselburgh	1 ,,
LETTUCE, Paris White Cos	1 ,,
,, Drumhead	1 ,,
,, Worcester Cabbage	1 ,,
MUSTARD	4 oz.
MELON	1 pkt.
ONION, White Spanish	2 oz.
,, James' Keeping	1 ,,
PARSLEY, Extra Curled	1 pkt.
PARSNIP, Hollow-crowned	1 oz.
RADISH, Wood's Early Frame	1 ,,
,, Long Scarlet	1 ,,
,, Red Turnip	1 ,,
,, White Turnip	1 ,,
SAVOY, Green Curled	1 pkt.
SPINACH, Round	2 oz.
,, Prickly	2 ,,
TURNIP, Early Snowball	1 ,,
,, Early Red-top	1 ,,
TOMATO, Large Red	1 pkt.
VEGETABLE MARROW	1 ,,
SWEET BASIL	1 ,,
SWEET MARJORAM	1 ,,

SEED WAREHOUSE, 61, HIGH STREET, WORCESTER.

THE
NEW PLANT and BULB COMPANY

Beg to call special attention to their NEW LIST (No. 31), just published.

CONTENTS:

NEW HARDY BULBS,
NEW and RARE LILIES,
NEW HARDY CYPRIPEDIUM,
NEW FERNS,
SEEDS of NEW HARDY FLOWERING PLANTS, &c.;

All of sterling merit, and at low prices. Post-free on application.

LION WALK, COLCHESTER.

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18s. to 30s. per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or £5 per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded, £5 to £7 10s. per 100, or 18s. per dozen.

ANTHONY WATERER,
KNAP HILL NURSERY, WOKING SURREY.

AVENUE TREES.

Chestnut, 2 kinds, 8 to 12 feet.
Elms, 6 kinds, 8 to 12 feet.
Oaks, 2 kinds, 8 to 12 feet.
Laburnum, 2 kinds, 8 to 12 ft.
Poplars, 3 kinds, 8 to 12 feet.
Sycamores, 3 kinds, 8 to 12 ft.
Sorbus, 3 kinds, 8 to 12 feet.
Limes, 8 to 12 feet.
Hornbeam, 8 to 12 feet.

All the above are very fine and very cheap.
CHARLES NOBLE, BAGSHOT.

VEITCH'S SELF-PROTECTING AUTUMN BROCCOLI.

JAMES VEITCH & SONS

HAVE MUCH PLEASURE IN DIRECTING ATTENTION TO

THIS VERY VALUABLE BROCCOLI

FOR AUTUMN AND EARLY WINTER USE.

This Plant is of robust but upright growth, and the heads, which are beautifully white, firm, and compact, are thoroughly protected by the foliage, and remain a long time fit for use. It will be found extremely valuable as a succession to our Autumn Giant Cauliflower, which has met with so much approval, and is now an established favourite in all gardens.

MR. WESTCOTT, *Gr., Ruby Castle, writing Nov* 11, *says*:—"I am now commencing to cut some splendid heads of the new Broccoli you sent me for trial. It is evidently a variety distinct from any one I am acquainted with, and from its splendid protecting habit, short and immensely hard woody stem, I am under the impression it will stand uninjured many degrees of frost, which will ensure it to be a great acquisition as an early winter variety. The plants are of immense strength, and the heads, both in size, texture, and odour, all that can be desired."

MR. PERKINS, *Gr. to* Lord Heniker, *Thorndam Hall, says*:—"It comes in just as the Autumn Giant and other Cauliflowers are going out, and is, therefore, most invaluable. It is quite distinct, and also wonderfully self-protecting; some rows of it at this place withstood 13° of frost last night, November 22, 1874. Wherever a long succession of Cauliflower is required this must be the one for late use."

MR. JAMES ADAMSON, *Brynkinalt, writing in the "Journal of Horticulture" of January* 4, *says*:—"This variety of Broccoli seems to me to be quite distinct from any other I know, and, like the Autumn Giant Cauliflower, is a grand acquisition to our list of autumn and early winter vegetables. The stem is short and stout, the head well protected, close, and compact, and of excellent size for table use. I cut the first early in November, and am still cutting as wanted now (December 22). We had 10° frost in November, and while numbers of Autumn Giant Cauliflowers were destroyed, this Broccoli was uninjured. To those who have not grown it the past season I would say—do so the next, and you will not be disappointed."

MR. MCINDOE, *The Gardens, Hutton Hall, Guisborough, December* 29, 1876:—"I beg to take this opportunity of congratulating you upon sending out such a splendid acquisition as your Self-protecting Autumn Broccoli is turning out to be. I consider it by far the best addition to our vegetable list for many years. In June last we planted out 300, which began to be ready for cutting about the middle of November, and from that date until now we have been cutting from six to ten heads daily. Where vegetables are wanted in quantity during November and December, no gardener will be safe without this choice Broccoli."

MR. W. JOHNSON, *Bayham Abbey, writing to the "Gardeners' Chronicle" of December* 30, *says*:—"At this season of the year Cauliflower is in constant demand, and to find a reliable variety that will fall-in from the middle of November onwards is a great boon to gardeners. In this matter we have Veitch's Self-protecting Autumn Broccoli, a gem of the first water, and I think it requires nothing further from me than to say it is simply unique."

Price 1s. 6d. per Packet.

SEED CATALOGUE now ready, and will be forwarded post-free on application.

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THE HUNTINGDON NURSERIES.

WOOD & INGRAM'S
CATALOGUE OF SEEDS FOR THIS SEASON

Is now ready, and will be forwarded free on application.

THE NURSERY AND SEED BUSINESS

So successfully conducted for a number of years by the late MR. JOHN INGRAM, will be continued to be carried on in its various branches, as heretofore, by his Widow and Two Sons, in the name of WOOD AND INGRAM, who respectfully solicit a continuance of the kind and liberal patronage which has been given for a lengthened period to their Establishment.

THE NURSERIES, HUNTINGDON.—January, 1877.

SEEDS OF SUPERIOR QUALITY.

WM. PAUL & SON

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PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, N.,

BEG TO ANNOUNCE THAT THEIR

ILLUSTRATED CATALOGUE
OF
SELECT VEGETABLE AND FLOWER SEEDS, &c.,

Is now ready, and will be forwarded, post-free, on application.

Many sorts are home-grown, and all are selected with the utmost care from the most celebrated stocks at home and abroad, in order to secure for their Customers the best quality that can be obtained.

IMPORTANT—Observe the Christian Name,

WM. PAUL & SON, WALTHAM CROSS, N.

The Best Medium and Late Kidney Potato in CULTIVATION.

SUTTON'S MAGNUM BONUM.

A remarkably good cooking Potato.
An enormous cropper.
Almost entirely free from disease.
Indispensable for show purposes.

From Mr. J. P. BELLISS, *Gr. to* Major Thoyts, *Sulhamstead, Nov.* 15, 1876.

"I bought of you in March, 1876, 1 lb. of Magnum Bonum Potatos, cut them into 50 sets, and planted them 3 feet apart. The haulm covered every foot of ground, and I am convinced that 3 feet square was not more room than was necessary, being a strong growing variety. I lifted the crop in October, and from two sets I dug 21 lb., and altogether 276 lb. of good sound Potatos."

Price 5*s.* per peck, 17*s. 6d.* per bushel.

SUTTON'S DESCRIPTIVE LIST of choice Seed Potatos gratis and post-free.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

Centaurea candidissima (Wholesale Price).

WOOD AND INGRAM offer fine summer-sown-plants, of the above, thoroughly established in thumb-pots, at 20*s.* per 100. Package 3*s.* per 100, or 12. 6*d.* for 50, not less than which will be sold at the price.

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EWING AND COMPANY'S LIST of NEW ROSES for 1877 is now ready, and may be had gratis. Additional Houses have this season been built specially to extend the Propagation and Growth of NEW and TEA ROSES. The plants are making vigorous, strong growth, and will be unusually large and fine.

Their GENERAL LISTS of Roses, Fruit Trees, Ornamental Trees for Avenues, Conifers, Evergreens, Clematis, &c. (104 pages), with full descriptions, gratis.

The Royal Norfolk Nurseries, Eaton, near Norwich.

LARGE ESPALIER APPLES.—Very fine large Trees, full of fruit-buds, measuring 6 to 10 feet wide and 4 to 6 feet high. Names and price on application to FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

STEPHANOTIS FLORIBUNDA.—Strong specimen plants of a very free-flowering variety, 10*s. 6d.* each; smaller, but fine half specimens, which will produce abundance of flower early, the buds just appearing on some, 7*s. 6d.* each, 63*s.* per dozen; in 48-pots (flowered last summer), 30*s.* per dozen. This offer is for six weeks only, to make room, the plants being worth double the money.

JOHN H. LEY, Royal Nursery, Croydon.

Surplus Stock—all Transplanted.

R. W. PROCTOR has to offer of the above:—

ASH, Weeping, 7 to 8 feet stems, 20*s.* per dozen.
BERBERIS DULCIS, 2½ to 3½ feet, 20*s.* per 100.
" AQUIFOLIA, 1½ to 2 feet, 7*s. 6d.* per 100.
CHESTNUT, Horse, 6 to 8 feet, 6*s.* per 100.
HOLLY, Common, bushy and well rooted, 1½ to 2 feet, 20*s.* per 100; 2 to 2½ feet, 32*s.* per 100.
LAURUSTINUS, thick bushy plants, 1½ to 2 ft., 40*s.* per 100
LAUREL, Common, 3 to 4 feet, 20*s.* per 100.
LABURNUM, 8 to 10 feet, 40*s.* per 100.
MEZEREON, Red, 16 to 20 inches, 25*s.* per 100.
POPLAR, Balsam, 11 to 13 feet, 9*s.* per dozen.
SYCAMORE, 10 to 12 feet, 9*s.* per dozen.
WEEPING WILLOW (American), Standards, 12*s.* per doz.
PRIVET, Box-leaved, very stiff and bushy, 2 to 2½ feet, 20*s.* per 1000.
" Evergreen, 2 to 3 feet, 20*s.* per 1000.
" OVALIFOLIUM, very bushy, 2½ to 3½ feet, 7*s. 6d.* per 100.
PINUS STROBUS, or Weymouth, well furnished plants, 3 to 4 feet, 30*s.* per 100.

The Nurseries, Ashgate Road, Chesterfield.

VALUABLE LILIES.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 8, at half-past 12 o'Clock precisely, an Importation of good Bulbs of the beautiful LILIUM NEILGHERRENSE. The white flowers of this magnificent Lily are deliciously fragrant, and of great substance; it bears several flowers on a stem, each flower nearly a foot long. Also some excellent Bulbs of the following new varieties of Lilium neilgherrense, viz.:—

LILIUM NEILGHERRENSE ROSEUM—the exterior of the flower tubes of this variety is pink, the interior white.
LILIUM NEILGHERRENSE FLAVUM—a handsome light yellow-coloured form of this charming Lily.
LILIUM NEILGHERRENSE TUBIFLORUM—a magnificent pure white Lily, with very long flowers; figured in Wight's *Icones Plantarum Indiæ Orientalis.*
LILIUM NEILGHERRENSE TUBIFLORUM LUTEUM—a very handsome yellow-flowered variety of tubiflorum. And some

Splendid flowering Bulbs of other choice LILIES, including BLOOMERIANUM OCELLATUM, PURPUREUM, HUMBOLDTII, GIGANTEUM, PARDALINUM, PARVUM, CALIFORNICUM, and WALLICHIANUM; also a quantity of choice Bulbs and Tubers from California, including CALOCHORTUS, CYCLOBOTHRAS, BRODIÆAS, TRITELEIAS, CALLIPRORAS, ERYTHRONIUMS, BLOOMERIAS, &c.; and some fine blooming Bulbs of the handsome CRINUM BRACHYNEMA, C. AUSTRALE, C. PRATENSE CANALICULATUM, tuberous-rooted BEGONIAS, PANCRATIUMS, AMARYLLIS, North American CYPRIPEDIUMS, with a variety of other Bulbs and Tubers.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

SPLENDID NEW MELON, 1877.

CHARLES LEE & SON

(Successors to Messrs. J. & C. LEE)

Have the pleasure to announce that they have purchased the entire Stock of

MANN'S HYBRID GREEN-FLESH MELON,

Which they now offer for the first time.

It has already earned a high reputation in London and the provinces for its many excellent qualities, among which may be mentioned a remarkably high and exquisite flavour at all seasons of the year—perfection of shape and size for dessert—a thin rind and melting flesh, with an overflow of perfumed juice. It is also a heavy cropper, and forces well.

Dr. HOGG has spoken of this excellent Melon in the highest terms, and after tasting it pronounced it a fruit of the highest merit.

Mr. CULVERWELL, of Thorpe Perrow, fellow judge with Mr. FOWLER, of Harewood House, at the Leeds Horticultural Show, where they awarded a First-class Certificate to "Mann's Hybrid Green-flesh Melon," speaks of it as "an exceedingly fine Melon, especially at that early season—the early part of June."

Mr. INGRAM, of Belvoir Castle, writes, in the third week of October, "that in spite of the disadvantage of a long term of gloomy weather, at that season of the year, 'Mann's Hybrid Green-flesh Melon' was sweet, tender in flesh, very juicy, and distinct in character."

Messrs. Charles Lee & Son are now prepared to offer this very useful and delicious new Melon

In Sealed Packets, at 3s. 6d. per Packet.

CHARLES LEE AND SON, HAMMERSMITH, W.

WM. PAUL & SON,



(Successors to the late A. Paul & Son, Established 1806.)

ROSE GROWERS,

TREE, PLANT, BULB, AND SEED MERCHANTS,

WALTHAM CROSS, HERTS,

Adjoining the "Waltham" Station, Great Eastern Railway.

Inspection of Stock invited.

Priced Descriptive Catalogues free by post.

AVENUE TREES.

PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 8 inches at 4 feet from the ground.

LIMES, 12 to 20 feet high, and girthing 6 to 10 inches at 4 feet from the ground.

POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 6 inches at 4 feet from the ground.

ANTHONY WATERER

Has to offer many thousands of the above. They may be seen growing at Knap Hill. They are straight, handsome, and well rooted, and altogether the finest Trees of the kind to be found in any nursery in Europe.

KNAP HILL NURSERY, WOKING, SURREY.

Vegetable & Flower Seeds
Seed-Potatos, Tools &c
Best quality. Carriage free
Priced Catalogue post free
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Australian Plants and Seeds.

EUCALYPTUS GLOBULUS, PALMS, CYCADS, FERNS, and all kinds of PLANTS and SEEDS indigenous to Australia, Fiji, &c., supplied on the most reasonable terms. Priced CATALOGUES and Special Quotations on application.

SHEPHERD AND CO., Nurserymen and Seedsmen, Darling Nursery, Sydney, New South Wales. (Established 1827.)

Agents: Messrs. C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

Yeovil Nursery.—Late E. Pierce.

R. DAVIS, having taken this Nursery, offers the following:—Extra fine, well-rooted BEECH, 3 to 4 and 4 to 5 feet; LIMES, CHESTNUTS, ELMS, &c., 10 to 12 feet: MAGNOLIA GRANDIFLORA, Exmouth variety; BOX, Minorca, Tree, and variegated, 3½ to 5 feet; FIR, Spruce, 2½ to 3½ feet. Prices and particulars on application to

R. R. DAVIS (late E. PIERCE), Yeovil Nursery and Seed Warehouse, Yeovil.

CATALOGUES.—His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded by mail to

S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

Planting Season.

E. BURGESS begs to offer the following: Strong Standard and Pyramid PEARS, ROSES, Evergreen and Deciduous Flowering SHRUBS, English OAK, ELMS, and LIMES, up to 10 feet, and Spruce FIRS. Prices on application.

The Nurseries, London Road, Cheltenham.

To Potato Planters.

POTATOS.—About 15 Tons Early Rose Potatos, a very pretty sample, Spalding Station, Great Northern Railway; 10 Tons Early Rose, 5 Tons Paterson's Victoria, and 50 Tons Bovinia Potatos, Boston Station, Great Northern Railway. To be Sold, for Cash.

W. W. JOHNSON AND SON, Nurserymen and Seed Merchants, Boston, Lincolnshire.

Cucumber Plants, clean, strong and healthy.

F. W. COOPER can supply the above: • Rollisson's Telegraph, Munro's Duke of Edinburgh, Blue Gown and Tender and True; also seed of all the varieties grown under his own supervision and guaranteed true. The Trade supplied. Florist, Huntingdon.

SPECIMEN AZALEAS (Winter flowers).—An abundance of splendid flowers can be had in a week or two, at one penny per bunch, by purchasing a few Specimen Azaleas, now opening flower. The plants are from 2 to 3 feet over, perfect shape, some hundreds of flowers and buds, which will last for months at this time of the year. All new and valuable sorts, 21s., 31s. 6d., and 42s. each, according to size and sorts. Eighteen plants only are for Sale. They are all worth double the money. Package gratis for cash with order.

JOHN H. LEY, Royal Nursery, Croydon.

FISHER, HOLMES, AND CO.'S CATALOGUE of VEGETABLE SEEDS and GARDEN REQUISITES, also of FLOWER SEEDS and GLADIOLI (which is published separately), has been forwarded to all their Customers. As there may be instances where they have not been received, F. H. & Co. will have pleasure in posting another on application.

Handsworth Nurseries, Sheffield.

VINES, VINES, ROSES, FRUIT TREES, &c.

VINES, strong planting and fruiting Canes of Black Hamburgh, Black Alicante, Lady Downe's, Gros Colman, Foster's Seedling, Muscat of Alexandria, Madresfield Court, Mrs. Pince's, F. Hegg, Waltham Cross, 2s., 3s. 6d., and 5s. each; Venn's Black Muscat and Pearson's Golden Queen, 7s. 6d. to 12s. 6d. each.

ROSES, dwarf hybrid perpetual, best sorts, 7s. per dozen, 50s. per 100.

APPLES, PEARS, PLUMS, and CHERRIES, pyramids, 12s. and 18s. per dozen; dwarf-trained, 30s. per dozen.

CURRANTS and GOOSEBERRIES, 3s. per dozen, 20s. per 100.

STRAWBERRY, Garibaldi, 2s. per dozen, 4s. 6d. per 50, 7s. 6d. per 100; Vicomtesse Héricart de Thury, 12s. 6d. per dozen, 3s. 6d. per 50, 5s. per 100. In 60 other good varieties, true to name, 2s. 6d. per 100.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

CHOICE TUBERS and ROOTS.—Twelve of tuberous BEGONIAS, including Fœbelli, roxæflora, intermedia, Sedeni, vivicans, &c., for 21s., very fine bulbs. Twelve CALADIUMS, splendid tubers, fit for exhibition, ready to start, 42s. Fine collections of these latter at 42s. per dozen, consisting of bulbs averaging 10 inches in circumference.

JOHN H. LEY, Royal Nursery, Croydon.

Calceolarias (James').

H. CANNELL has to announce that he has a splendid stock of the following, established in 60's, just ready for shifting:—

CALCEOLARIAS, 2s. 6d. per dozen.
PRIMULAS, 2s. 6d. per dozen.
CINERARIAS, 2s. 6d. per dozen.

Smaller, 1s. per dozen less, and post-free. Special prices per 100 or 1000. H. CANNELL, Swanley, Kent.

Asparagus, Asparagus, Asparagus.

ROBERT AND GEORGE NEAL have the above to offer in large or small quantities, 1-yr., 9-yr., and 3-yr. old:—

1-yr. old, 40s. per 1000.
2-yr. old, 25s. per 1000.
3-yr. old, 35s. per 1000.

Price to the Trade on application.

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Dessert ditto, per dozen	1 2 0	1 9 0	1 11 0
Tea Spoons, per dozen	0 14 0	1 0 0	1 2 0

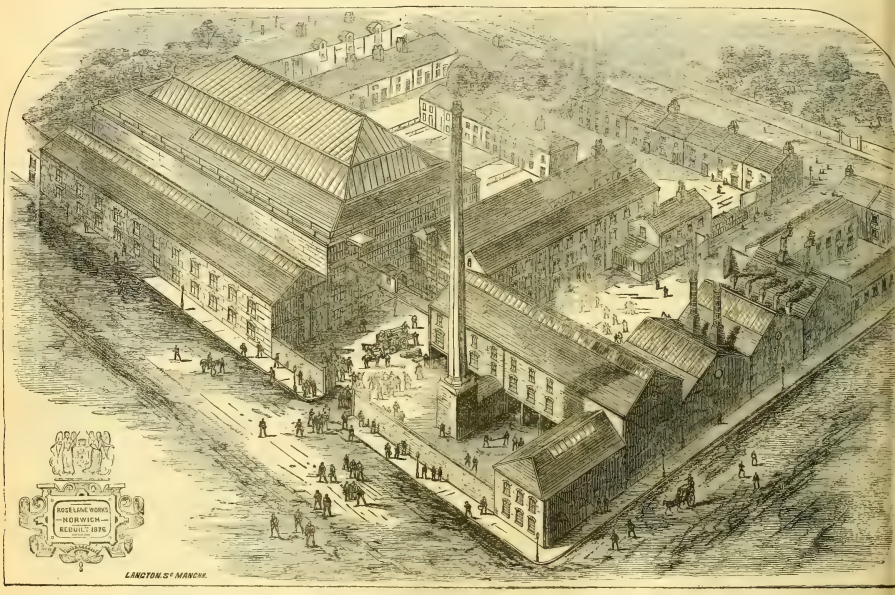
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SATURDAY, FEBRUARY 3, 1877.

WALKING-STICKS.

(*Concluded from p.* 106.)

IT will readily be conjectured that a large stock of these roughly cut sticks, both of British and foreign produce, would appear when stacked together like so much firewood, and this is the impression one has on passing through the several floors of the store-house for raw material belonging to Mr. Henry Howell, of 180, Old Street, City Road, London, the largest manufacturer of naturally grown walking and umbrella sticks in England. This building, which is nearly 100 feet long and about 60 feet high, has four separate floors, in which are classified the various English and foreign sticks; and although each one of the hundreds of thousands of sticks thus stored has been carefully selected for the purposes of the trade, to the uninitiated they all appear like so many stacks of faggots; but if we pass on to the factory (an immense building of several storeys, which, together with the warehouse, covers a space of some thousands of square feet), we shall see the various processes through which each stick passes till it is finally ready for the retail market.

In a great many sticks, whether of British or foreign growth, much labour and discrimination are needed to reduce and form them to the necessary shape. In the Ash or Holly, for example, the naturally grown branches are mostly too thick to allow of them to be simply straightened, polished, and sent into the market; they have, therefore, to be reduced by a process of planing and rasping, by which the required taper is given and the knob or hook formed, after which it is smoothed and polished, or perhaps before polishing it is artificially coloured in imitation of other sticks, or carved and figured according to the fancy of the manipulator or the demands of fashion. The young saplings of the Ash, however, prepared with their bark on, require but little treatment at the hands of the workmen besides forming the heads, cleaning and polishing, and when finished they make excellent sticks. Very few, indeed, of British-grown sticks are in their natural condition sufficiently straight for use as walking-sticks, and indeed some of the foreign produce are even more crooked; for instance, the Carob (Ceratonia siliqua), quantities of which are imported from Algeria—these have all to be straightened by mechanical means. They are buried in hot sand over a stove till they become quite pliable. In front of the heap of sand in which the sticks are plunged is placed a stout board, 5 or 6 feet long, fixed at an angle inclined from the workman: in the edge of this board are square notches. When the stick has become sufficiently pliable by being buried in the hot sand, the workman places it in one of the notches, and strains and bends it till he has succeeded in producing a perfectly straight stick. In this way the most crooked, and, to all appearance, worthless sticks, are made so straight that the result appears almost impossible, more especially when it is borne in mind that the workman has no other guide but his well-trained eye to help him. When straightened to his satisfaction the sticks are placed on one side, and as they cool they become perfectly rigid.

Efficiency in this branch of walking-stick making is only attained after many years of training and practical experience on the part of

the workman, and this can be easily imagined when we remember the different effects produced by heat on the various kinds of wood—the degree of heat necessary to straighten one kind of stick being often sufficient, if applied to one of a different kind, to completely spoil it. The application of heat in various forms, as will readily be supposed from the above illustration, is an important element in the operations of the stick-maker. The same power which makes a crooked stick straight can be applied to make a straight one crooked, and so we find that the hard and brittle stems of the Bamboo, the partridge and the Rajah canes, as well as the various kinds of English sticks where Nature has not provided any kind of knob or crook, are by the application of heat curled into the necessary shape to form a handle. Most of our readers will, however, be aware that the naturally-formed knob or hook is more highly valued by *connoisseurs* of walking-sticks.

Of the final processes of cleaning, polishing, and ornamenting we need say nothing, it will suffice to show the enormous extent of the trade when we say that in the establishment above referred to nearly 200 skilled workmen are constantly employed in the preparation of naturally grown walking-sticks and umbrella-handles.

This trade is essentially a British industry, but large quantities of sticks are also made in France and other parts of the Continent. Though we import so many in their rough state from all parts of the world, the imports of manufactured sticks are comparatively few. From France we get some tastefully mounted canes, and from Hamburg we import the cheaper kinds of painted canes; but for substantial and well-got-up sticks, more especially for natural sticks, the British manufacture is noted, not only at home, but in the foreign markets, large quantities being exported to North and South America, as well as to other parts of the world.

I am indebted to Mr. Howell for many of the particulars contained in this article, as well as for the following list of sticks known in commerce, the botanical origin of many of which is quite unknown. Perhaps some of the readers of the *Gardeners' Chronicle* may be able to throw light upon those to which the scientific names are not attached.

Sticks from Algeria.

Olive—Olea europæa	Chestnut—Castanea vulgaris
Myrtle—Myrtus communis?	Cork—Quercus suber
Pomegranate—Punica granatum	Juniper
	Bay-tree
Carobtree—Ceratonia siliqua	Date Palm petioles—Phœnix dactylifera
Orange and Lemon—Citrus sp.	
Eucalyptus—E. globulus	Wild Bamboo

West Indies.

Fimento—Pimento vulgaris	Supple Jack—Paullinia sp.
Coffee—Coffea arabica	Orange and Lemon—Citrus sp.
Flowered Ebony—Bryæa Ebenus	Yellow Sanders
	Myrtle
Soapwood—Sapindus saponaria	Black Torch
Briar—Xanthoxylon Clava Herculis	Gru-Gru—Astrocaryum vulgare, or Acrocomia sclerocarpa
	Wild Bamboo

English.

Blackthorn	Ground Ash
Oak	Holly
Crab	Hornbeam
Warted Crab	Birch
Whitethorn	Mountain Ash
Hazel	Cherry
Maple	Dogwood
Furze	Cabbage (Jersey)

Bamboos, chiefly from China.

Ordinary yellow-coot Bamboo and black do.	Doghead Cane
	Beetle Cane
Tonquin Reed	Whangee—Phyllostachys?
Carolina Reed	Whampoa Bamboo

Australian.

Midgen (perhaps a species of Dracæna)	Loya
	Bramble
Cardwell	

Other Varieties from the East.

Partridge cane (a Palm)	China
Penang Lawyer (Licuala)	Penang
Malacca (Calamus scipionum) ..	Siak
Rajah	Borneo
Root Rattan (Calamus)	Singapore
Bakow (a Palm)	Singapore
Jungle (a Palm)	Java
Zephyr	East Indies
Chi-Chi	
Tea-tree (not Thea)	China

Miscellaneous.

Assyrian Thistle	Smyrna
Medlar	France
Black Jacks	South Carolina

—and a fine knotted stick recently imported in considerable quantities under the name of Ceylon Vine, the native country, however, of which is doubtful, and it may prove to belong to the order Sapindaceæ. *John R. Jackson, Museum, Kew.*

PLANT PORTRAITS.

AERIDES FIELDINGI, Orchidaceæ (*Belgique Horticole*, 1876, tt. 18, 19).—The well-known Fox-brush Aerides, referred as a variety to A. multiflorum, Roxb. With this plate is given a list of the cultivated species, with comments thereon.

BILBERGIA HORRIDA, Regel, Bromeliaceæ (*Belgique Horticole*, 1876, t. 22).—A species with strongly toothed, white-banded leaves, and erect racemes of white flowers, the tips of whose petals are tipped with blue. It is a native of Brazil.

BILBERGIA SPECIOSA, Bromeliaceæ (*Revue Horticole*, 1877, p. 10).—A Brazilian species, supposed to be a variety of B. Croyana. The leaves are tufted, strap-shaped, obtuse, serrulate, lightly covered with bran-like scales. The flowers crowded in spikes or racemes, with numerous rosy red bracts; the calyx of carmine-red, the petals violet, shaded with red. The plant is of vigorous habit, and flowers several times in a year.

BILBERGIA VIRIDIFLORA, H. Wendland, Bromeliaceæ (*Belgique Horticole*, 1876, tt. 20 and 21).—A species with long loose panicles of greenish flowers. It is supposed to have been procured from Brazil.

COULOMBIER PEACH, *Revue Horticole*, 1876, p. 30.—Of this a coloured figured is given. It is said to be of merit *tout à fait hors ligne*, and was raised by M. Lepère, jun., of Montreuil. The glands of the leaves are globular, the flowers of medium size. The fruit is a freestone of medium size, perfectly spherical, downy, richly coloured, and finely speckled on the sunny side. The flesh is melting, of exquisite flavour. The kernel oval, deeply furrowed. The fruit ripens in the first fortnight of September. M. Carrière, a good judge, speaks of it in the highest terms. It is in the hands of M. Jamin, of Bourg-la-Reine, and M. Coulommier, of Thiry-sur-Seine.

DENDROBIUM GUIBERTI, *Illustration Horticole*, t. 258.—A species with a dense panicle of pale yellow flowers, the lip being of a darker orange colour. It is nearly allied to D. densiflorum.

DRIMIOPSIS KIRKII, *Botanical Magazine*, t. 6276.—A pretty bulbous plant, with spotted leaves, like those of a Lachenalia, and a spike of small white bell-shaped flowers. The figure was taken from a plant which flowered at Kew in July, 1873. The plant is a native of Zanzibar.

LIVISTONIA AUSTRALIS, *Botanical Magazine*, t. 6274.—A noble Australian Fan Palm, for many years one of the chiefest ornaments of the Palm-house at Kew, where it flowered every year, but at last outgrew its accommodation. The figure gives but a poor notion of the beauty of this fine species.

MASDEVALLIA ATTENUATA, *Botanical Magazine*, t. 6273.—One of the more inconspicuous white-flowered species, with long-spreading tails to the flowers. It was described in our columns by Professor Reichenbach in 1871, p. 834, and was introduced into commerce by Messrs. Veitch. It flowers at Kew in December.

× NÆGELIA, HYACINTHINA *Revue Horticole*, woodcut, p. 29.—A dwarf-growing hybrid Nægelia, producing a profusion of pale blush-coloured pendulous flowers in a dense spike. It appears to be a desirable variety, and is to be sent out by M. Jules Vallerand, of Bois de Colombe, France.

NEPENTHES VEITCHII, *Illustration Horticole*, t. 261.—A Bornean species, known in gardens as N. lanata, or N. villosa. See Dr. Moore in *Gardeners' Chronicle*, 1872, p. 542.

PHILODENDRON GLORIOSUM, *Illustration Horticole*, t. 262.—Described as a truly glorious plant. According to the figure it is a scandent plant, with large bold cordate ovate-acute leaves of a deep rich green colour, the midrib and secondary nerves being of a snow-white colour, and the margins of the leaves bordered with a thin edging of a pink colour. M. André met with it in a virgin forest on the borders of the River Guatiquia, in Colombia, and was, as he says, transported with admiration at its beauty. It has been successfully introduced into the establishment of M. Linden, of Ghent.

SONERILA MADAME VICTOR ALESCH, *Illustration Horticole*, t. 259.—A hybrid raised by M. Linden, with leaves of a bronzy green, marked and spotted with white, and resembling those of Tydea amabilis.

TELFAIRIA OCCIDENTALIS, *Botanical Magazine*, t. 6272.—A Cucurbit, of singular and striking appearance, of climbing habit, pedate 5-foliolate leaves, tendrils and white bell-shaped flowers 1½ inch to 2 inches in diameter, with a purple centre, and five deeply fringed segments. The Gourd is 2 feet long, ovoid-oblong, with ten prominent winged ribs, and the cells filled with golden-yellow pulp. The seeds are numerous. The plant is a native of West Tropical Africa, where the seeds are eaten by the natives, and used for extracting oil. It flowered at Kew in September, 1876.

TILLANDSIA PRUINOSA, Swartz, Bromeliaceæ (*Belgique Horticole*, 1876, tt. 16 and 17).—A rootless plant, with a thick, rather elongated, bulbous stock, from which proceed numerous long, linear, ciliated leaves with sheathing bases. From the centre of these rises the inflorescence, consisting of a spike of rose-coloured bracts enclosing purplish flowers. The plant may be grown suspended from the rafters of a hothouse. It is a native of the West Indies.

TYDÆA CECILIÆ, *Illustration Horticole*, t. 260.—One of M. André's discoveries in the mountains of New Grenada, between 2000 and 3000 feet above the sea, in a temperature of +30° C. at noon. The plant was growing amid the fissures of the rocks. The leaves are a velvetty violet colour, with white markings. The flowers are pink, with the limb spotted with darker spots of the same colour.

XANTHISMA TEXANUM, *Botanical Magazine*, t. 6275.—A hardy annual Composite, with sessile, linear, dentate leaves, and heads of yellow flowers like a Coreopsis. The plant, which is a native of Texas, flowered at Kew in November last.

ASPECTS FOR PLANT HOUSES.

IT is so universally recommended for span-roofed plant-houses to be built with the ends facing north and south, so that the sides face east and west, that it will doubtless be considered an act of temerity to dispute the soundness of the advice, yet I do dispute it, at least so far as to say it is not the best position—that an aspect for the sides south and north, with ends east and west, is quite as good, and I think a great deal better.

The greatest drawbacks to the perfection of the first position, viz., ends north and south, are, first, that during the winter when the sun has but little power except when within a few degrees on either side of the south the bars and framework of the house, be they ever so slight, cast a shade over its interior which is of great disadvantage to the plants, and on a frosty morning in midwinter the ice on the glass will remain unmelted a good hour longer than upon a house facing south.

In the second place, when the sun rises early in summer the east face of the house receives the full glare immediately it is above the horizon, which endangers tender foliage. Houses in this position are often hotter at 5 o'clock on a summer's morning than they are at 10 o'clock, owing to the interposition of the bars and rafters as the sun works round.

And in the third place, the sun in the afternoon of a summer's day, pouring as it must its full force direct upon the west face, renders it almost impossible to close the house till late in the day unless a heavy shading is left on after closing; and unless your house is a stove for foliage plants only, this is a great drawback.

Now the position I advocate—viz., ends east and west, with broadside north and south—has none of these disadvantages, for in the first place it receives the full force of the little sun we have in winter, which shines right through the house, reaching the back stage as well as the front most cheerfully.

In the second place, the hot summer sun rises upon the face of the house gradually, giving time for the drying up of condensed moisture, and the danger of scorching is less than where the glare is sudden.

And in the third place, as the sun approaches the west in the early summer, the house may be closed, the blinds raised, the plants well syringed, and the atmosphere and temperature of the tropics maintained for hours in broad daylight without danger of scorching, giving the foliage of your flowering plants time to dry before night comes on, the advantage of which will be appreciated by all cultivators.

All the great plant-growers with whom I am or have been acquainted have had greater difficulties to contend with in the structures they have had at command than are here enumerated, yet, as far as my experience goes, building houses facing east and west, where the ground allows of the north and south aspects being used, is a great mistake. *John Bester.*

FERTILISATION OF PLANTS.*

(Continued from p. 42.)

THE first series of experiments was made on the so-called Convolvulus major (*Ipomœa purpurea*), which, having conspicuous corollas, is greatly intercrossed by humble-bees, but is also highly self-fertile, so that the number of seeds produced by intercrossing and self-fertilisation differed very slightly. Mr. Darwin experimented on this plant for ten years, planting seedlings of exactly the same growth on opposite sides of pots, and the general results were that the excess in height per cent. of the former over the latter varied from 14 to 46; or, taking the intercrossed plants as 100, the mean height of the self-fertilised was 77. The intercrossed plants showed greater vigour and weight. A chief difference was in the number of capsules produced, although the seeds per capsule differed but slightly, so that the actual fertility of the intercrossed as compared with that of the self-fertilised was as (from) 100 : 35 to 100 : 64.

Mr. Darwin next fertilised flowers of the ninth intercrossed generation with pollen from a new stock, while other flowers were again intercrossed. The results were greatly in favour of the new cross in *height*, as 100 : 78, *i.e.*, almost the same ratio as that of the mean of the intercrossed for ten years to the self-fertilised, or as 100 : 77. In *weight* the ratio was 100 : 51. An exceptional plant appeared in the sixth generation, which Mr. Darwin called Hero, as being remarkable for its strong self-fertilising powers, and for showing no benefit when its children and grandchildren were not merely intercrossed, but crossed even by a new stock!

Mimulus luteus afforded quite analogous results. For three years the intercrossed exceeded the self-fertilised in height as 100 : 65. In the fourth generation a new variety appeared, which grew taller, had whiter and larger flowers, and transmitted these characters with great fidelity, so that all the plants in the later self-fertilised generations belonged to it. These frequently exceeded the intercrossed in height, even in the ratio of 137 : 100, and in fertility as 147 : 100. As with Hero so with this pale variety of Mimulus, intercrossing did no good. But it differed from Hero when crossed by a new stock, for the heights of the eighth self-fertilised plants thus crossed were to that of the ninth self-fertilised generation as 100 : 52, and in fertility as 100 : 3.

"Better evidence," says Mr. Darwin, "could hardly be desired of the potent influence of a cross with a fresh stock on plants which had been self-fertilised for eight generations, and had been cultivated all the time under nearly uniform conditions."

Here, then, is a most important fact for horticulturists, and it is associated with another of equal value, that greater variety of colours are produced in proportion to the crossing; while on the other hand perpetual self-fertilisation seems invariably to reduce them to a uniform tint. Mr. Darwin first noticed this in the seventh generation of Ipomœa, of which all the flowers were of a uniform remarkably rich dark purple tint, which remained constant up to the tenth and last generation raised. Likewise had the repeatedly intercrossed flowers a much more uniform colour than those originally raised from purchased seed. Similarly with Mimulus, the original plants varied greatly in the colour of their flowers, so that hardly two individuals were quite alike, the corolla being of all shades of yellow, with the most delicately blotches of purple, crimson, orange and coppery brown, probably the result of much intercrossing. On the other hand, the form which appeared having great self-fertility was not only tall, but its flowers were large, nearly white, and blotched with crimson, and retained a surprising uniformity throughout later generations.

Brassica oleracea. — This, like other cruciferous plants, is adapted for crossing with its two shorter stamens, and self-fertilisation by its four longer ones; and, if varieties are grown together, it is consequently very difficult, as Mr. Darwin proved, to raise pure kinds. Height in this case proved quite fallacious, but weight showed the vast superiority of intercrossing by the ratio 100 : 37, while the fertility was as 100 : 25. Finally, crossing with a new stock increased the weight of the cross to the ratio of 100 : 22. Mr. Darwin tested the statement that a cut-leaved curled and variegated white-green Cabbage would not cross with a similar crimson-green Cabbage. This was an error, but the former was partially sterile, which may possibly account for the statement. The latter crossed by the former afforded curious results. A few reverted to a pure green, and became very vigorous, but many more of the self-fertilised seedlings of crimson-green thus reverted, and grew taller by 2·5 inches than the crossed seedlings. Hence reversion to a more natural condition acted more powerfully on their growth than the influence of crossing with a semi-sterile variety.

It would have been interesting for gardeners had Mr. Darwin experimented on the effects of crossing upon "root" plants. He only remarks that the effects of Kohl Rabi were particularly plain in the enlarged stems of the mongrel seedlings of varieties of Cabbages grown together.

Pisum sativum is fully self-fertile in England, and is rarely intercrossed, as no British insects are usually strong enough to effect it. Hence varieties grown together remain pure. Knight's, produced by artificial crossing, lasted over sixty years, and were always self-fertilised. Owing to the varieties being self-fertilised for many years, a cross brought no benefit at all, or rather had a deteriorating effect; for the heights were as 100 : 115; but Mr. Knight proved that a short variety crossed by a tall one gave rise to offspring twice its height. Mr. Laxton also proved that crossed varieties gave rise to prolific offspring. From this species we learn that when a plant has after many generations become, as it were, habituated to self-fertilisation, then intercrossing does no good. This we have seen is paralleled by Hero in Ipomœa, and probably by Lathyrus odoratus, though Mr. Darwin did not test this species; though he crossed different varieties varying in colour, and obtained a new sub-variety, and in the next generation the offspring varied still more—proving the good effect of crossing varieties if colour-variations are required. On the other hand a spontaneous variety may appear, and then this may prove true to its kind.

Phaseolus multiflorus, or Scarlet Runner, is very sterile in the absence of fertilising insects, but self-fertile if the petals be only mechanically moved. The cause of the great variability in the colouring of the seed-skins is disputed, but seems most likely to be due to intercrossing. The crossed and self-fertilised plants differed but little, if anything, in height and fertility. *P. vulgaris*, though closely allied to the preceding, differs from it in being highly self-fertile, yet varieties cross freely if planted together.

Pelargonium zonale.—This genus is strongly proterandrous and almost self-sterile, but in pale-coloured varieties the pistil matures early and the plants then become "great seeders." The physiological importance of this fact will be alluded to hereafter. In Mr. Darwin's first experiments he crossed plants derived by cuttings from the same stock, and no benefit accrued—a result similar to one obtained by crossing plants of Origanum propagated by stolons. A cross with the pollen from a different plant gave offspring, compared in height with one from a flower fertilised by pollen from another flower on the same plant, in proportion of 100 : 74. It possessed also greater vigour. It would have been a desideratum to know what, if any, effect was produced by crossing on the "zones:" for Mr. Grieve found the pollen of Zonal Pelargonium to affect Geranium pratense, both in the colour of the flowers as well as in the variegation of leaves (*Gardeners' Chronicle*, July 8, 1876), but nothing is said about it.

Dianthus Caryophyllus.—This plant is also strongly proterandrous, and great care must be taken to prevent varieties crossing if pure strains are required. The number of seeds from crossed and self-fertilised parent plants (as was not unfrequently the case at first) differed but little, the ratio being as 100 : 92. That of the heights of the second generation were about as 100 : 86 when both were grown in the open ground, but when crowded in pots, the result of struggling for existence, which self-fertilised plants usually manifest, was very apparent in the relative heights being as 100 : 58. In the third generation, however, the heights, though grown in pots, were as 100 : 99. They were, however, "drawn," being "light and thin," but when tested by weight the latter showed the ratio of 100 : 49—a fact which well illustrated the danger of estimating solely by heights. Another curious fact happened in the third generation. The self-fertilised became much more fertile than the intercrossed, the number of seeds being as 125 : 100. This was probably due to the sexual organs maturing more nearly together, and so being less dichogamous. This is similar to Pelargonium and Primula, which may also become self-fertilising from a like cause. A fresh cross from a new stock was now introduced. The first effect appeared to indicate a decrease of fertility, but the offspring, compared with the self-fertilised, were in weight as 100 : 33, and their relative heights as 100 : 81. Lastly, the pale pink or rose colour of the fourth self-fertilised generation were "as uniform in tint as those of a wild species." The flowers of the fourth intercrossed generation were likewise nearly uniform; but the newly-crossed plants varied extremely in colour. *George Henslow.*

(To be continued.)

* *Cross and Self Fertilisation of Plants.* By C. Darwin. Murray.

New Garden Plants.

DENDROBIUM (PEDILONUM) MOLLIANUM, *Rchb. f.**

When the late Dr. B. Seemann came home from the Fiji Islands he spoke in rather high praise of a Dendrobe he had found on Buku Levu and Vana peaks, at an altitude of 4000 feet. It is a Pedilonum, somewhat comparable to Dendrobium thyrsodes, Rchb. f. (D. Kuhli, Lindl., *Bot. Reg.* 1847, tab. 47, not Bl.). It has, however, a quite new and most striking character. The lip is inflexed at its end into a shoe, in the way of that of a Cypripedium, and it was these nice ciliæ which were later observed in D. trichostemma of New Guinea. A second peculiarity is the presence of narrow leaves. The third was this: the flowers were most distinctly said to be cinnabar-red. None of the subsequent Fijian collectors met with the plant, as far as I know, and I thought I should not see it again. Now, however, Mr. Peter Veitch has gathered it, and we may judge for ourselves whether the plant is so nice as one may expect it to be. *H. G. Rchb. f.*

AMOMOPHYLLUM PATINI (*Master*), *Englr.*†

This beautiful plant, which was figured and described in the *Gardeners' Chronicle*, 1876, fig. 109, vol. iii., under the name of Anthurium Patini, does not, I find, belong to the genus Anthurium, and not even to the section Pothoideæ, but to the section Monstereoideæ near Spathiphyllum. In Schott's *System of Aroidaceæ* the genus Spathiphyllum is first removed from Monstera and allied genera, but no doubt Spathiphyllum is much nearer to the genera Rhodospatha, Atimeta, Steenospermatium, &c., than it is to the genera Anthurium and Orontium, between which it is placed by Schott. *Genera Aroidearum* and all to other genera of Araceæ. The Monstereoideæ are always readily recognisable by the very singular intercellular hairs described by Van Tieghem in *Ann. Sc. Nat.*, 5 ser., vi., p. 157, in the petioles, peduncles, stems, and also sometimes in the roots (as in Tornelia fragrans). The Monstereoideæ always differ in this anatomical character from the Pothoideæ. No Anthurium, no Pothos has such intercellular hairs as Monstera, Tornelia, Rhodospatha, Scindapsus, Raphidophora, &c. Spathiphyllum belongs also to the Monstereoideæ on account of this anatomical character, as also do Anthurium Patini, * and A. floribundum,* both being furnished with intercellular hairs.

* *Dendrobium (Pedilonum) Mollianum*, Rchb. f.—Caulis gracilis vaginis nigropunctatis; foliis linearibus apice inæqualiter racemis congestis; bractеis semiovatis bene evolutis; sepalo impari triangulo; tepalis oblongis obtuse acutis; sepalis lateralibus in calcar crassum extensis; labello basi cum columna pede connato, ligulato, apice dilatato saccato, limbo sacci minute denticulato ciliolato; 3 columnæ androclinio trifido; lacinia postica acuta, lateralibus retusis. Flores cinnabarini. Dendrobium Mollianum, Rchb. f., in *Bot. Zeit.*, 1802, p. 214; *Bonplandia*, x., 1862, 334, tab. 16 ("Mollianum, *Fl. Viti*, fig. 305, tab. cv."). Vid. Seemann, *Fl. Viti*, p. Veitch.

† *Amomophyllum*, gen. nov. *Aroidearum*, Englr. — Flores hermaphroditi, gregarii. Perigonium 0. Ovarium apice formicata, formice quasi truncato. Stamina 6, tepalis opposita, filamenta brevia obovata, apicem versus incrassata, antice plana, postice gibbosa, apice abrupte in connectivum tenue angustata, antheræ filamenta subæquantes, ovoideæ, thecis oblongis connectivum superantibus, rima longitudinali vix ad basin extensa extrorsum dehiscentibus. Ovarium breviter obpyramidatum, hexagonum, vertice valde truncatum, 3loculare; ovula in loculis 1—2, anatropa mastropyle fundum spectantia, funiculo brevi erecto medio ad-nato affixa. Stylus nullus, stigma sessile, subtrilobum. Herbæ acaules Americes tropicæ. Folia petiolata, ovata, lanceolata, tenues, apice geniculo paullum incrassato instructi, ad medium usque vel ultra medium vaginati, lamina elongata ellipitica lanceolata, costa tenui, nervis lateralibus 1—2, a medio sub-parallelis approximatis, arcuatim adscendentibus, in margine exeuntibus, nervis 3 et 4 tenuibus, haud prominulis, reticulatis. Pedunculus teres tenuis, folio longior. Spatha oblongo-lanceolata cuspidata, pedunculo brevissime decurrens, ex alboviridescens, primo convoluta, demum ad basin usque explanata. Spadix stipite tenui longitudine subfultus, cylindratus, spatha subæquilongus, densi et multiflorus.

Anthurium Patini I received through the kindness of Dr. Maxwell Masters, and I can decidedly affirm that the plant is allied to the genus Spathiphyllum. It agrees with Spathiphyllum in the trimerous flowers (petals 6, stamens 6, 3-locular ovarium), but differs in the ovarium having uniovulate cells. Anthurium floribundum, Linden et André (*Ill. Hort.* 1877, p. 22, t. 159), the flowers of which I received by the kindness of Mr. Veitch, belongs also to the genus Amomophyllum; but the cells of the ovary are very often 2-ovulate, therefore this species, Amomophyllum floribundum (Linden et André), Engler, resembles the genus Spathiphyllum in the structure of ovary, in which the cells of the ovary are 8—2-ovulate, but the form of the ovary is quite different. Possibly species will hereafter be found with characters forming a transition between Spathiphyllum and Amomophyllum. *A. Engler, Botanic Garden, Munich.*

STAPELIA PATENTIROSTRIS, *N. E. Br.* (Fig. 21.)

Stems erect, branching at base, 3—5 inches high, ¼ inch thick, puberulous, four-angled, sides very concave, angles obtuse, toothed, teeth erect. Flowers 1—3, erect from the base of the young stems, not very fœtid. Pedicels 1½ inch long, puberulous. Calyx lobes narrow linear-lanceolate acute, 5 lines long, 1 line broad, puberulous. Corolla 2½—3½ inches in diameter, the back minutely puberulous, pale green tinged with reddish brown towards the tips, the face rugose, the centre densely villose, with long, soft, rich purple-red hairs, which extend a short way up the base of the lobes; the latter are 1—1½ inch long, 7—8 lines broad, lanceolate-acuminate, spreading or reflexed, glabrous except just at the base, and fringed with long, simple, purplish hairs, dark red- or purple-brown, the basal part marked with numerous slender, transverse, undulated yellow lines; ligulæ erectly spreading, linear, concave, apex recurved, truncate, with a central projecting tooth, or truncate-emarginate with the tooth from the base of the notch, or very rarely entire and acute (as in the figure), the base and the margins of the apex dull greenish; rostra very suddenly recurved at the base, and horizontally spreading almost to the sinuses of the corolla, subulate-triquetrous, blackish purple; alæ (the flat, wing-like dorsal appendages of the rostra) free to the base, horizontally spreading, shorter than the rostra, straight or curved, linear, obtuse, entire, blackish purple.

This very pretty species may at once be distinguished from all yet described by the horizontally spreading processes of the inner corona. The above description and figure was made from the same plant that was figured in the *Botanical Magazine*, t. 5963, as S. sororia of Masson, from which species it differs in its much more slender stems, (only half as thick), smaller flowers, and different corona; it is also cultivated under the name of S. Courcelli. The ligulæ are usually truncate-emarginate with a projecting middle tooth, the side lobes being very short and rounded, as figured in the *Botanical Magazine*, but in one flower examined by me some of them were quite entire and simply acute, as here represented. *N. E. Brown, Kew.*

BOTTOM-HEAT WITHOUT COST.

ON reading the above heading in the *Gardeners' Chronicle*, p. 107, many gardeners must have been on the tenterhooks of expectation that some great discovery in bottom-heating was about to be divulged. Mr. Fish is, however, such a master in surprises in horticultural matters that we must rather regret that this, his last essay on heating, has nothing sensational about it. There cannot be the least doubt but that placing the roots of all plants in the same temperature as their tops are grown in is the natural way to success in their cultivation, especially in the winter months. In growing early Grapes—that is, where they are expected to ripen from April till June—if the roots of the Vines are all confined inside the house the gardener can then attend to their wants in every detail of cultivation, and, therefore, no one can gainsay but that the system is sound in practice. I have, however, grown good crops of early Grapes in vineries where the Vines were planted inside and the roots could get to the outside borders, which were protected by Oak leaves mixed with litter, and the surface covered with wooden shutters. The varieties of Vines grown were principally of the Frontignan section, which are well known to delight in heat, and they produced more vigorous wood and bunches than those in the vineries where the roots of the Vines were confined inside. Where, however, labour and materials are scarce, and neatness is desirable on the out side borders, I am of Mr. Fish's opinion that the growing of very early Grapes in structures where the borders are inside is the safest and best system.

In growing the main crops of summer, autumn, and late-keeping Grapes, I have found, after a long experience, that the best results have been from vineries where the Vines were planted inside but the roots were left to ramble in properly prepared outside borders at their "own sweet will." There is something more in solar attraction, and its atmospheric effects in making Vine roots always try to reach the outside border when they can, than Mr. Fish gives credit for. The late Mr. John Wilson, when gardener at Worksop Manor, once told me that the original Black Damascus Vine planted there, and which grew in the corner of a vinery where its roots were confined inside, had managed to get through the rotten brickwork into an ashheap and luxuriated there. On making some alterations here this year near the outside borders of the main range of vineries, the Vine roots were found running into the burnt clay that had been filled into a drain, and this was 4 or 5 feet from the made borders. I believe, therefore, that for Vines, where they are expected to grow to a good old age and permanently warm, dry summers. This vinery has now been planted fourteen years, and never misses bearing good crops of Grapes, with bunches and berries of good size, and their colour of that rich golden hue which the Muscat shows when in perfection. There is no extra expense in heating the air-drains in this house, for the same boilers heating the atmosphere of it heats the piping in the outside where the drains are placed.

I have now given as above my experience in Grape growing, but with fear and trembling, for hath not Mr. Fish recorded his "anathema"—that if no one can convince him that outside borders are better than inside ones then they are for ever after "to hold their peace"? I hope, therefore, that other extensive Grape growers will support me, and advance the cause of practical horticulture by giving their opinions on the subject, so that it may be impartially ventilated in the columns of the *Gardeners' Chronicle. William Tillery.*

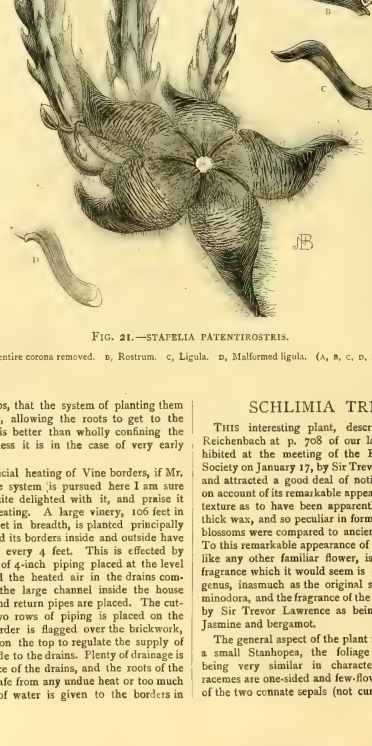


FIG. 21.—STAPELIA PATENTIROSTRIS.

A, The entire corona removed. B, Rostrum. C, Ligula. D, Malformed ligula. (A, B, C, D, magnified.)

to bear good crops, that the system of planting them inside the house, allowing the roots to get to the outside border, is better than wholly confining the roots inside, unless it is in the case of very early Grapes.

As to the artificial heating of Vine borders, if Mr. Fish saw how the system is pursued here I am sure he would be quite delighted with it, and praise it above limekiln heating. A large vinery, 106 feet in length and 18 feet in breadth, is planted principally with Muscats, and its borders inside and outside have heated air drains every 4 feet. This is effected by having two rows of 4-inch piping placed at the level of the drains, and the heated air in the drains communicates with the large channel inside the house where the flow and return pipes are placed. The cutting where the two rows of piping is placed on the outside of the border is flagged over the brickwork, with ventilators on the top to regulate the supply of air from the outside to the drains. Plenty of drainage is laid on the surface of the drains, and the roots of the Vines are quite safe from any undue heat or too much drying if plenty of water is given to the borders in

SCHLIMIA TRIFIDA.

THIS interesting plant, described by Professor Reichenbach at p. 708 of our last volume, was exhibited at the meeting of the Royal Horticultural Society on January 17, by Sir Trevor Lawrence, Bart., and attracted a good deal of notice from the visitors on account of its remarkable appearance, so unusual in texture as to have been apparently modelled out of thick wax, and so peculiar in form that the individual blossoms were compared to ancient Grecian helmets. To this remarkable appearance of the flowers, so unlike any other familiar flower, is to be added the fragrance which it would seem is characteristic of the genus, inasmuch as the original species is called jasminodora, and the fragrance of the present is described by Sir Trevor Lawrence as being between that of Jasmine and bergamot.

The general aspect of the plant is very much that of a small Stanhopea, the foliage and pseudobulbs being very similar in character. The drooping racemes are one-sided and few-flowered, the blunt sac of the two connate sepals (not cuneate as printed by

oversight at p. 708) giving the individual blossoms when reversed the helmet-shaped figure above referred to, while the third sepal is ligulate and projected forward. The general colour of the flower is a waxy white.

The plant is, it appears, New Grenadan, and was sold as S. jasminodora at one of Stevens' sales in May, 1874. The Floral Committee gave it a Botanical Certificate.



FIG. 22.—SCHLIMIA TRIFIDA (FLOWERS WHITE, FRAGRANT).

AGRICULTURAL STATISTICS.

WE quote the following from the Agricultural Returns for Great Britain just issued by the Statistical and Commercial Department of the Board of Trade :—

The total quantity of land returned in 1876 as under all kinds of crops, bare fallow, and grass, amounted for Great Britain to 31,544,000 acres. For Ireland the returns obtained by the Registrar-General show a total of 15,725,000 acres, and for the Isle of Man and Channel Islands the totals are respectively 93,000 acres and 31,000 acres. Thus for the whole of the United Kingdom the cultivated area in 1876 was 47,393,000 acres, exclusive of heath and mountain pasture land and of woods and plantations. This total exceeds that of 1875 by 80,000 acres, and between the years 1869 and 1876, 1,293,000 additional acres were returned as under cultivation in the United Kingdom. This increase is mainly in Great Britain, and the respective proportions in each division are 824,000 acres for England, 181,000 for Wales, and 200,000 for Scotland.

The acreage under Wheat in the United Kingdom in 1876 was 3,124,000, being 11 per cent. less than in 1875, and 22 per cent. less than in 1869, when the area under that crop was greater than in any other year from 1868 to 1876. In Great Britain alone the decrease from 1875 was 10 per cent., and from 1869 19 per cent. An unfavourable seed time is stated to be the principal reason for so large a falling off this year, but the cause alluded to as accounting for decreased arable land may be held to apply more particularly to Wheat.

The acreage under Barley in 1876 both in Great Britain and Ireland corresponds pretty closely to that of 1875, but Oats were grown in Great Britain on 125,000 acres more than in the previous year, a larger acreage than in any year since the agricultural returns were collected. This may be accounted for by the relatively high price of Oats during the past year, and also by their being sown on a large area of land intended for Wheat for which the seed time was unfavourable.

The fifth table gives the acreage under orchards, market gardens, nursery grounds, and woods, in each county in England, Wales, and Scotland, from which we extract the following :—

COUNTIES.	Orchards, &c. Acreage of Arable or Grass Land also used for Fruit Trees of any kind.	Market Gardens. Land used by Market Gardeners for Growth of Vegetables and Fruit Gardens and Nurseries.	Nursery Grounds. Land used by Nurserymen for growing Trees, Shrubs, &c.
ENGLAND.	Acres.	Acres.	Acres.
Bedford	372	488	12
Berks	1,345	223	162
Buckingham	1,575	249	69
Cambridge	1,189	600	126
Chester	1,719	991	497
Cornwall	4,372	874	80
Cumberland	902	166	200
Derby	629	418	443
Devon	24,097	808	325
Dorset	3,656	138	102
Durham	171	520	48
Essex	1,057	4,675	306
Gloucester	11,602	1,010	217
Hants	1,161	1,014	162
Hereford	24,010	36	131
Hertford	1,033	333	250
Huntingdon	252	196	43
Kent	11,666	4,101	618
Lancaster	1,781	1,097	255
Leicester	603	336	148
Lincoln	1,157	491	145
Middlesex	2,977	5,000	445
Monmouth	2,873	154	27
Norfolk	1,440	969	110
Northampton	499	263	211
Northumberland	153	581	136
Nottingham	1,350	468	113
Oxford	788	205	55
Rutland	53	27	10
Salop	2,751	74	102
Somerset	21,089	762	225
Stafford	822	503	231
Suffolk	685	337	70
Surrey	2,057	1,723	1,374
Sussex	1,650	691	500
Warwick	809	327	140
Westmoreland	181	14	14
Wilts	2,235	214	92
Worcester	14,178	1,564	351
York—East Riding	505	425	205
York—North Riding	751	283	153
York—West Riding	1,325	1,691	526
Total for England	153,277	34,989	9,550
WALES.			
Anglesey	13	1	21
Brecon	864	7	43
Cardigan	42	48	30
Carmarthen	85	5	70
Carnarvon	81	66	53
Denbigh	151	135	34
Flint	161	30	15
Glamorgan	290	251	38
Merioneth	42	4	8
Montgomery	361	4	43
Pembroke	51	13	8
Radnor	409	..	2
Total for Wales	2,600	573	365
SCOTLAND.			
Aberdeen	32	432	197
Argyle	25	13	20
Ayr	76	120	110
Banff	10	5	9
Berwick	20	39	23
Bute	..	13	19
Caithness	1	3	..
Clackmannan	9	10	..
Dumbarton	5	14	..
Dumfries	46	16	134
Edinburgh	86	811	500
Elgin or Moray	29	8	83
Fife	33	67	26
Forfar	39	164	101
Haddington	58	389	6
Inverness	19	4	52
Kincardine	1	12	8
Kinross	..	2	..
Kirkcudbright	26	3	28
Lanark	474	211	35
Linlithgow	16	17	13
Nairn	6	..	2
Orkney	..	..	..
Shetland	..	..	..
Peebles	..	2	12
Perth	265	353	114
Renfrew	63	157	58
Ross and Cromarty	4	3	10
Roxburgh	33	42	74
Selkirk	1	3	..
Stirling	41	24	63
Sutherland	..	..	..
Wigtown	10	2	64
Total for Scotland	1,410	2,341	1,761
„ Great Britain.	157,287	38,503	11,676

Notes. The greater part of the acreage of orchards and some part of the acreage of market gardens are included in the general returns under separate crops of grass.

The decrease under green crops, as compared with 1875, is considerable in Great Britain, amounting to 90,000 acres, or 2¼ per cent., while in Ireland there is little change, the larger extent of Turnips and Mangel almost making up for the diminished acreage of Potatos. It is noticeable that the acreage under the latter crop in the United Kingdom is now considerably less than at any time in the past decade. The fear of disease is alleged by some of the collectors as a reason for so steady a falling off. Of the other green crops in Great Britain, Turnips show a small increase, Mangel a decrease of about 4 per cent., Cabbage, &c., about 5 per cent., and Vetches, Lucerne, &c., about 12 per cent.

The land under Flax increased largely in Ireland in the present year, but is still little more than half what it was in 1867, when more than a quarter of a million acres were sown with that crop. In Great Britain its acreage is still insignificant, being confined to only a few counties.

The acreage under Hops shows a further increase in Great Britain, and may now be reckoned at 70,000 acres, being an increase of 4000 acres since 1874.

Bare fallow was much larger in 1876 than in the previous year, much land being left uncropped owing to the wet and unfavourable seed time.

There was an increase of more than 4 per cent. in the acreage under artificial grasses in Great Britain, and the total of 4,540,000 acres is the largest yet recorded.

Permanent grass for hay shows little variation from 1875, but the figures for that year were exceptionally large. In permanent grass, not for hay, there is an addition of 193,000 since the previous year.

The following is a summary of total acreage under each principal crop in Great Britain in 1876 :—

Principal Crops.		Acres.
Wheat ..	England	2,822,342
	Wales	94,423
	Scotland	78,192
	Great Britain ..	2,994,957
Barley or Bere	England	2,109,265
	Wales	153,647
	Scotland	270,197
	Great Britain ..	2,533,109
Oats	England	1,595,349
	Wales	242,417
	Scotland	1,021,764
	Great Britain ..	2,789,530
Potatos ..	England	307,798
	Wales	42,581
	Scotland	154,709
	Great Britain ..	505,088
Turnips and Swedes ..	England	1,561,116
	Wales	72,049
	Scotland	512,408
	Great Britain ..	2,145,573
Clover, &c., under Rotation	England	2,787,103
	Wales	360,159
	Scotland	1,393,011
	Great Britain ..	4,540,273

Natural History.

THE SPORTS OF WILD BIRDS.—Anything relating to the garden is always acceptable to those who admire the works of Nature, and what subject more innocent and enjoyable than noticing the unaccountable sports of wild birds. A blackbird in a pretty country parterre is now hopping among pigeons, doves, ducks, chickens, dogs, and cat, feeding at stated hours of the day, and answering to the name of Dick. Until a few weeks ago, and all through the last summer, he would come to a cage at sunset, which was placed on a garden-seat for him to roost in, nor was the cage-door fastened after he had settled on his perch ; but now, and thus far in winter, he prefers open air, and sleeps on an old tree near. Early in the morning he takes strolls along the paths, and goes regularly at the hour for feeding the poultry, after which he finds his way among the shrubs searching for worms. Occasionally a wild blackbird visits him, until the approach of some one of the family, when the wild bird flies away, leaving Dick to himself.

Sparrows and other small birds are fed daily from the dining-room window, when our tame blackbird, which is sure to be there too, will display his dexterity and authority by driving the smaller birds away, and usurping more than his share of the crumbs. His movements altogether are most interesting, especially when titbits are scattered for a scramble.

Many years since a robin became most familiar with the ladies of the same place. Bobby would come at their call all across the garden, hop about them, perch upon the dress of either, sing his plaintive melody upon the finger of one, take a bit from her mouth, displaying signs of joy at seeing his two favourite friends, and, after all, quietly retire, as recorded at the time in your journal ; but the sender of this account never before heard of a blackbird becoming so tame as the one now described, to be seen at the Laurels, Clewer Hill, Windsor.

WASPS.—This is a bad time of year to write upon wasps, when there are none ; but seeing how many of your correspondents were tormented with these hothouse pests last year, I send my experience of the last two years. I cannot explain the facts ; I only state what I saw and afterwards tried. The same remedies may not suit other places, and are probably well known to many.

In 1875 I saw a large house of ripe Grapes in great perfection at Beechwood, in Cheshire, with all its windows open, the fruit fully exposed. I saw four large plants of Tomatos in pots standing on a border, looking very much out of place amidst such fine Grapes. This made me ask the gardener why he kept them there, when he told me "it was to keep out the wasps." I then observed that not a single wasp was in the house, while at a small vinery within a quarter of a mile they swarmed. This year I grew a good many Tomatos in a vinery, for the double purpose of use and to keep off wasps from the Grapes, and I never saw one in the house ; there were plenty about the garden.

Last year I had a good crop of Peaches, which were sadly tormented by wasps and flies. Seeing Mr. Scott's advertisement, I wrote for a bottle of his wasp destroyer, and, following his directions, put a few drops on branches, which at that time were alive with wasps and flies in the full sunshine. I felt very incredulous as to what Mr. Scott says on the subject, but on going to the trees an hour or two after not one wasp was there, and the fruit was saved from them for some days.

Now Dr. Slade's spiritualistic performances seem nothing to what these few drops per tree effected. I could not see that a wasp touched the poison, nor could I find a dead wasp, but all disappeared. It often seems as if bluebottle flies send scouts to look out for dead and dying, as if you notice in any sick chamber, whether of man or beast, there is always one very knowing-looking bluebottle, who sits quiet taking observations, and as soon as death comes oft goes the fly and brings all his relatives. Now whether the wasps keep an ambassador to notify to headquarters how wasp politics go on I know not, but I am certain of the fact I mention, that every wasp departed and I ate my Peaches in peace. As I before stated I only mention facts, and I find Tomatos and Scott's wasp destroyer both effectual.

I may perhaps trouble you with a little more upon the natural history of wasps and hornets. I hope some gardeners will try these two simple remedies next year. *W. D. F.*

THE GOATSUCKER.—I quite agree with your correspondent, Mr. Wilson, thet the "burring" sound proceeds from the bird at rest. In all opportunities I have had of watching them, their flight in hawking after food has been as noiseless as that of the owl, but when resting after a flight they have commenced "burring" almost immediately.

Gilbert White in his *Natural History of Selborne* says : "There is no bird, I believe, whose manners I have studied more than the Caprimulgus (goatsucker) . . . but I have always found that though sometimes it may chatter as it flies, as I know it does, yet in general it utters its jarring note sitting on a bough." Again I agree with Mr. Wilson, the goatsucker is by no means a shy bird ; so long as the observer remains stationary they continue their flight after food, frequently passing within a few yards. A relative of mine has in his possession a specimen that was shot in consequence of its persistently settling on the roof of a cottage and "jarring" to the annoyance of the inmates, who regarded it as a bird of ill-omen. With us the favourite resorts of the goatsucker are Fir plantations adjoining heath or open ground. *Finder, Ampthill, Bedfordshire.*

—— I am glad to see that a correspondent has noticed "R.'s" communication about the nightjar or Fern owl. "R." was wrong in nearly everything he wrote on the subject, radically so with regard to the "burring" sound the bird makes, which, so far as my experience goes, is invariably made when it is settled on a bough. Directly it takes wing it ceases the "burring," although in its owl-like flight it occasionally utters a short cry or screech. I have never seen it except in woods or plantations, and have certainly thought it was far from a timid bird. *John W. Downing.*

—— Having been very busy and much away from home, I have been prevented replying to Mr. Wilson's note upon this bird (*vide* p. 14). My short observations were made last season in the North of England ; I noticed the birds were more plentiful than I ever remembered, this perhaps caused me to observe them more closely. I have no doubt Mr. Wilson is quite correct, for White seems to be of the same opinion. In this locality they are only to be met with on a wide heath, skirted on one part by a young plantation, where the birds were flitting from the roadway to the branches ; they appeared then to produce the burring sound, as well as when going from branch to branch. Probably Mr. Wilson, from closely watching their habits, has come to a different conclusion. Again, I generally look upon it as a shy, timid bird ; but this may arise from the fact that it is hunted by the boys whenever an opportunity arises. If it takes refuge in a park, where it feels safe, and is never allowed to be molested, it may then become trustful ; but it should have every protection extended to it, if it is only as a garden or farm friend. Very few of the denizens of our woods and heaths do more good. *R.*

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Any one who ever intends to succeed in plant-growing, either large or small specimens, will find it imperative to be continually on the look-out for the insects that wage an unceasing war upon the subjects they cultivate. Hard-wooded greenhouse plants, taking them collectively, are much less liable to the attacks of aphides than softer, more succulent things, the juices of which afford more suitable food for these parasites ; yet nevertheless it often happens that a few aphides during the autumn take up their abode on hard-wooded plants, and go on slowly increasing through the winter on Pleromas, Boronias of different species, but more especially B. pinnata and Drummondii, Adenandras, Gompholobiums, and Aphelexis. In the case of almost all these plants the insects are so different in appearance, and have such a puny, ill-fed character as to be scarcely recognisable, and in some not very easily seen, and they rarely increase to an extent so as to be readily detected by their numbers, yet they frequently do an immense deal of harm before they are noticed by those who have not had much experience with these plants. On Aphelexis in particular they attain such a diminutive size, and are so nearly the colour of the leaves, that it requires a quick eye to detect them ; but if the points of the flowering shoots for the season, on which they principally congregate, are closely examined, the excrement will be seen, which is enough by itself, finding on Aphelexis so as to have the appearance of minute white crystals. Where they exist on these plants, unless speedily destroyed, they will have the effect of killing every flower, or what is generally understood as turning them blind. I have seen many a fine specimen so affected, the owners of which have not been able to detect the cause. On Gompholobiums the insects find a little more genial feeding-ground, but on them are small, congregating on the underside of the leaves, and if not dislodged they will very soon have the foliage off. On Boronias, the fatty deposit they excrete soon becomes mouldy, to the destruction of the leaves, which will fall off in quantity with little perceptible cause. Contrary to what might be supposed, having apparently so little vitality when living on these plants, they are immeasurably more difficult to kill than when in the plump, fat condition they are found in on many soft-wooded subjects : so much so, that tobacco-smoke can scarcely be applied strong enough to kill them, for which reason washing with tobacco-water is much the best remedy, and it should be used tolerably strong. One or two washings with the syringe, the applications being such as to reach every part of the plants, leaving it to dry on, will generally be found effectual. Kalosanthes at this time of the year are frequently affected in like manner, the insects getting into the points of the shoots, and to be seen need to be looked for ; on these plants they do not absolutely destroy the flowers

but they cause all the leaves that surround the heads of bloom to turn quite yellow, which gives the plants when they ought to be at their best a very unsightly appearance. Here again washing with tobacco-water is the best remedy. As the tying is completed, every plant should be stood well up to the glass and kept clear of its neighbours; yet so elevated, especially in good light houses, they will bear being much nearer together than when placed where there is comparatively less light. Such an arrangement admits of Cinerarias, Primulas, or flowering bulbs, that from this time forward will bear a little shade, being stood under-neath them; which is not only an advantage in economising space, but gives to the hard-wooded house an improved appearance, doing away with the objectionably flowerless look that these structures too often have at this season. Those useful winter forcing plants, Genistas and Acacias Drummondii and armata, especially when brought into flower so early as the commencement of the year, are often, after a few seasons, allowed to get into an unsightly straggling condition, by letting them after blooming go on growing without a sufficient use of the knife; they are much the most serviceable when freely cut in every year after the flowering is over, so as to keep them in a close compact form and limited size. After being cut in they should be kept in a genial atmosphere and as to sap that they are completely free from red-spider, to which the Genistas especially are very subject.

SOFT-WOODED GREENHOUSE PLANTS. — Herbaceous Calceolarias, where required early in flower, should now be kept a little warmer than ordinary greenhouse stock—45° in the night will suit them; let them have a light situation, and if possible a little moister atmosphere than most things require. Fuchsias cut back last summer must have careful attention, to see that they do not want for pot-room, for if the roots ever get cramped the plants will not move freely afterwards. Keep the main shoot trained to a single stick, stopping it and the side branches proportionately with the habit of growth of each individual variety, so as to lay the foundation for dense bushy specimens; 55° in the night will now do for them; syringe overhead daily to keep down red-spider. So treated they will bloom early, and make much handsomer plants than the old stools. Where the latter are to be grown they should now be started in a little warmth, and shook out and potted as soon as they have made an inch of growth. Give more air to the general stock on calm sunny days, but be careful of cold draughts, for the weather at this early season is so changeable that in one hour we may have it as genial as April, and the next cold and cutting. *T. Baines.*

ORCHIDS.—The vestita section of the Calanthes will now have done flowering, and that the bulbs may have a period of rest before starting them in March, as well also as for utilising the room they have taken up, it is preferable that they be shaken out of their pots, the greater part of the old dead roots cut away, and the bulbs laid on some dry moss in a shallow box or pan, and stood on the same shelf or stage; here they will keep plump and hard, and in the course of a few weeks will push out the breaks from the base of the bulbs. As C. Veitchii goes out of flower, it may be treated in a similar manner; the bulbs of this, however, are generally elongated, and since it is one of the most useful of winter-blooming Orchids, and it is desirable that a number of it should be obtained, it may be easily increased by breaking or cutting the bulb through the middle, so that the top piece will have one or more eyes to push into growth. The bottom ends, however, should have a little sulphur rubbed on them to dry up the sap that exudes, and thus prevent them from being lost by damp or rot. C. Turneri and nivalis, that always bloom later, must still be kept in the East India house, to bring their flowers to perfection. The compact form of the first named, with the pure white colour of the sepals and petals and rosy purple eye, makes this a very desirable addition to this section, whilst the two varieties of nivalis are both deserving of culture. C. Masuca and Domineyana will now be growing fast, and must be well attended to as regards water; C. veratrifolia will also be growing freely, and with the advanced growth the flower-spikes will be pushing up, and both continue growing at the same time; if there is any yellow-fly, it should be got rid of by sponging or smoking. This will remain a long time in flower, and if it is wanted for exhibition purposes, unless it is very forward, it had better remain in the warm division and come gradually on, otherwise if stood in a cool house the flowers are apt to damp and open very badly and irregularly. Such of the Dendrobiums as are still in a dormant state, and among these may be named lituiflorum, Bensoniæ, crystallinum, Parishii, crepidatum, Devonianum, &c., must be carefully looked to, and as soon as any exhibit symptoms of returning activity and growth such a course of treatment must be adopted as they will require for their full development. One of the first will be C. Devonianum, and unless looked well to, the young breaks as soon as they push up are liable to be eaten through by the small shell-snail, which is likely to be hidden among the moss. Trap these with pieces of Potato hollowed out in the middle, and placed about on the plants. Look to D. Falconeri in the cool division, and see that it does not suffer with its cool treatment above what may consistently be considered sufficient for the forming and setting of the flower-buds, which latter will be looked for some two months hence. D. Cambridgeanum and chrysanthum will now be growing fast, and must have a plentiful supply of water. Carefully regulate the temperatures of the divisions, avoid cold gusts against a hot and dry state of the atmosphere, at the same time be careful that an excess of moisture is not permitted to remain in any of the houses. When the weather is mild air must be given on the lower ventilators of the Odontoglossum-house, and occasionally on the other divisions also, but be careful that they are closed in good time, otherwise the houses may fall much lower than is desirable. *W. Swan, Fallowfield.*

FRUIT HOUSES.

PINES.—At about the commencement of March we make it a practice to go through that section of the plants which has been wintered in pots of from 5 to 8 inches, and to shift into fruiting-pots a number, equal to the requirements for next winter and spring. Only such plants as are in a highly satisfactory state of health are selected, and those of the Queen and similar tender-rooting kinds are placed in 10-inch pots, and such as the Smooth Cayenne and other strong rooters have 12-inch ones afforded them. After these plants are potted the bottom-heat should be kept at not less than 80°, but not much surface growth should be permitted until more propitious circumstances exist outside; a mean of 58° at night and 65° in the daytime will therefore be ample for some time afterwards. At about the same time we commence with a batch of suckers, which form an immediate succession to the preceding. The requirements to carry these operations into effect should have attention, and the loam, which is the chief component, should be seen to at once, as it should be in a moderately dry state when used, or otherwise in embedding it firmly round the balls of the plants it may be rendered impervious—a condition which would forcibly indicate its unfitness for the destruction of the plant. Timely preparations will also be necessary for the suckers, in order to have the bed in a proper state at the time. If space will admit, all those suckers which are on fruiting plants, or stools whose which fruit has recently been cut, should be retained in this way until they are required to be started. Carry out former directions with respect to all young stock, see that these do not suffer from the lack of water, and especially those which are shortly to be shifted. The temperate state of the atmosphere this year has been the means of reducing the amount of fire-heat to its minimum state and of materially assisting the maintenance of a higher standard inside, which is very beneficial to fruiting plants and those which are coming up, which should now be the case with the earliest started, and of plants, so that the fruit may be fit for summer use. *George Thomas Miles, Wycombe Abbey.*

ORCHARD HOUSE.—Many sanguine pomologists admit that the pot culture of fruit trees has not made the progress they anticipated, simply because the system, comparatively new, has not been properly understood, and many failures may be traced to the practice of keeping excitable trees like Peaches, Apricots, and Nectarines under all the year round, instead of removing them to an airy place out-of-doors as soon as the wood is ripe, where, with the pots well protected from frost by means of leaves or Fern, the trees can have the benefit of autumn rains, the buds are retarded, and the danger of too many dropping in the spring brought to be kept too dry at the roots when at rest or premature excitement is done away with. Assuming that the general stock of trees is now in position under glass, and the soil in a medium growing state, all the ventilators and doors must be kept open to extend the opening days to the months, as we may yet experience severe frost, and even then during bright sunshine, which we frequently have in frosty weather, the ventilators should be opened to keep down the temperature. For the mid-season house I would recommend Royal George, Royal Kensington, Bellegarde, Noblesse, and Dymond Peaches; Elruge, Pitmaston Orange, Pine-apple, Albert Victor and Napier Nectarines; Moorpark and large early Apricots; Bigarreau Napoleon, Governor Wood, and Black Circassian Cherries. *W. Coleman.*

CUCUMBERS.—With increased light and an improvement in the weather, winter Cucumbers are now making good growth, and assuming better colour and texture of foliage. Plants that have been some time in bearing, and are now showing signs of exhaustion, will make a fresh start and produce a quantity of useful fruit at a time when fruit is most in demand if a portion of the old soil which has become sour is removed from the roots and replaced with good turfy loam and lime rubble, previously warmed to the temperature of the house. The turf should be broken up with the hands, and firmly packed over the surface of the beds; a few of the old leaves may at the same time be removed to make room for the young growths, which may be trained over all vacant spaces, and stopped at the first joint beyond the fruit, when the roots have taken to the top-dressing, care being taken that the trellis does not become crowded with useless spray, which is always detrimental to successful cultivation. The night temperature may now be raised to 70°, with a rise of 10° to 15° by day from sun-heat; close at 80°, and syringe on fine afternoons about 2 P.M. If movable trellises are used they may now be lowered a little to prevent the leaves from touching the glass, which must be kept clean. Keep the first set of young seedlings near the glass until they are about 12 inches high, and when they have filled the pots with roots they may be transferred to the hills, fruiting-pots or boxes, in hot-water pits. If the latter are used, they should be filled to within 6 inches of the rim, to leave room for earthing-up as the roots appear on the surface. Place a stick to each plant, train up the trellis, but do not stop them until they have filled two-thirds of the allotted space. *W. Coleman.*

KITCHEN GARDEN.

The recent changes from long-continued drenching rains to weather which is more favourable to garden operations will cause this to be a very busy department, and it would be as well if a little extra labour could be bestowed on the necessary operations connected with the preparation of the soil for future crops. Very much of the success which will attend the produce of the kitchen garden through the whole year depends upon the amount of labour which is expended upon it during the next three months. In most seasons we may safely calculate on being able to trench up roughly all vacant plots of ground during the two preceding months, and, by seizing the opportunity afforded by dry frosty mornings of forking the ground over, to bring the soil into a condition favourable for the reception of the crops, but in a season like the present all these operations are in arrear, and hence the necessity for extra strength being put on, and likewise for taking every opportunity, when weather and conditions of soil will serve, to commit to the earth such crops as are required early, amongst which a good sowing of Early Peas, such as Advancer, should not be forgotten. Another sowing of some of the varieties of Early Longpod Beans should be got in for succession; the supply required should always regulate the quantity sown, but as a rule succession is better secured by sowing a lesser quantity at shorter intervals. This remark will apply in the case of all crops of which the supply depends upon successional sowings. It is quite safe now to make the principal sowing of Celery for the main crops; this will be best sown on the brisk heat of a dung-bed in a frame, so as to give it more room, which is preferable to sowing in pans or boxes, which, from their confined space, and the necessity for sowing thickly, is apt to draw them up weakly, and they never give a robust plant out. The same dung-bed and frame may be made available for the first sowing of Snow's Superb Winter Broccoli, also Veitch's Autumn Giant Cauliflower, Veitch's Self-protecting Autumn Broccoli, which is truly a most valuable variety. A pinch of Walcheren Cauliflower will also be useful, as will also some Lettuces for succession. A good-sized frame of early Potatos should be planted at once, and some Radish seed scattered over the surface; and if the early Carrots are not yet sown in the pit or frame, no time should be lost. Where soup will still be constantly supplied, to prevent drawing up weak. A good bed of Cabbages from the late sown plants last year should now be planted to succeed those planted in the autumn. A little seed may also be sown in a warm corner for successions. It is now time to plant out Garlic and Shallots. These flourish best in a stiff soil and plenty of manure; plant in rows about 6 inches apart. Large Onions may be planted out for seed, if required; and very small ones from the stores (if no larger than Peas so much the better), if planted out now, will be highly appreciated for kitchen purposes by-and-bye, when the winter stores are exhausted. Give to Cauliflowers in frames and under handlights plenty of air in suitable weather; remove all decayed foliage, stir the soil, and dust over with dry soot and ashes now and then. When there is no Cucumber-house the supply will mainly depend upon the produce from dung-beds in frames. Some seed should therefore be sown at once in the briskest heat at command, so as to have the plants ready to ridge out by the end of this month. A good supply of fermenting materials should be kept in a course of preparation by frequent turnings, to sweeten and render it fit for almost immediate use as soon as thrown into a bed. *John Cox, Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, FEBRUARY 3, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, Feb. 7—Sale of Orchids at Stevens' Rooms.
THURSDAY, Feb. 8—Sale of Lilies at Stevens' Rooms.
FRIDAY, Feb. 9 { Sale of Hardy Plants and Bulbs, at Stevens' Rooms.

THE Bill affecting the future management of our great arterial HIGHWAYS, brought into the House of Commons last year only to be scotched almost before it had seen the light, is promised as a pressing measure for the ensuing session, and in the interests of thousands of hardly pressed ratepayers it is to be hoped that it will, if carried, be found effectual in giving the desired relief. Although not technically a horticultural topic, our highways and roads are intimately associated with it in relation to their construction and maintenance, but in the neighbourhood of large towns, and especially around the metropolis, the condition of our highways is a matter that very largely affects the market gardener, as his draught both ways is exceedingly heavy, and the stern necessities involved in the housing of an immense population have driven him farther and farther out into the country, so that now teams of heavily laden garden produce have to travel distances varying from 10 miles to 20 miles ere they can reach that great central depôt which has such a world-wide reputation as the garden-market of London.

Whilst the tollbars stood the highways were fairly well maintained, but just as these tolls offered a decided bar to locomotion and internal communion between localities, so also did they violate those principles of progress and free trade upon which our political economy is now based. Under the laws that established highway trusts and tollbars, all kinds of agricultural or garden produce, and manures for the improvement of the land, received a degree of immunity from tolls that spoke well for the sagacity of the landowning legislators of those days in looking after their own interests. With the abolition of tollbars go these special privileges, and as the cost of maintenance is now thrown on the parishes through which the respective highways pass, farmers and market gardeners alike have to bear the burden of cost, and this has proved in numerous cases to be so heavy as to be a veritable millstone round the necks of the unfortunate ratepayers. Ordinary parish roads are chiefly intersecting means of communication between one great highway and another, and, therefore, the maintenance of these has never proved to be a heavy burden to any parish, but the traffic on the arterial highways is immense, and is gradually growing; further, it would appear to become of a heavier and consequently more grinding nature as years go on, and thus the wear and tear on any important highway is so great as to thrust upon poor parishes a burden they are unable to bear.

The provisions of the Government Highway Bill are not widely known, and, as far as the coming one is concerned, are simply conjectured, but it is understood that the Bill proposes to establish County Boards having power to take charge of all arterial highways within the county, and to make rates for their maintenance over the entire area. It is difficult to believe that this will prove to be the most satisfactory method of solving a somewhat pressing difficulty. In populous urban parishes, such as those which immediately surround London and other large towns, the evil does not forcibly present itself. A wider area of municipal government thus absorbing into some dozen or more of parochial vestry executives would be an undoubted boon, and further Government is hardly called upon to intervene, but in more rural districts the burthen is singularly heavy, and if relieved, as thus proposed by the Bill, no doubt the ratepayers would be satisfied so far without taking much thought as to the statesmanlike character of the proposal, or whether it was likely to prove in the end at once the cheapest and most efficient that could be devised. Unfortunately in relation to our highway management a much more drastic measure is required to put it on a sound and sensible basis, and make highways and public footpaths everywhere more adapted for the wants of modern civilisation than they now are. To touch the urban vestry system of government will require a strong hand, and any measure purposing to alter and amend parochial administration in rural parishes can only be made effective by grave determination.

The present system of managing the parish roads by local and untrained surveyors is as rotten as are the roads they profess to keep in repair. In nine cases out of ten the appointments are almost permanent, and open the door to much rank jobbery; and, worst of all, whilst the parochial surveyor is endowed with large powers to make rates and expend them, he has no professional auditing of his accounts to submit to, the members of the vestry only going over the accounts; and nothing is easier than to throw dust in the eyes of the few assembled ratepayers, who have to take all submitted to them for granted. It is one of not the least of the evils incidental to this form of parochial highway administration that the men selected as surveyors rarely have any practical knowledge of road making or road repairing; and farther, having their own business matters to attend to, naturally give those a preference over the highway management. They are also, from a fellow feeling, naturally very lax in insisting upon the trimming of roadside hedgerows and the cleansing of watercourses, and permit the cutting of turf and various other trespasses and nuisances in the shape of huge heaps of manure on the roadsides, such as would not be allowed if a professional man held the position of surveyor. The real remedy for these defects in our highway management will be found in making the Union, and not the parish, the limit for highway administration.

The Board of Guardians is gradually becoming enlarged from a body merely having powers in Poor Law Administration to a board having the management of all public matters within their Union area. It is now the sanitary authority; it has recently had large powers given it under the Education Act of last year, and it can hardly be out of character to make it the Highway Board for the whole Union. Ere these enlarged powers be granted, however, it will be necessary to reconstitute it on a more popular basis, as probably the Board of Guardians at present presents one of the most unrepresentative of public elective bodies in the kingdom. It will be but necessary to abolish voting-papers, and make the present ratepaying parish constituency the electoral body for, say, the triennial election of the members of the Board, and its popularity becomes at once assured. With its new duties it may be necessary to increase its members, and then it can divide itself into poor-law, sanitary, educational, and highway committees, performing, through efficient officers, its work thoroughly and well within the radius of its operations. Here, then, is offered a solution of both the arterial and parochial highway difficulties. The County Board and its widespread costly administration over, after all, only a few highways, becomes needless,—the Union becomes the equal area for rating and maintenance of all highways within its bounds. The highway committee appoint a professional surveyor, whose time is entirely occupied in looking after the highways within his charge; he has his own gangs of men throughout the district under his daily supervision, his own horses and carts and all necessary repairing implements. The committee buy and sell, keep a rigid supervision of accounts, all roads and footways are kept in an even state of repair, and the end of parochial highway jobbery is brought about. These ideas are commended to the attention of Mr. SCLATER BOOTH.

—— AT one of the recent meetings of the Royal Horticultural Society, Mr. MOSELEY, one of the naturalists attached to the late Challenger Expedition, showed a series of Japanese illustrated works on horticulture and agriculture, which were of great interest and no slight artistic merit. One of the volumes, beautifully printed on Daphne paper, was devoted to illustrations of the process of CULTIVATING RICE, from the sowing of the seed to the harvest thanksgiving at the ingathering of the crop. One of these illustrations has, by permission of Mr. MOSELEY, been engraved by Mr. WORTHINGTON SMITH, who has very accurately copied a scene representing the thinning out and transplantation of the Rice plants in the flooded fields wherein it is cultivated (fig. 23). The whole work gave a vivid idea of the industry and skill of the Japanese.

—— The *Bulletin de la Société d'Acclimatation* for November, which we have lately seen, contains a catalogue of all the plants at present growing in the Society's garden at Hyères. This catalogue consists mainly of plants hardy in the open air at Hyères, and includes the collections of Grape Vines, Oranges, subtropical fruit trees, &c., and will be found very useful by those interested in forming collections in the South of Europe.

—— In a recent number of *Der Gartenfreund*, an Austrian contemporary, and the organ of the Horticultural Society of Vienna, there is an admirable article, by LOTHAR ABEL, landscape and architectural gardener, on THE SOCIAL STANDING OF GARDENERS IN AUSTRIA. It is headed by LINDLEY'S gardener's watchword, and the whole argument resolves itself into this, that as soon as gardeners generally have attained that degree of culture and refinement which will qualify them for intercourse with the members of other professions, then they will certainly rise in the social scale. The leading gardeners of this country are highly complimented, as are also the possessors of large gardens, who extend some consideration to their gardeners. Otherwise the article in the main might be addressed to the young gardeners of this country, who, collectively, are responsible for the social standing of the profession in the immediate future. The majority of our best practical gardeners will agree with us, we believe, that very much remains to be done before the general run of English gardeners will be raised to the level of their occupation. Of course there will always be a large number of people who mistake their calling, just as in every other walk of life; but these may be left out of consideration.

—— In a report on the condition and progress of the garden of the Society of Acclimatisation at Hyères, the *Bulletin* for November gives the RATE OF GROWTH OF VARIOUS SPECIES OF EUCALYPTUS and other Australian trees. The Eucalypti rapidly form very straight, slender trunks of very durable wood. E. globulus, sown in March, 1873, and planted in a row, are now from 20 to 35 feet high, the greater part being over 25 feet. Seedlings of the same species planted out in 1870 are now from 48 to 65 feet high, and some of them are 40 inches in girth. Another species, probably E. maculata, planted at the same time, is now about 82 feet high, the trunk being about 10 inches in diameter a yard from the ground. Some experiments with seedlings gave a rate of growth exceeding an inch in the twenty-four hours.

—— As an illustration of the IMPORTANCE OF THE CAROB TREE (Ceratonia Siliqua) IN PORTUGAL, we may point to a recent report on the trade and commerce of Lisbon, where we are told that the Ceratonia is one of the principal resources of the province of Algarve, and that a severe drought that visited

the province in the year 1875 had begun to cause the death of the trees. The general failure of these trees is described as being equivalent to the utter ruin of the largest and best part of the inhabitants of the province.

—— At the annual meeting of the HIGHLAND AND AGRICULTURAL SOCIETY, held on Jan. 17, Professor BALFOUR reported that the following premiums had been awarded in the Forestry Department :—1. The gold medal, or £10, to Mr. WILLIAM GORRIE, consulting landscape gardener, Rait Lodge, Trinity, Edinburgh, for a report on the Tree Mallow (Lavatera arborea) as a new agricultural plant for cattle-feeding, paper-making, and other purposes. 2. The medium gold medal, or £5, to Mr. ROBERT HUTCHISON, of Carlowrie, for a report on the Taxodium sempervirens, or Red-wood, for timber purposes. 3. The medium gold medal, or £5, to Mr. ROBERT HUTCHISON, of Carlowrie, for a report on the Picea Nordmanniana, and its suitability for the climate of Britain. 4. The medium gold medal, or £5, to Mr. THOMAS WILKIE, forester, Invergarry, N.B., for a report on the management of plantations.

—— We have received from the agent of the Canadian Government in London a pamphlet containing some interesting facts connected with STOCK RAISING and the BREEDING OF PEDIGREE CATTLE in the Dominion of Canada. Those of our readers who may be interested in this subject should apply for a copy at the Canada Government Office, 31, Queen Victoria Street, E.C.

—— At a meeting held as announced on the 31st ult., in reference to the organisation of an EXHIBITION OF CARNATIONS AND PICOTEES during the approaching summer, the projected show was approved, and a committee, with power to add to their number, was appointed to make the necessary arrangements. Mr. G. F. WILSON, F.R.S., was unanimously elected President, and Mr. E. S. DODWELL Secretary. About £25 was subscribed at the meeting in aid of the funds for the necessary prizes. It was thought that, if possible, the show should be held at South Kensington, provided satisfactory arrangements could be made.

—— The rashness exhibited on the part of those who declare certain varieties of POTATOS to be "disease resisting" is constantly being illustrated in various ways, and the experience of those who make a speciality of the Potato goes to prove that, if an average of three years be taken, no variety is altogether exempt from the ravages of the disease. An amateur cultivator of our acquaintance grew the American variety Eureka in 1874 and 1875, and finding it, notwithstanding statements to the contrary, of good cooking quality, and entirely free from disease during the time he had grown it, strongly recommended it to his neighbours and friends. But mark the result of the season 1876.



FIG. 23.—TRANSPLANTING RICE. (FROM A JAPANESE DRAWING).

He writes:—"This season Eureka all rotted down, other varieties stored round them remaining very good." But while making this statement, the writer reiterates the favourable opinion he had already expressed as to the culinary value of Eureka:—"I find it cook extremely well, very white and mealy, from my sandy red land, in fact most of the American varieties are of good quality from this soil, whilst in the heavy clay lands hereabouts they are simply worthless." This is an invariable experience with the American Potato. The writer makes another statement in regard to American Potatos worthy of being recorded:—"On some light sandy land a short distance from here" (he is writing from the southern part of the county of Warwick) "all the red American Potatos turn white after being grown in it about three years, at the same time yielding enormously." The land is chiefly let out as allotment gardens to labourers, and this season the Early American Rose was quite white in the skin. Did what is known as the White American Rose originate in this manner?

—— In wintering stock plants of the useful MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATUM is it expedient to keep the plants so dry at the roots as is generally done? The condition of some plants in 48-pots seen a few days ago in a cold greenhouse, which has no apparatus for heating by artificial means, seemed to raise the question as to whether it is conducive to its well-being to keep the plants dry at the roots. They were occupying a sunny shelf, and on all occasions when dry the plants were freely watered. The growth was almost as luxuriant as at mid-summer. The plants were cuttings struck last spring, and were well established in their pots, and a good supply of cuttings could be obtained from them. True, the season has been an exceptionally mild one, but then it has been very damp and cold. It may be that drought at the roots during winter is more injurious than moisture, supposing the plants be well established in pots and there be sufficient drainage. This hint is thrown out for the consideration of those who have to winter in quantity the choicer bedding plants.

—— Major HALLETT has been lecturing before the Tunbridge Wells Farmers' Club on SEED SELECTION, and his lecture is so interesting that it is a matter of regret to us that the crowded state of our columns forbids us from extracting the greater part of his observations. For the present we must confine ourselves to the following extract, in the hope of subsequently returning to the subject. The full text of the lecture is given in the *Brighton and Sussex Daily Post* of the 27th inst.

"Very close observation during many years has led me to the discovery that the variations in the cereals which Nature presents to us are not only hereditary, but that they proceed upon a fixed principle, and from them I have deduced the following law of development of cereals:—1. Every fully-developed plant, whether of Wheat, Oats, or Barley, presents an ear superior in productive power to any of the rest on that plant. 2. Every such plant contains one grain, which, upon trial, proves more productive than any other. 3. The best grain in a given plant is found in its best ear. 4. The superior vigour of this grain is transmissible in different degrees to its progeny. 5. By repeated careful selection, the superiority is accumulated. 6. The improvement, which is at first rapid, gradually, after a long series of years, is diminished in amount, and eventually so far arrested that, practically speaking, a limit to improvement in the desired quality is reached. 7. By still continuing to select, the improvement is maintained, and practically a fixed type is the result."

—— The large ORCHID-HOUSE AT GUNNERSBURY PARK, Acton, the residence of Baron LIONEL DE ROTHSCHILD, is just now remarkable for the fine display of Phalænopsis in flower. Altogether there are about fifty plants growing in baskets suspended from the roof at the front of the house, a considerable majority being P. Schilleriana. About forty plants are now in bloom; and, while the spikes are of good size, regard being had to the dimensions of the plants, the flowers are large and finely coloured. P. amabilis is very beautiful, and P. grandiflora, being a little later, is not yet in bloom. Mr. RICHARDS grows all his Phalænopsis in these suspended baskets, with but little soil in them, and the leaves they put forth are large and finely marked. The floral spectacle presented by the line of so many plants in bloom is of an imposing character. Other Orchids in bloom are Lælia anceps Dawsoni, with three very fine flowers of most delicate beauty, the interior of the crest being richly striped with rosy crimson; Masdevallia Veitchii, with twelve large and brilliantly coloured blossoms; several fine varieties of Odontoglossum Alexandræ, one pure white being remarkable for its chaste beauty. This beautiful Orchid is largely grown at Gunnersbury, and Mr. RICHARDS states he is scarcely without flowers all the year round. A plant of O. Andersonianum has thrown a five-branched spike having quite sixty buds on it, and this will be in bloom a week or ten days hence. Odontoglossum bictonense has six large spikes of blossoms; and Sophronites grandiflora is particularly effective. The whole collection of Orchids, which are grown mainly for cutting from, are in fine condition, the result of high-class culture.

—— M. VAN TIEGHEM has been elected a member of the Academy of Sciences, Paris, Botanical Section, in the place of the late Professor BRONGNIART.

—— At the meeting of naturalists in Hamburg last year, Professor J. BÖHM read a paper on the RELATIONSHIP BETWEEN ROOT DEVELOPMENT AND THE SIZE OF THE LEAVES. In some experiments on the influence of various saline solutions on germinating plants of the Scarlet Runner Bean, growing in a sandy soil impregnated with salt, he found that the effect usually showed itself in the very slow development of the stem, and the extraordinarily small size of the leaves. Analyses of the ashes proved that these conditions were not brought about by an undue absorption of salts. No other explanation could be found but that the solutions acted injuriously upon the roots of the plants under experiment, and this view was confirmed by direct experiment. It was also proved that the solutions acted injuriously upon the development of the stem and leaves independently of the root. The main result of the experiments was simply a confirmation of the generally accepted theory that there is an intimate relationship between root development and growth above ground.

—— At the same meeting, Dr. REICHENBACH, the President, described a very REMARKABLE CAMPANULACEOUS PLANT, which he believed to be a hybrid between Campanula barbata and Phyteuma hemisphæricum. Only a solitary plant of it was found, and of this only a dried specimen now remains. It was discovered by Baron VON HAUSMANN, in the Seiser Alps. Dr. REICHENBACH calls it × Campanula Hausmanni, and says that it may most aptly be designated as a Campanula with the flowers of a Michauxia. Respecting the transformation of Ferns, Dr. REICHENBACH mentioned a case of reversion of an abnormal form to the normal state, and another case in which the normal form had begun to vary. The first was the well-known variety of Asplenium Filix fœmina, called Fritzelliæ. This, planted out in a shady place in the Hamburg Botanic Garden, suddenly changed into the common typical form, not only in the cutting of the fronds but also in their size. The other was the ordinary Scolopendrium with narrow acute fronds, which were succeeded by others forked at the tip.

—— Dr. RILEY has published, under the title of "POTATO PESTS," an illustrated account of the Colorado Potato beetle and other insect foes of the Potato, with suggestions for their repression, and methods for their destruction. It will be our duty to notice this publication more at length on another occasion, but the matter is so important that we lose no time in saying that the pamphlet can be obtained of Messrs. TRÜBNER & CO.

—— We understand that Mr. E. BENNETT, of the Rabley Nurseries, Shenley, Herts, formerly gardener to the Marquis of SALISBURY, has been appointed Floral Director of the Royal Aquariam, Westminster.

—— Our contemporary, *Nature*, has published Mr. J. S. GARDNER'S lecture on the TROPICAL FORESTS OF HAMPSHIRE, given at South Kensington in connection with the Loan Collection of Scientific Apparatus. The lecture was illustrated by a rich collection of fossils, chiefly from the valley of the Bourne, and by an imaginary landscape representing the vegetation of the Bourne valley during the eocene period. This lecture was an extremely interesting one, not alone to geologists, but also to botanists, great care having been exercised in the determination of the fossil remains of the plants. We have some experience of the difficulties attending the determination even of the fresh leaves of not uncommon plants, for many of our correspondents seem to think we ought to be able to recognise the smallest scrap of any plant they may send to be named. If it is so difficult to recognise living plants, what must it be with the imperfect, petrified remains the geologist has to deal with? Nevertheless, the fossils from the Bourne valley (and other parts, of course) represent plants so different from the existing vegetation that every one must realise the fact that our flora has undergone an entire change since the comparatively recent eocene period. Mr. GARDNER exhibited many fossils undoubtedly belonging to families not represented in the present flora. Respecting the genera, and still more the species, there can be little certainty in the majority of instances. Among Mr. GARDNER'S numerous specimens were several Proteaceæ, referred to Dryandra and Stenocarpus, fan-leaved and feather-leaved Palms, large Aroids, and, what was more interesting than all the others, remains of a gigantic member of the Cactus family. Associated with these were Oaks, Elms, Beeches, Maples, and other equally familiar types, with a crowd of others now strangers to our soil. Still we cannot accept Mr. GARDNER'S inference that the climate of that period may be spoken of as actually tropical. At the present time there are temperate representatives of the Palmeæ, Aroideæ, Cacteæ, and other families, and it is quite possible that the temperate types were formerly more numerous.

—— Professor BÖHM, of Vienna, has been repeating some of SAUSSURE'S experiments relating to the ABSORPTION OF CARBONIC ACID BY PLANTS. If green leafy twigs of Ligustrum vulgare, or any other plant, are placed in an absorbing tube, containing atmospheric air, and excluded from the light, the volume of gas is considerably reduced whilst there is at the same time a generation of carbonic acid. Taken into broad daylight the original volume of gas is reinstated. But this phenomenon is wholly due to the absorption of carbonic acid by the cell contents, but more especially to the storing up this gas in the cell-wall. At a temperature of 21·2° dry branches appear to absorb even more carbonic acid than fresh ones; but whereas, in the latter, it is comparatively quickly expelled by the hydrogen, oxygen, and nitrogen, in the former it is given off only very slowly, probably as in coal.

—— How much the aspect of the VEGETATION OF THE SOUTH OF FRANCE AND ALGERIA will eventually be modified may be gathered from the large scale on which the Acclimatisation Society is raising various subtropical plants hardy in that region. Although many of them are likely to possess nothing beyond their ornamental value, others have been selected for their economic products. Among plants raised for sale they have in the gardens at Hyères about 50,000 plants of the following species:—Chamærops humilis, C. excelsa, Corypha australis, C. Gebanga, Phœnix dactylifera, P. leonensis, F. pumila, Sabal, various species; Jubæa spectabilis, Dracæna indivisa, Phormium tenax, Dasylirion, various species; Hakea Victoriæ, Aralia Sieboldi, &c. This does not include a large stock of Eucalyptus, Casuarina and Acacia. The Society also possesses a large collection of Bamboos, and it is one of the special features of their labours to try the hardiness of the various kinds and get up a stock of those likely to prove commercially useful in the Mediterranean region. B. aurea, nigra, mitis, flexuosa, violascens, and Quilloi are the hardiest. A species, most likely Himalayan, received under the name of Bambusa Thouarsii, exhibited a most remarkable luxuriance. In October last a single plant had produced during the summer fourteen stems upwards of 16 feet high. In size this exceeds all others in the climate of Hyères.

—— Dr. SORAUER, the author of a handbook on plant diseases, read a paper at the meeting of naturalists in Hamburg last year on the NATURE AND CAUSES OF CANKER IN APPLE-TREES, illustrated by

a large number of microscopical slides. He observed that since the publication of his book no scientific work on this subject had appeared, if he excepted an article entitled *Ueber den Krebs der Apfelbäume*, the author of which had the misfortune to take the galls of the blood louse for canker. The result of SORAUER'S investigations is that he finds that neither insects nor fungi cause canker, though the latter are usually present in early stages. Briefly it may be stated that he attributes canker to the action of frost upon malformed or abnormally formed tissue. To use his own words, after fully explaining the abnormally developed tissue, "canker must consequently be regarded as a local hypertrophy peculiar to certain varieties and soils, the beginning of which must be sought in the injuries effected by frost—at least in the cases hitherto authenticated." But this does not preclude the possibility of other agencies causing the canker growths, the original influence always residing in the soil which induces the development of this exuberant or abnormal tissue. Such is DR. SORAUER'S opinion, which amounts in fact to nothing more than the constitution and soil theory.

—— The last monthly report of the American Department of Agriculture states with reference to the FRUIT CROPS OF 1876 that almost the only complaint about the Apple crop was that its superabundance greatly diminished its market value. Maine returned a yield 20 per cent. below that of the previous crop; Vermont fell 4 per cent. below. Drought and September storms reduced the figures in New Jersey to 95, in Delaware to 55, and in Virginia to 92. Missouri reported a production falling 28 per cent. below that of 1875. With these exceptions, in the entire section north of the thirty-sixth parallel, and east of the Pacific slope, the yield exceeded that of last year; the average excess for the whole area being not less than 17 per cent. The excess in New York is 22 per cent.; Pennsylvania, 23; Ohio, 41; Michigan, 24; Indiana, 39; Illinois, 16; Wisconsin, 54; Iowa, 43. The Pear crop fell below the small crop of 1875. The extensive prevalence of the disease known as Pear blight appears to be the leading cause of this diminution. The only States in which the product did not fall below that of 1875 are New Hampshire, 103; Vermont, 100; Wisconsin, 119; Iowa, 105; Oregon, 101; no one of which produced a large crop. In the remaining States the decline was about 20 per cent. In Howard, Indiana, Pears were plentiful and fine; Decatur, Iowa, produced the largest crop ever known; and Placer, California, a crop surpassing any other for many years. The Grape returns indicate a product somewhat less than in 1875. In California the product is reported 2 per cent. larger than last year.

—— At a late meeting of the Academy of Natural Sciences of Philadelphia, Dr. ENGELMANN, of St. Louis, spoke about ABIES FRASERI, the very local species of the highest mountains of North Carolina. This is the tree which caused these mountains to be designated the Black Mountains; giving their summits that sombre hue for which they are known. They seem to grow nowhere but on these mountains, and only on those that reach up to or above 6000 feet altitude. The northern localities claimed for the species rest on confusion with forms of Abies balsamea, the common northern Balsam, of which our tree may be claimed to be the southern representative. A. balsamea does not seem to extend southward further than the Virginian mountain region: and it would be interesting to ascertain how near both species approach each other. Besides the well-known characters of the cones and their cusps, excellent distinctions are found in the structure of the leaves of both species. Abies Fraseri and balsamea are so nearly allied, that without fruit they are constantly confounded; but the structure of the leaves will always distinguish them so well that a single leaf, or even a fragment of one, will invariably solve all difficulty. The leaves of Abies have under the epidermis, and between it and the cells of the parenchyma, which are full of chlorophyll, an arrangement of cells of thick walls, elongate form, and destitute of chlorophyll, analogous to bast cells, which have been called hypodermic cells (see *Gardeners' Chronicle*, 1875, vol. iv., pp. 194, 710); we find them in all species of Abies on the edges and on the keel, where they strengthen the leaf; but their distribution under the epidermis of the upper side of the leaf is very different in different species—they may be wanting there altogether or may be differently grouped, or may extend over the whole upper surface. Now in all forms of A. balsamea they are there almost entirely absent, even in those of the highest New England mountains; while Fraseri exhibits under the microscope a continuous hypodermic stratum of them.

Home Correspondence.

A Caution to Gardeners.—I shall feel greatly obliged by your giving public caution in your next week's issue to my friends in the horticultural and nursery line against being imposed upon by a young man at present going about in the South of England and passing himself off as a son of mine, and who by such false representations is inducing respectable gardeners to receive and entertain him. In one case he called on a friend of mine, a well-known gardener near Bath, and, by representing himself as my son, was most hospitably received and entertained for the best part of a week. He said he had just been calling on a well-known Earl's gardener in Gloucestershire, and was on his way to call on a nursery firm in Worcester (R. Smith). He says he is a gardener, and is on a tour picking up information about his profession. I naturally feel very much annoyed to think that any one should be thus imposed upon, especially on my account, and trust you will make the affair as public as possible. I only hope the rogue will be found out and punished as he deserves. He is described as about twenty-seven years of age, 5 feet 10 inches high, beardless, of a very taking and gentlemanly manner. Of course I have not the slightest idea who he is. I may say that my eldest son is only in his tenth year, and never had a foot across the border. *George Johnston, Glamis Castle.*

The Gardeners' Royal Benevolent Institution.—Permit me to draw attention to a custom which, if persisted in, will in the end I fear damage the above excellent Institution. I allude to the practice of some of the subscribers sending out circulars soliciting votes on behalf of no doubt very deserving persons. The motives influencing gentlemen who have thus acted have been, I feel sure, of the most laudable kind, but if any one will take the trouble, as I have done, to gardeners to become members, they will be met with a reply something in this wise: —"If I should unfortunately require aid from the funds of the Association, unless I can command the assistance of some influential nurseryman, I should not stand a chance of being elected as a pensioner. Nurserymen take up the cases of persons, and then parade the fact that they have been instrumental in securing the election of their *protégés*." I can hardly think there is any truth in this statement, still it seems to me very questionable taste for two or three nurserymen to take up different cases, and the one who has succeeded in getting his candidate elected to announce the fact in the newspapers, inasmuch as the secretary always announces the result of the ballot in the papers. On the next occasion that the subject of the electoral franchise is before the Houses of Parliament it is hoped that canvassing will be made illegal. A man who will not vote without some one looking after him is unworthy of a vote. It would, of course, be carrying analogy beyond its limit to compare the two cases. Still I think it is a subject worthy the consideration of those who make the rules for the government of institutions similar to that of the Gardeners' Royal Benevolent Institution, whether it would not be well to insert a clause prohibiting the canvassing to which I have referred. It has always been to me a most mysterious circumstance that so few persons connected with gardening subscribe to this excellent institution, and observing that it is the opinion of some gentlemen that the guinea membership will be a potent lever in reviving the fortunes of the Royal Horticultural Society, I ask myself this question, "If so few gardeners will subscribe a guinea a year to an institution existing for their special benefit, how many will permanently subscribe to the funds of the Royal Horticultural Society?" Few gardeners can spare a guinea from their hard-earned wages, and it seems to me that the future of the Royal Horticultural Society is gloomy indeed if it does not rest on a sounder financial basis than the guinea membership: but I am digressing; still, the one case seems to me to have an important bearing upon the other. *Bruce Findlay, Manchester.*

Extirpation of Thistles by Chemical Vapours.—Can any of your readers explain the following fact? There is near Topsham in Devonshire a large manufactory of Odams' chemical manures. Being in the neighbourhood last week, I asked several farmers as to the effect of the smoke (very unpleasant to the smell) on the surrounding vegetation. They agreed that it had no injurious effect, except on some unexplained occasions, and some even thought it was beneficial. But there was one curious exception. Thistles used to abound in the meadows where the manufactory now is, but wherever the influence of the smoke is felt the Thistles are gone. They dwindled away year by year, and at length entirely disappeared. *Henry N. Ellacombe, Bitton Vicarage.* [Is any refuse from the factory strewn over the fields? EDS.].

Italian and American Tuberoses.—Will some of your readers kindly inform me what is the difference between American and Italian Tuberoses? There is a wide difference in the price, the former being nearly as dear again as the Italian; and as I have partly to depend on the production of cut flowers for a livelihood, it is of great importance that I should obtain the best article at the smallest price. I have hitherto grown American Tuberoses, but I should grow Italian if I could depend upon their being as good as those I can get from America. I cannot, however, afford to run any risk by growing the Italian before I know of their quality. *Florist, Yan. 29.*

Notes on Grapes.—Your correspondent, Mr. A. S. Kemp, at p. 84, in writing about Grapes says: "I find stocks influence the style and character of the bunch more than most writers venture to observe or state," and, according to his opinion, the stock does not only influence the development and productive character of the scion, but, as far as the Vine is concerned, alters the form of the bunch and the shape of the berry, &c. To me this appears to be a somewhat startling announcement, and, as the subject is very interesting, it would doubtless be desirable to ascertain if the experience of Grape growers generally is in accordance with that of Mr. Kemp. For my own part, I may as well say that such has not been the case with me, but at the same time I must admit that my experience with grafted Vines has not by any means been considerable. I have, however, under my care here the Mrs. Pince variety growing upon its own roots, and grafted upon Alicante and West's St. Peter's, and in one instance upon the White Frontignan variety, and I cannot perceive any appreciable difference in the fruit as regards either the form of bunch, shape of berry, colour, or flavour. I have also some recollection of having something to do with the planting of a vinery, all the Vines being intended or supposed to be the White Muscat of Alexandria. The plant, however, through some unaccountable mistake, proved to be a Black Hamburgh. When this was discovered to be the case, the offending Vine was cut down, and duly grafted with the Muscat of Alexandria, and I certainly never could, nor did I ever hear of any one discovering, any difference in the fruit of this Vine from that of the fruit of the other Vines in the same house. *P. Grieve.*

To the Right or the Left?—Your leader on this subject reminds me of the smart retort of a young lady to an advocate who became furious at her hesitation in answering the question of what side of the street a certain house was on. "Either," said the lady, after a pause. "Either!" cried the advocate, anxious to make a point. "Don't you know your right hand from your left?" "Oh, yes," answered the lady; "but when you go down the street the house is on the right, when you come up it is on the left." With and against the sun are much better terms to use, and are, if I remember rightly, largely employed by Mr. Darwin in his *Climbing Plants*. Would it not also be possible for observers of scientific facts to agree to some definite standpoint, such, for instance, as to face the north pole when making their observations? *D. T. Fish.*

Large Garden Pots.—Noticing your paragraph on p. 80 about the number of garden pots made by one firm, I send you the dimensions of two very large pots that were used here about two months ago. They are both the same size, and the measurements are as follows:—Circumference round the rim outside, 9 feet 3½ inches; diameter across the top inside, 2 feet 9 inches; depth, 2 feet 4 inches. These two pots are the largest Mr. Bailey, the potter, of Heaton Mersey, has ever made. They are both in use for Camellias, one for a red (imbricata), about 15 feet high, a well-furnished pyramid, and the other for a white variety of nearly the same size. *Robert Mackellar, The Gardens, Abney Hall, Cheadle.*

Lily of the Valley.—I quite agree with Mr Thomson that home-grown Lilies of the Valley are a good for forcing as those imported from the Continent. I have grown Lily of the Valley for ten years and have forced them for the last fifteen years in England and in Germany. I dug my crowns up at the beginning of November, and selected the best crowns and forced them at once by 36° R. above zero, and had the first flowers five weeks after. The less strong flowering crowns I left till after Christmas, for these will not force well before then—indeed I may say not all. The French Lily of the Valley, as they are

forced over there, are first-rate, but I feel inclined to state that, if you buy crowns from the Continent for first-rate ones and give a first-rate price, you do not after all get the best. I followed this practice for several years and obtained them from different firms, and have now 500 crowns of Lily of the Valley under my charge, are sold as first-rate crowns, but which I only call seconds and thirds. And these imported crowns have another fault, viz., they lie too long about and are often quite dried up. I obtained this season about 1000 crowns to force from the Continent (our sale is generally 5000, but we were really afraid to order more for fear of losing them). From those now in question I selected only the very best, and forced them as soon as they arrived in 120° Fahr., and had them well in flower at Christmas; but my second batch, which are the smaller ones, are only middling. I think there is no doubt that the Lily of the Valley grown in this country is as good as those grown in Germany and France, but I don't know whether they can grow them so cheaply and in quantities sufficient to meet the demand of the English markets. *Fritz Hesse*, 2, *Kingston Place, Prestbury Road, Cheltenham.*

Orchids in January.—This is still a month of promise rather than of performance to the Orchid grower; nevertheless the show-house has exhibited the following, at a time, too, when flowers are so welcome—and such flowers!—

Cattleya Trianæ
,, marginata Pinelli
,, chocoensis
Lælia autumnalis
,, alba
,, Dayana (very beautiful, but an identical flower has appeared on a plant bought among a large quantity of imports sold last year at Stevens' as Cattleya marginata. Were these Lælias part of that lot?)
,, anceps
Helcia sanguinolenta
Dendrobium Linawianum
,, Japonicum
Angræcum sesquipedale
,, eburneum virens
Oncidium Barberi
,, Insleayi leopardinum
,, nubigenum
,, cruciochynchum
,, flexuosum
,, aurosum
,, pulvinatum
,, pelicanum
,, Papilio
,, cucullatum superbum (bought at Stevens' in 1875 — imported — proves to be a superb variety; the labellum twice the width of the old sort)
,, cheirophorum
Saccolabium violaceum
Cœlogyne cristata
,, media
Cypripedium nigrum superbum
,, javanicum
,, pardinum
,, venustum
,, Lowii
,, Reichenbachii
,, niveum
Masdevallia melanopoda
,, Veitchi
,, ochodes
Phalænopsis amabilis
,, grandiflora
Epidendrum aromaticum
,, fragrans
,, dichromum
,, cochleatum
Lycaste lanipes
,, Skinneri
,, leuco-flavescens
Zygopetalum Mackayi
,, maxillare
Cymbidium sinense
Odontoglossum Alexandræ
,, pulchellum majus
,, Cervantesii
,, Rossii majus
,, bictonense
,, Lindeni
Calanthe vestita rubra
,, ,, oculata
,, Veitchii
Maxillaria grandiflora
,, picta
,, Colesii
Pilumna fragrans

Edward W. Cox, Moat Mount, Hendon.

—— The following Orchids are now in bloom in the choice collection of C. G. Hill, Esq., Villa Road, Nottingham:—Cypripedium villosum, C. Warneri, C. niveum, C. barbatum, Cœlogyne cristata, Dendrobium Wardianum, D. Wardianum album, D. moniliforme, D. barbatulum, D. crassinode, Calanthe vestita rubra, C. Veitchii, C. Turneri, C. nivalis, Cattleya Trianæ, C. Trianæ Russeliana (true), C. Hillii, C. marginata, Phalænopsis Schilleriana, P. amabilis, Saccolabium violaceum, Zygopetalum Mackayi, Oncidium cheiropthorum, O. tigrinum, O. pulchellum, O. Wentworthianum crispum (several varieties), O. Andersonianum, O. Cervantesii (good), O. cordatum, O. Rossii, O. Rossii major (true), O. cirrhosum, O. Roezlii album, Masdevallia ignea, M. polystycta, Lycaste Skinneri, L. Skinneri alba, Limodores roseæ, Lælia albida. The Cœlogyne cristata is a fine plant, with nearly 200 blooms; Cattleya Hillii, a flower of which I enclose for your inspection, is also fine, and distinct from other varieties. *N. German.* [The flower received appears to us to be only an ordinary variety of Cattleya Trianæ. EDS.]

Course of the Sap.—In the course of your remarks relating to the flow of sap, you say—"There are three principal theories which, disregarding modifications, may be thus briefly summarised:—1. The old theory of a regular continuous ascent in the season, and an equally regular descent later on;" to which you add—"This seems to be the view of a correspondent at p. 76 of our present issue." If these remarks are intended to apply to me, I beg to state that I hold quite a different opinion, which I endeavoured to make clear in my paper on bottom-heat. I wish, therefore, to say at once that I do not believe in the descent of sap at all unless Nature is put out of her ordinary course, as will be apparent to you if you read my remarks again. The theory I hold is this, that the application of artificial heat to leafless Vines sets up an unnatural and too rapid circulation by unduly exciting the top roots, and that the sap, not being absorbed or expended by its proper outlet, the leaves, and being impelled onwards by the heat, returns again to the soil by some of the lower roots, thus exhausting the Vines at the outset by draining them of their life-giving fluid by a continuous flow and return growing more feeble daily, and this it is, as I said, would account for the Vines only making real progress after they got fairly into leaf, when any downward current would have ceased and taken its proper course. I am strengthened in this opinion from close observation, for having had much to do with Vine and other fruit borders for over twenty years, I have had to ponder on the reasons for certain causes, and search them out so far as I could for myself. *S. W.*

Hereditary Deformity in Brassica Napus.—In October, 1873, Mr. John Reitenbach, of Plicken, near Gumbinnen, in Prussia, sent me a large napiform root of a variety of Rape ("Pommersche Kannen-Wruke"), which he had grown for cattle food, and which presented the not uncommon appearance of small tuberous swellings on the tap-root, and on the slender secondary roots. But what is very extraordinary, and, as far as I know, has never been observed before, several of these monstrous tubers were provided with vegetative buds, consisting of several yellow, imperfectly developed leaves. The tissue of the little tubers was connected with the roots from which they sprung by a ring of vascular bundles, and it seemed most probable to me that these tubers were deformed roots, although I was unable to dis-

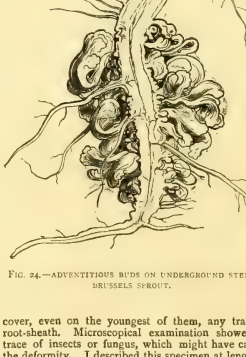


FIG. 24.—ADVENTITIOUS BUDS ON UNDERGROUND STEM OF BRUSSELS SPROUT.

cover, even on the youngest of them, any trace of root-sheath. Microscopical examination showed no trace of insects or fungus, which might have caused the deformity. I described this specimen at length in the *Schriften der Physikal.-ökonom. Gesellschaft fur Kœnigsberg*, 17 *Jahrgang*, 1873, p. 109, plate xiv. In November, 1873, twelve of the tubers which had leaf-buds were taken from this specimen, planted in a pot, and kept through the winter in a cold house. I was anxious to see what the further development of these leaf-buds would be. Only one of them rooted and lived through the winter of 1873-74. In the spring of 1874 this was planted in an open border of the Royal Botanical Garden at Königsberg. It formed a moderately-sized plant of about 1½ foot in height, flowered abundantly, and ripened many seeds. In the spring of 1875 the seeds of this plant were sown in pots, and a part of the seedlings, which came up in great numbers, were planted in an open border. At the end of October, 1875, the large and well-grown plants which these seedlings formed were taken out of the ground, and it was then seen—1, that all thirty-eight plants which had been grown had similar monstrous tubers, not only on the tap-root, but also on the secondary and tertiary roots; 2, that the monstrous root-tubers of sixteen of these plants were without leaf-buds, but twenty-two had leaf-buds, varying in number from one to thirty-nine; one to two buds were on one tuber. The leaf-buds of these twenty-two plants were in some cases very much developed, particularly on the tubers of the specimen, figured from a photograph (fig. 25). The leaf-buds had from three to twelve leaves, each from 1½ to nearly 4 inches in length, but of a pale yellow colour, as they were developed underground. Microscopical examination showed, as in 1873, no trace of insect or fungus which could have caused the degeneration of the ordinary roots. This case demonstrates, therefore, that the peculiarity of forming monstrous tubers instead of ordinary roots, and of developing leaf-buds on these, had already become an innate property of the plant to such a degree that it was transmitted by inheritance to the seedling. It will now be very interesting to see how long this inherited condition will last. In the autumn of 1875 the leaf-buds of the Rape represented in the woodcut were taken off and planted in pots, but only one of them survived the winter of 1875-76: it rooted, and was planted in the spring of 1876 in an open border; it became a strong plant, flowered well, and a good quantity of seed was ripened. Four of the Rapes of 1875, which bore leaf-buds on their tubers, were also kept through the winter of 1875-76, and planted in 1876 in an open border. From these also a good quantity of seed was secured. Should any of the readers of the *Gardeners' Chronicle* who have a favourable opportunity for growing Rapes be inclined to enter upon the interesting experiment how far the seeds of the deformed Rape in 1876 will reproduce the tendency of the parent by forming monstrous tubers and leaf-buds on them by inheritance, I shall be pleased to send him some seeds for trial, but on condition that he will give in due time an account of his experiments in the *Gardeners' Chronicle*. *Robert Caspary, Professor of Botany in the University of Kœnigsberg.* [The specimen in question resembles those figured in the *Gardeners' Chronicle* in 1872, p. 1066, from specimens brought before the Scientific Committee of the Royal Horticultural Society in the same year by Mr. Wilson Saunders. As the tuber is of cauline rather than radical nature, the production of adventitious buds is not so surprising. The hereditary reproduction is, however, very interesting. EDS.]

Rainfall in 1876 at Bodorgan, Anglesey.—The following is a monthly register of the rainfall, including the number of days on which .01 inch or upwards of rain or snow fell during the past year at this place:—January, 1.87 inch, thirteen days; February, 3.14 inches, nineteen days; March, 2.26 inches, twenty-two days; April, 3 inches, fifteen days (including .72 inch of snow on April 12); May, .15 inch, three days; June, 1.96 inch, thirteen days; July, 2.82 inches, ten days; August, 3.54 inches, seventeen days; September, 2.78 inches, twenty-one days; October, 4.27 inches, nineteen days; November, 4.72 inches, twenty-one days; December, 5.11 inches, twenty-three days; totals, 35.62 inches, and 196 days. The heaviest falls in one day were 1.32 inch on July 26, and 1.30 inch on August 2. The highest reading of the barometer was 30.55 on April 5, the lowest 28.35 on December 4. Height above sea level, about 35 feet. Rain gauge, Negretti & Zambra's 8 inch, 4 feet above ground, plunged in soil in a large vase; measurements taken at 8 A.M. daily. *T. E.*

The Scarcity of Holly Berries.—In common with other parts of England we have a scarcity of Holly berries in this county, and, to my mind, the thing is easily explainable. The Holly is influenced, as any other tree, by our springs; if the weather be mild and favourable for its fertilisation when in blossom we have a plentiful supply of fruit, not otherwise. A tree near the conservatory here, sheltered by the stables and under the friendly protection of a large Oak, had a fine crop of berries, while trees a little way off were perfectly barren. Was it bees or drought which influenced this tree? Assuredly not; and I give the same reason for the comparative barrenness of our orchards this year, and the want of acorns in the park. Bees we have in abundance, and no garden should be without them; but although they are of great service in fertilising blossom in garden and grove, moor and meadow, yet a late spring frost will occasionally play sad havoc even amongst our indigenous plants. All things favourable, it is surprising how far pollen will travel and prove effective. I know of a case where a female aucuba plant growing in the garden bore a fine crop of berries, and the nearest male plant was nearly a quarter of a mile distant, but whether the pollen travelled in the air or was carried by bees I cannot decide, but I certainly lean to the former. I once had a few Gymnogramma ferns taken into the stove and vegetate on the wall, when I knew for certain that no plant of the kind was within half a mile. Near where I write there is a forest of 500 acres covered principally with Heath; half was planted with Scotch Fir, they grew well, and soon bore cones. What is the result?—that the strong south-west winds have carried these seeds till the other 250 acres will soon be a natural plantation of trees. And what has taken place on this forest is taking place around us daily; every breeze that blows in spring and summer is charged with pollen and seed, and the very mote that dances in the sunbeam is often a thing of life. *J. Rust, Eridge Castle, Tunbridge Wells.*

—— With regard to the scarcity of berries upon the Holly this year, it may be interesting to Mr. Darwin and others of your readers to know that upon

an estate not far from here, where Holly trees abound, one in the vicinity of a bee-hive was covered with berries, while others not far off had scarcely a berry upon them. I think this fully supports Mr. Darwin's suggestion that the scarcity of bees during the early part of the season may account for the small allowance of berries at Christmas. *William Elliott, Crofton House, Stroud, January* 14.

—— In Mr. Darwin's recent letter to your journal on Holly berries he states that the Holly is a thesis, "the ovary is often abortive and four-lobed without stigmas." He thus not only classes it with perfect plants, but also notices an exceptional difference. Will you therefore allow me to ask whether all our long-venerated botanical authorities were mistaken, or whether the marvellous transformation of trees with perfect flowers into dioecious trees has really taken place, and that, too, in the short space of about sixteen years? If the trees observed by Lindley were becoming monoecious, it would be a wonderful



FIG. 25.—ADVENTITIOUS BUDS ON THE ROOT OF BRASSICA RAPA.

"dioecious plant," and that during forty years he has looked at many flowers in different districts, but has never found an hermaphrodite. In subsequent letters to the *Times* (January 17 and 19), the names of Withering, Sowerby, Smith, and Hooker, are quoted as authorities for regarding the Holly as a plant bearing perfect flowers. To these names those of other celebrated botanists might easily be added. I will, however, only refer to Professor Lindley. So late as 1860, in his *Descriptive Botany*, a manual for students, specially urging the importance of "correct, scientific descriptions," he, after particularising each part of the Holly in the usual way, remarks in parenthesis, "the ovary is often abortive and four-lobed without stigmas." He thus not only classes it with perfect plants, but also notices an exceptional difference. Will you therefore allow me to ask whether all our long-venerated botanical authorities were mistaken, or whether the marvellous transformation of trees with perfect flowers into dioecious trees has really taken place, and that, too, in the short space of about sixteen years? If the trees observed by Lindley were becoming monoecious, it would be a wonderful proof of "development," but for Holly trees in general to have become dioecious would be so marvellous that students cannot help being anxious for authoritative opinion on the matter. *E. A. Mullinger*, 281, *High Street, Chatham*. [We believe the common Holly to be polygamous. In the nurseries the best of the cultivated varieties are strictly dioecious. EDS.]

Potato Spritting Boxes.—I can fully endorse your remarks regarding Potato storing (p. 114), and can strongly recommend the "spritting boxes," but think Mr. Spinks need not have gone to France for the idea, as they have been in general use in this part of Old England for more than twenty years. I believe they originated with John Percival and John Lewis, and were made under the latter's superintendence at Aston, near Northwich, Cheshire, in the year 1847. They are very much used in this neighbourhood, as Potatos are extensively grown for market, and hardly a farmer or cottager but has them in quantities. The boxes are also very useful for storing the finer sorts of Apples and Pears, as they can be taken to the trees and the fruit placed in them as gathered, so preventing any moving or bruising in transit to fruit-room, and they are easily looked over when there. *Wm. Cruickshank, The Gardens, Arley, Northwich, Jan.* 30.

Vegetable Shows.—I am not in a position to say whether or not the Royal Horticultural Society intends this year to give the Cabbage growers an opportunity to show the most useful occupants of the garden; but as as it cannot be expected that the large seed firms will be so liberal every year, if the Society will do nothing we must take the field to ourselves. I am perfectly willing to subscribe my mite, and I should like the opinion of others on the subject. *R. Gilbert.*

The Royal Horticultural Society.—It has been eloquently said of a certain place that in the lowest depth a lower deep still opens in a deep descending series of woes. Substitute the word degradation for woes, and the sentence correctly describes the present state of the Society. How art thou fallen, beautiful Flora and luscious Pomona! was the thought that brought a blush to my cheeks as I read the Secretary's begging appeal to the rich Kensingtonians in the *Daily News*. That such a letter should ever have been written is degradation enough, but that it should have been penned by a distinguished horticulturist who has taken sweet council with his brethren at the Horticultural Club and other places, concerning the best means of reconstituting the Society on a horticultural basis, makes degradation wear the semblance of insult. You suggest the probability of some explanation being forthcoming: I hope it may; but it is difficult to see how any explanation can alter the fact that any horticultural secretary, of his own option—for his letters to all the daily papers are extra-official, and are not sent by order of the Council—has thrown the horticulturists wholly overboard, and has appealed, hat in hand as it were, to the South Kensingtonians to subscribe the funds to uphold the gardens, engage the bands, start the promenades, restore: an entrance, &c., on the ground that the said gardens are a great advantage to the residents and owners of property in the neighbourhood. What, in the name of common sense, has a Royal Horticultural Society to do with such paltry pettifogging objects as these? What has South Kensington or its resident owners or occupiers done for horticulture that the secretary of a Royal Society should become a beggar, as it were from door to door, on their behalf? Are such narrow policies and mean practices in accordance with the charter, of which we hear at times so much? And if they are, perish a thousand charters rather than that they should be continued. A good deal is also heard at times of the *prestige* of the Society: out upon such *prestige* as can be acquired by begging for such unworthy objects, with a threat—for the threat is, if the money be not forthcoming the property may probably be built over. Well, as far as horticultural *prestige* goes, probably the sooner the better; but it ought to have been added that the property belongs to the nation, and cannot be built over unless for national advantage. The time has surely come for action among horticulturists. I am glad to see Mr. Wilson has arrived at that point, and now that he has I will gladly give my name to his guinea scheme as the basis of an entirely new policy, or a new Society—I care not which. I would also remind him that the horticultural public cannot live long on the mere promise of guinea Fellowships, equal in elective and executive functions to any other. It seems to many of us full time that the promises were consolidated into facts. I do not believe in the turning of any wheel to horticultural advantage unless the willing, skilful bands of horticulturists put their own shoulders to it in earnest. The mere waiters upon Providence seldom find many prizes turn up for them. To idly wait when stirring work lies before us to do is proof positive either of incompetence, indifference, or indolence. Horticulturists have courted the many kicks the Society has given them. The worse the usage any of their numbers have received the more they have rallied round the Society, and the more they have been praised for doing so. Let the fat go forth—no more plants, flowers, fruit, vegetables to the society—no more notices from the horticultural press—until your policy is the only one for which you exist as a Society—the advancement of horticulture; and then, before another month, we should either have a new policy or a useless encumbrance swept out of the way. Perhaps the last would be best. What should we lose by the de-

struction of the Royal Horticultural Society's South Kensington Gardens? Perhaps, and perhaps not, the property is bound to be used for the advancement of science, the culture of the taste and the promotion of the happiness of the people. The Lindley Library? This by no means follows. It would probably be gladly handed over to a new society, and if not, Her Majesty's Commissioners would no doubt gladly afford facilities equal to those enjoyed at present to all comers. There would be little risk of losing the use of the Lindley Library: that secured, its ownership is a matter of little moment. But we should lose the charter—and gain much by the loss. It is little less or more than a mere deed of ownership between two bodies that have shown their inability to act together for the good of horticulture. It has been broken and set aside again and again, and its main purpose, the elevation and advancement of the science and practice of horticulture as a cultural and ennobling power on national life, has been sacrificed for the most paltry objects. But we might lose the Chiswick Gardens, and we might not; and if we did, they could be replaced. A gentleman months ago offered to be one of twenty to subscribe £1000 each for the establishment of new gardens in a new locality. What should we gain by the establishment of a new Horticultural Society? First, freedom of action; secondly, freedom from all incumbrances; thirdly, freedom to initiate a purely horticultural policy, unfettered by red-tape and vicious traditions; and, finally, freedom to select the best men for all offices, unbiassed by personal considerations. It is only needful to grasp the latent power involved in this perfect liberty, and to set it on fire with the enthusiasm for horticulture that abounds throughout the country, and much of which is now running to waste for lack of an outlet to give it proper expression—to see that a truly national Society might easily be formed, and must needs prove alike prosperous and powerful. *D. T. Fish.* [Without by any means endorsing all our correspondent's views, we may yet express our unqualified regret and dismay at the recent action of the Secretary to the Society. Probably an explanation will be forthcoming at the annual meeting. EDS.]

The Golden Champion Grape.—I have forwarded for your inspection a cut from a Golden Champion Vine of one year's growth. I do not grow it on its own roots, as I find the wood is much firmer when worked on the Muscat, and its propensity to spot on the berry is a good deal diminished, and the colour, when ripe, much improved. The specimen I have sent you is from a bud worked on Black Hamburgh, which is the first I have tried on that variety, and I should like to know if a similar growth on the Hamburgh has before come under your notice. You will see the cane is perfectly ripe, and the pith quite in proportion. I am a little sanguine as to its further results in the approaching season, as it is a variety especially esteemed at Raby. *Richard Westcott.* [A sample of extraordinary vigour, exactly one inch in diameter, well ripened, and with a very moderate development of pith. EDS.]

Poinsettias in a Low Temperature.—At p. 52 "Inquirer" asks the lowest degree of temperature that Poinsettias can be grown in to a tolerable state of perfection. Being myself rather limited in the way of heated structures, I adopted the following mode of treatment, which I found answered well. Cuttings were put in singly in thumb pots in the second week in June, and plunged in bottom-heat in a Melon frame. In about three weeks they were rooted, and I had them removed to a Cucumber frame near at hand, where they remained standing on the surface of the bed for about three weeks, when they received the final and only shift into 48-pots, and were gradually hardened off to a cold frame, where they remained till the end of September, when they were removed to a cold house under an east wall with no heating apparatus to it at all, in a temperature ranging between 50° and 55° till the end of October. From here they were removed to their flowering quarters, in a house where the temperature is never above 65° and frequently under 40°. The plants in question were from 2 to 3 feet in height, and the head of bracteal leaves 12 to 16 inches across, and of a brilliant colour. The soil I used was good yellow loam, with a little rotten cow-dung. The plants should never be allowed to get dry, as they will be sure to lose their leaves, and plants of that description look miserable. I do not mean to say that Poinsettias may not be grown finer in places where they have every convenience in the way of glass, but I think "Inquirer" or any one else may grow them to a tolerable state of perfection if they grow Cucumbers in a common garden frame, and have a house of 60° of heat to flower them in in autumn. *W., The Gardens, High Green House, Sheffield.*

Premature Growth of Vine Roots, &c.—Pardon me for again troubling you in this matter just to say how deeply I am interested in the discussion, and also to offer a word of reply. First, to the veteran Mr. Henderson (p. 151), who I am sorry does not approve of inside borders—well, we'll agree to differ. I have not the honour of his personal acquaintance, but I know him sufficiently by repute to believe that he practises what he preaches, and in this matter I do the same, for the late vinery here, which is a span-roofed house, 52 feet by 25 feet, has the border entirely inside; and though there are several hundred bunches of fruit still hanging, I can conscientiously affirm that not one berry per bunch has cracked or fogged off, notwithstanding the excessively wet period we have had, which certainly would not have been the case had the borders been unprotected. The border is concreted and walled round, and the roots cannot get out, but (this is one to Mr. Henderson) as soon as the Grapes are cut and bottled the lights are taken off and the border is, as it were, turned out to the atmosphere. We have another vinery with borders entirely inside, but the lights being fixtures the border cannot be exposed to the atmosphere, yet I can perceive no ill effects on that account; the Vines flourish equally well as the others. I also wish to offer a word of explanation to C. S. Wise (p. 76). I am quite in accord with what he advocates, viz., that no plant is ever entirely at rest; and when I wrote that "new feeding roots of Vines were not made till the buds were expanded or were in full leaf," I did not for a moment think that my meaning would be so construed, though perhaps it would have been better had I written (which was really my meaning) that they remain in a comparatively inactive state up to that period, and that no perceptible growth—feeding-roots—was made till then. At p. 118, Mr. Goodacre, after virtually endorsing my views as to inside borders, tenders me another advice, and, though it is nothing whatever to do with the subject, yet being entitled to reply, my answer is, that when I have anything I think worth writing about, and leisure to write it, I shall do it, and court honest criticism, but despise personalities. I am proof against any discouragement he or any one else has to offer, as he must be aware from the mixed score; and as, according to Mr. Goodacre, I live in the land of Goshen, you may shortly expect to have some celestial effusion from *W. Wildsmith.*

Brussels Sprouts.—This vegetable, on which much dependence is placed, has with many signally failed to afford a good supply, which has been caused by their growth having been checked during the dry summer and autumn. Here they have been in the greatest abundance, as the plants were raised under glass, and got out early in May. Those who do not make a practice of sowing their Brussels Sprouts in August early in September, which is the best time, will find it will pay well to do so now if a few old lights can be spared for the purpose, and a trifling bottom-heat afforded, to get them to germinate freely. The raising of Brussels Sprouts in this way may appear a useless expenditure of labour and means, but adverse seasons have to be battled with, and gardeners are expected to meet all difficulties of that kind, and not to fail in producing everything in the vegetable line when wanted. To grow Brussels Sprouts in the style they should be they must be got out early, so as to have plenty of time to get thoroughly established before hot, dry weather sets in, when they will continue to push on daily increasing in size and strength till they are capable of bearing at least double the quantity, and of much superior quality to any that can be obtained from those sown and treated in the ordinary way. *Y. S.*

Gros Colman Grape.—Mr. Goodacre asks (p. 51) "What has become of Gros Colman, so highly spoken of last season?" I have not had much experience with this fine Grape, but having fruited it last season I have formed a very favourable opinion of it. In March, 1874, I planted two young Vines; last year one of them bore five and the other six bunches, which coloured and ripened off well. Had I known at the time they were thinned that the berries would have got to the size, and the bunches to the weight they did, I should probably have lessened the number of bunches. Not only is it a fine-looking Grape, but the flavour of that grown here was also good. In this regard I consider it one of the best late Grapes. I exhibited it at two of our local shows, and on each occasion the 1st prize for the best black Grape was awarded to it. The bunches were left on one of the Vines until about the middle of November; the berries were then in excellent condition, as fresh-looking and plump as in August, and appeared likely to hang much longer. Should it prove to be a good bearer I have no doubt it will be extensively cultivated, particularly for late use. *M. Saul, Stourton.*

Hardenbergia bimaculata and Chorozema cordatum splendens.—I was much struck the other day when visiting Lockinge Park, Colonel Loyd Lindsay's seat, illustrated in your columns at p. 81, with the beauty of the above as winter flowering plants for the decoration of the greenhouse and conservatory. They are most valuable plants, and the specimens were about 2½ by 2½ feet, grown and trained upon trellises, and were one mass of flowers, the beautiful orange and scarlet of the Chorozema forming a grand contrast with the deep blue of the Hardenbergia, and certainly they are worthy of a place in every collection. Mr. Atkins, the gardener, informed me they had been in flower fully a month. *A. Outram, Victoria and Paradise Nurseries, Upper Holloway, London, N.*

Why are Inside Borders Rootless?—Will you allow me to inform Mr. Henderson that the reason why Vine roots "struggle to get out" (see p. 51) is because inside borders are kept too dry. About five years ago I planted a range of vineries with inside borders, taking care at the time to place all the roots pointing in an inward direction, thinking that by so doing they would feed from the inside before going out. The Vines made rapid progress, and it was thought such excellent top-growth must have a corresponding root-growth, which undoubtedly they had, but not inside, for it was found, on examining the borders, that the roots had turned downwards to the drainage, and then outwards to the outside borders. As the inside borders were prepared at great expense, the thought of their being useless was anything but pleasant. I was told by those qualified to give an opinion, that "there was no help for it; the outside borders were evidently more suited for them." On one occasion, being caught in a sharp shower, I ran for the nearest shelter—the vinery; and the question suggested to my mind while listening to the rain beating on the roof was—Do we give water to these inside borders in sufficient quantity to compensate for the amount kept off by the roof? If not, why not? Surely, from their position, if they don't get more, they certainly ought not to have less. Fortunately at this time we had a water supply "laid on," and water has been unsparingly applied to the inside borders, the result of such soakings being that the roots are now to be found turning their attention inside. Another mode of utilising rootless inside borders will, I think, recommend itself: that is, to plant young Vines, or, what I prefer better, insert an eye at the back wall of the vinery immediately under each Vine on the roof, train the young Vines up the wall and inarch them with the Vines on the roof. Suppose, for instance, an early vinery is without a variety, say, of Muscat of Alexandria, I would plant the back wall with that variety, not only because it is a strong rooter, but if inarched on the Vines sufficiently low on the roof, say from 9 inches to 1 foot, the result will be that two crops would be grown on each Vine will be Muscats, which from their position will not fail to set; this not only gives an extra variety, but greatly assists from the hanging properties of the latter in connecting the link between early and later vineries, besides supplying each Vine with a double portion of root. *T. W. Bond, Weybridge.*

Cedars of Lebanon.—Your correspondent "O." corrects an error in my article on the Cedar of Lebanon. In fixing the date of its introduction I intended to say, "In Evelyn's *Silva* of 1664 he does not mention the Cedar of Lebanon" as having been at that time introduced into this country. I have always understood that he planted that tree at his residence at Wotton. It would be interesting to know if any of his specimens remain. Mr. Crowhurst describes a large tree—19 feet 9 inches at 4 feet. The picture would have been better with the addition of the height to the crown. *H. Evershed.*

Vine Borders.—Some time ago it was said that the sun of Hardwicke had set, and really it appears to have left Mr. Fish in darkness, and prevented him from seeing clearly what direction Vine roots take. If they did, as he says, take a southerly direction, they might answer the purpose of the compass to travellers; but these notions are wrong, as every practical gardener must know that a Vine in a healthy state pushes out roots in every direction. Mr. Fish must have enjoyed a happy state of things if he has not had to winter plants in his vineries, thus causing the inside border to get soddened and sour. The idea that borders inside are of the same temperature as the house can be readily answered by the use of bottom-heat thermometers, which say that they are not. To use hot rank stable manure without well turning and sweetening it is very unwise indeed, and Mr. Fish's friend, thus bitten, would do well to spend a time in some of the London market gardens, where he could learn the use of stable manure for bottom-heat, early forcing, &c. *J. H. Goodacre, Elvaston.*

—— Mr. Fish asks for cause to be shown why Vines will not do as well with their roots confined in inside borders alone. This needs no showing: I never yet saw an instance where the Vines did not show it themselves, and that unmistakably when they have been planted seven or eight

years, by evincing weakness in the canes not thickening more than half so fast as if the roots had access to a good outside border as well, and by the time they were a dozen years old they generally increase in girth almost imperceptibly, and are seldom more than half the strength that those are which have more room, and this despite a well made border and every after-attention in the shape of plenty of water, sufficient solid and liquid manure, and the surface renewing with new soil, so far as the non-interference with the roots would permit. The fact is, if Vines are intended to last, they require double or treble the root space which an inside border alone affords. *T. Baines.*

Guinea Fellowship.—The proposal of the Royal Horticultural Society to admit guinea Fellows without a vote is by no means satisfactory. Those who have given their names to me as guinea Fellows have done so only on condition of incurring no further liability, and on condition that the Society is relieved from its present incumbrances. The Society is not free; therefore, had the Council offered a full guinea Fellowships instead of proposing it in the emasculated form they have done, the guinea Fellows would probably not have come in. Now, as to the future, I trust in the proverb "he who waits wins;" and I believe that those who have given their names as would-be guinea Fellows in the Society when free, will be content to wait till the Society is free, especially as they will not be asked for their subscriptions till the time of freedom has come. I should very much prefer to see the old Society take its proper position as representative of the horticulture of the country, but if it does not see its way to do so, and prefers continuance as an appendage to South Kensington, I think it certain that some qualified man will see the strength of the position, and will raise up a Society which will become the strongest and most prosperous of societies, with head-quarters in London, instead of being the most divided and least prosperous, as the Royal Horticultural Society has been for at least the twelve years I have known it, and for long before. The great body of horticulturists of this country has always held aloof from the Royal Horticultural Society, and I believe will continue do so, so long as it continues under the shade of South Kensington. *George F. Wilson.*

Bedding Lobelias.—Will any of your readers kindly give a short account of their experience with the dwarf section of Lobelias, and which they consider best in their respective localities? I have used L. Lustrous very extensively during the two past summers, and find it a regular gem, being very dwarf and dense flowering, of a very deep blue, with a rather large white eye; in fact the eye is my only objection to it, as in my opinion there is rather too much white. Bluestone I find very useful, but not quite so dwarf as Lustrous, neither is it so compact in its habit. *T. W. Shrives, Royal Pavilion, Brighton.*

Platycerium grande.—In the gardens of S. Shearn, Esq., Little Grove, East Barnet, I saw, a few days ago, a fine plant of Platycerium grande, and was informed by Mr. Ireland, the head gardener, that it was purchased a little over two years ago, quite a small plant in a 32-pot. It now measures 5 feet 6 inches in diameter. I think so grand and perfect a specimen, grown to the above dimensions in so short a time, highly worthy of notice. *S. Johnson, Royal Nurseries, Ascot.*

Hotbeds on Vine Borders, &c.—I hope the subject of the premature rooting of Vines will not be allowed to drop until it has been fully discussed, as it cannot fail to be profitable to a large number of your readers. I think it well put by Mr. Baines, when he says we "have much to unlearn as well as to learn," notwithstanding all that has been written on Vine culture. His remarks, too, in the same paper on bottom-heat as applied to stove plants are to my mind well worth thanking over. In your last issue, p. 84, Mr. Goodacre says he fails to see—the roots being outside—how ripe Grapes are to be had in May without the aid of the old-fashioned hotbed. Now I for one am fully persuaded that this is possible—and that for a number of years in succession—by simply adopting a similar method of early protection to that mentioned by Mr. Wildsmith (see p. 20), especially if means are provided for throwing off snow and cold winter rains. I have forced the early Vines here for the last six or seven years, and have often regretted not having the means of warming the border, which has a north-west aspect, and only gets a thin covering to keep out frost, but experience teaches me that a hotbed on the border is not absolutely necessary to secure a fair crop of Grapes. I must here admit that we have a 4-feet border inside, which I think helps us a little, the front wall of the house being arched in the usual manner. We start steadily with the new year, and commence cutting in June. I am here led to think of the editorial query at the end of the communication by Mr. Wildsmith above alluded to. This I also hope to see satisfactorily answered. I am under the impression that where the outside border is but slightly protected, as the one just described, and having an inside border as well, the roots inside are the first to move, being in a higher temperature. I have never had ocular demonstration that it is so, but it seems reasonable to me to think that such is the case. I remember once seeing a rod from an old Vine in a late house that had been taken through the partition into an early house adjoining, and whose shoots must have been wellnigh half-matured before any growth was visible on the other parts of the Vine. Now, supposing it had been possible to have increased the temperature of a portion of the border (which was an outside one), would it be unreasonable to expect to find the roots in the warmest part the most active? I think not; hence I conclude that the roots in the inside borders of early houses are the first to respond to the demand made by the foliage for help from below. But should this be the case I must leave it for some one much better versed in vegetable physiology to say whether or not having two sets of roots has any injurious effect upon the constitution of the Vine. *Thomas J. Crane, Gr., Loyshill, Chislehurst, Kent, Jan. 22.*

Orobanche minor.—We have had quite a curiosity in our nursery here, namely, the flowering of a quantity of Orobanche minor, a specimen of which we send for your inspection; they have come up in our Bouvardia pots, the seeds no doubt having been brought in with the loam. *William Rollisson & Sons.*

Notices of Books.

M. ROTHSCHILD has lately issued a fourth edition of M. Cordier's work entitled *Les Champignons*. Those who read French will find a popular account of the organisation, physiology, reproduction and other generalities of hymenomycetous fungi, together with detailed descriptions and synonymes of all those species native to France and which are of interest by reason of their useful or noxious properties. A more complete list of all the species of the genera mentioned is also given, together with excellent indices, for which the reader will be thankful. The system followed is that of Persoon. But the point of most importance to our readers in the volume before us consists in the coloured plates, chromolithographs, sixty in number, and representing a considerable number of species, and which will be found very serviceable to amateurs. The whole forms a handsome volume, attractive and useful to beginners, for whom it is principally intended, but not complete enough in its indications and literary references for more advanced students.

—— Under the title of *Forage Plants*, Mr. Thomas Christy (155, Fenchurch Street) gives an account of Symphytum asperrimum, a well-known herbaceous plant closely allied to our wild S. officinale, and which is highly recommended as a forage plant by Professor Buckman and other agricultural authorities. We have no personal acquaintance with the plant as a forage plant, but if hardiness, rapid growth, abundant foliage, and facility of propagation are requisites, then this plant is likely to be very useful. We suppose the plant would do best on heavy wet soils and temperate climates. Whether it will be so suitable for hot, dry countries is a matter open to doubt, though its fleshy root-stocks will enable it to withstand the ill effects of drought. The same pamphlet contains a number of miscellaneous trade notices, amongst others of a plant-case lined with felt, and intended for the transmission of fruit and other trees to India and the colonies; and an illustration of a Chilian plant, Cæsalpinia brevifolia, the pods of which furnish a gum used in tanning operations under the name of Balsamocarpon, and known also as Algarobba and Algarovilla—names of vague and uncertain application. The gum is said to yield 80 per cent. of tannic acid, if the pods are picked before the rainy season: if allowed to remain till the rainy season the value of the gum is much impaired.

—— M. Rothschild has lately published a second edition of M. Depuiset's *Les Papillons*, or Natural History of the Butterflies of Europe, a quarto volume richly illustrated with excellent woodcuts, and with fifty hand-coloured plates representing a very large quantity of species. The book is well adapted for young entomologists, and forms a handsome volume for the drawing-room table.

Reports of Societies.

Meteorological.—The annual general meeting of this Society was held on Wednesday, the 17th ult., at the Institution of Civil Engineers, Mr. H. S. Eaton, M.A., President, in the chair. The Council in their report to the Fellows expressed their satisfaction at the progress that had been made by the Society during the year. The first point on which they thought there was reason for congratulation was the publication in their *Journal* of the daily observations taken at Hawes and Strathfield Turgiss, and of the monthly abstracts of the observations at thirteen other stations. The increase in the number of Fellows was considered worthy of special reference, as it is an indication not only of the vitality of the Society, but also of the advance which meteorology is now making amongst the professional and general public. They also referred with much satisfaction to the enlargement of the quarterly Journal, as well as to the printing of the catalogue of the library and of the list of Fellows, which have both been issued during the year. They drew special attention to the report of Mr. Symons on the new stations which have been inspected and brought into relation with the Society. The financial position, notwithstanding the large outlays during the year, was very good. The report also contained the very interesting discussion by the Rev. T. A. Preston, M.A., of the observations on natural periodical phenomena.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON FOR THE WEEK ENDING WEDNESDAY, JAN. 31, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fah.	Barometer. Departure from Average of Seventeen Years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for the Day.	Temperature of the Air. Departure of Mean from Average of Seventeen Years.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Degree of Humidity Saturation = 1000.	Wind. Average Direction	Wind. Average Velocity in Miles.	Rainfall.
Jan.	In.	In.	°	°	°	°	°	°				In.
25	29 55	— 0.20	53.8	33.7	20.1	42.0	+ 5.1	40.9	933	S.W.	W.S.W.	0.29
26	29.04	+ 0.19	43.1	31.3	11.8	36.8	— 1.1	31.7	831	N.W.	N.W.	0.00
27	29.99	+ 0.23	48.6	28.6	20.0	38.8	+ 0.7	37.0	941	S.	S.S.W.	0.04
28	29.78	+ 0.01	51.7	36.6	15.1	43.3	+ 5.1	37.8	818	S.S.W.	W.S.W.	0.06
29	29.86	+ 0.09	49.3	33.0	16.3	41.1	+ 2.8	34.6	788	W.S.W.	S.W.	0.01
30	29.40	— 0.37	50.6	30.2	12.4	43.8	+ 5.4	37.1	777	W.S.W.	W.S.W.	0.12
31	29.84	+ 0.08	45.2	31.8	13.4	38.5	+ 0.1	32.1	804	W.	W.S.W.	0.14
Mean	29.77	0.00	48.9	33.0	15.9	40.7	+ 2.6	36.0	84	S.W.		sum 0.66

Jan. 25.—Overcast, dull, with occasional rain till 7 P.M.
— 26.—A fine and cloudless day. Cold. Slight fog and hoar-frost in morning.
— 27.—A dull day, cool, with frequent thin rain.
— 28.—Fine and cloudy, occasionally dull, with showers of rain.
— 29.—Fine and clear till 2 P.M., cloudy after. A little rain fell between 2 and 4 P.M.
— 30.—Overcast, with frequent heavy rain till 11 A.M. Hail fell at 11.30 A.M. Fine and bright after. Strong gale.
— 31.—Fine, but cloudy till 6 P.M. Overcast and wet after. Cool. Solar halo in morning.

London: *Barometer.*—During the week ending Saturday, January 27, in the suburbs of London, the reading of the barometer at the level of the sea increased from 29.55 inches at the beginning of the week to 30.66 inches by the morning of the 27th, decreased to 30.13 inches by the morning of the 24th, increased to 30.19 inches by the afternoon of the same day, decreased to 29.61 inches by the afternoon of the 25th, increased to 30.22 inches by the evening of the 26th, decreased to 30.13 inches by the afternoon of the 27th, and was 30.24 inches at the end of the week. The mean reading for the week at sea level was 30.26 inches, being 0.28 inch above that of the preceding week, and 0.31 inch above the average.

Temperature.—The highest temperatures of the air varied from 53½° on the 25th to 43° on the 26th; the mean value for the week was 48½°. The lowest temperatures of the air ranged from 28½° on the 27th, to 34½° on the 24th, the mean for the week was 31½°. The mean daily range of temperature in the week was 16½°, the greatest range in the day being 20° on the 23d, 25th, and 27th, and the least 14° on the 26th. The mean daily temperatures of the air, and the departures from their respective averages were as follows:—21st, 39°.3, +2°; 22d, 38°.1, +0°.7; 23d, 38°.8, +1°.3; 24th, 41°.2, +3°.5; 25th, 42°.9, +5°.1; 26th, 36°.8, −1°.1; 27th, 38°.8, +0°.7 The mean temperature of the air for the week was

39°.4, being 1°.7 above the average of sixty years' observations.

The highest readings of a thermometer, with blackened bulb in vacuo, placed in sun's rays, were 105° on the 23d, and 91½° on the 21st and 24th; on the 27th 50° was the highest reading. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 23° on the 27th and 23½° on the 23d; the mean value for the week was 26°.

Wind.—The direction of the wind was mostly S.W. and S., and its strength moderate. The weather during the week was somewhat fine, and frequently foggy. Lunar halos were seen on the 21st and 23d.

Rain fell on three days; the amount collected was 0.39 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 54° at Truro and 53½° at Blackheath; at Hull 47° was the highest temperature. The mean value from all stations was 50½°. The lowest temperatures of the air observed by night were 28° at Hull and 28½° at Blackheath; at Liverpool 36½° was the lowest temperature. The general mean from all stations was 31½°. The range of temperature in the week was the greatest at Blackheath, 25½°; and the least at Liverpool, 13½°. The mean range of temperature from all stations was 18½°.

The mean of the seven high day temperatures was the highest at Truro, 51½°, and the lowest at Leicester, Norwich, and Hull, all about 44½°. The mean from all stations was 47°. The mean of the seven low night temperatures was the lowest at Blackheath and Wolverhampton, both 31½°, and the highest at Truro, 41°. The mean value from all stations was 35°. The mean daily range of temperature in the week was the greatest at Blackheath, 16½°, and the least at Bradford, 7½°. The mean daily range from all stations was 11½°.

The mean temperature of the air for the week from all stations was 40½°, being the same as the value for the corresponding week in 1876. The highest was 46°, at Truro, and the lowest 38°, at both Wolverhampton and Hull.

Rain.—The falls of rain varied from three-quarters of an inch at Truro, Bristol, and Sheffield, to a quarter of an inch at both Nottingham and Sunderland. The average fall over the country was half an inch nearly.

The weather during the week was somewhat fine, but foggy at some places. Lunar halos were seen on four days in the week at Bristol.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 51° at Paisley to 47½° at Edinburgh; the mean value from all stations was 48½°. The lowest temperatures of the air ranged from 31° at both Dundee and Paisley to 33 at Greenock; the general mean from all stations was 32°. The mean range of temperature from all stations was 16½°.

The mean temperature of the air for the week from all stations was 40½°, being 4° lower than the value for the corresponding week in 1876. The highest happened at Paisley, 41½°, and the lowest at Dundee, 39½°.

Rain.—The fall of rain varied from 3 inches at both Greenock and Paisley to half an inch at Leith. The average fall over the country was 1½ inch.

DUBLIN.—The highest temperature of the air was 53°, the lowest 30½°, the range 22½°, the mean 43½°, and the fall of rain 0.36 inch.

JAMES GLAISHER.

Law Notes.

IMPORTANT TO SEED MERCHANTS.—*Cross & Donaldson* v. *Fleming & Co.*—This case, which was heard at the Ballymena Quarter Sessions, stood over for judgment, and a few days since the Chairman (J. H. Otway, Esq., Q.C.), before whom the case was heard at Ballymena, delivered his judgment in the Sessions Court. The facts transpire in the Chairman's remarks below. The Chairman said this was an action for not delivering goods according to contract. The contract was by parole only. The defendant seemed cautious not to have the terms of the agreement reduced to writing. Some telegrams passed, but the Statute of Frauds was not satisfied so far as a note or memoraudum was concerned. The facts were shortly these: The plaintiffs agreed to buy from the defendant 15 tons of Italian Rye-grass, upon a sample shown to them, for £15 10*s.* per ton. The plaintiffs then required a bulk sample—namely, a sample taken from the bulk that they were to get. This was sent. The defendant, in his evidence before me, used the following words:—"They (the plaintiffs) bought all I had, 15 tons more or less; out of what they were to take I sent the bulk sample." That bulk sample, which weighed 4 lb., the plaintiffs received and kept, and sent to the defendant a letter, in which they said, "The bulk sample compared, and we regret to find it hardly up to sale sample. You must see and keep up the quality in your first transaction." I consider, then, that they took and accepted the bulk sample, hoping that the large quantity, when delivered, would be perfectly equal to it. The defendant then delivered to the plaintiffs 6 tons of the article sold, which, as they swore, and by independent witnesses was proved to be inferior (to the extent of £1 5*s.* per ton) to the bulk sample. After forwarding the 6 tons the defendant went to Belfast and saw the plaintiffs, who complained of the quality of the 6 tons they had received, but said they would keep them if the remaining 9 tons were, in the judgment of men most experienced and respectable in the trade, equal to the sample. The defendant said he would not accede to this, and would not leave those 6 tons he had delivered, and insisted on taking them back, which he did, notwithstanding the remonstrances of the plaintiffs, paying them £2 11*s.* 9*d.* for the carriage, which, had the contract been carried out, they would be entitled to deduct. On the same day the defendant sold the selfsame seed to a Mr. Lytle, of Belfast, at £18 a ton, there having been a very considerable rise in the market since the sale to plaintiffs, of which rise the defendant, as it seems to me, was anxious to have the benefit. The action was for the non-delivery of the goods according to the original contract. The defendant, through his counsel, relied on the Statute of Frauds—the goods being over the value of £10—and contended that, as there was no note or memorandum in writing, the action should fail. But a note or memorandum in writing is not the only means of taking a contract out of the operation of the statute—acceptance and receipt of part of the goods will have the same effect. By the common law, a parole sale of goods might have been in every instance effected by an agreement, coupled with a tender of payment or a delivery of part of the goods by way of earnest. And if A had agreed to pay to B, the owner, a certain sum for goods, and B had agreed to take it; if B had tendered the goods, or A the price, or B had received any part of the price, though but a penny, or A any portion, even the smallest, of the goods, both would have been bound by the bargain. Such was the state of the law before the Statute of Frauds, and so it is still where the value of the goods is under £10, but where the value is over £10, then if there be no part payment by the vendee, or no receipt or acceptance by him of a part of the subject-matter of the sale, or no memorandum or note in writing of the terms of the sale signed by the parties or their agents, the contract is invalid. Thus the old law as to part payment by the buyer, or receipt of part of the goods by him, is retained; and if neither of those elements exist, there must be a note in writing; but if either do exist, a writing is unnecessary. Here there was no writing, no part payment, and the question is, was there a delivery and acceptance of a part? In Hinde *v.* Whitehouse, 7 East, 558, it was held, and it has never, as far as I know, been questioned, that acceptance of a sample which is to be accounted as part of the commodity sold, is sufficient to bind the parties. And on this matter I refer again to the testimony of the defendant, according to which he said, "out of what they were to take I sent the bulk sample." Now, generally speaking, the cases in which a question arises as to the effect of a delivery of goods or part of them, is where the vendor sues. If he contends that goods were received and accepted by the buyer, actually or constructively, he sues for goods sold and delivered; if he cannot sustain a case upon actual receipt and acceptance of all the goods, he sues for goods bargained and sold, and the question is, whether, upon the facts, the Statute of Frauds is satisfied. But I take it that if there was an acceptance of part of the goods sold, the statute would be satisfied. And as I think the sample in this case was part of the goods sold and, according to Hinde *v.* Whitehouse, bound the bargain, I am of opinion that if the parties were reversed, and if Messrs. Cross & Donaldson found the market had fallen, and wished to have escaped from their contract, Mr. Fleming could have successfully sued them. If that be so, there should be reciprocity, and what would bind Messrs. Cross & Donaldson to a bargain should also give them the advantage of it, and what would justify their being sued as defendants would justify their suing as plaintiffs. I confess, however, I am not aware of an action under a similar state of facts being brought by a purchaser for the fulfilment of a contract, but my ignorance does not show that many such cases may not have existed. It is plain that if there had been a contract in writing the plaintiffs here could have sued, and the Statute of Frauds makes the delivery and acceptance of part equivalent to a writing. Upon principle, then, I think the action can be maintained. It was once thought, and many cases seem to support the opinion, that there can be no acceptance within the Statute of Frauds unless the buyer is precluded from objecting that the vendor has not fully performed the contract on his part. But the very well considered case of Morton *v.* Tibbitt, 152 B. 423 and 14 Jur. 669, has dissipated that doctrine and established that there may be an acceptance of goods sufficient to make a contract valid within the meaning of the Statute of Frauds without the buyer having precluded himself from contending that they did not correspond with the sample, and the same doctrine it recognised and adopted, especially in the judgment of Mr. Justice Brett in the very recent case of Grimoldy *v.* Wells, 9th Rep. law report of Common Pleas. In the case of Morton *v.* Torbitt, before Lord Campbell in the Common Pleas, after mentioning the sufficiency of part payment to bind the vendee, his Lordship said—"The same effect is given to the corresponding act by the vendor if he shall deliver part of the goods sold to the buyer, and if the buyer shall accept such part and actually receive the same. As part payment," he continued, "however minute the sum may be, is sufficient, so part delivery, however minute the portion may be, is sufficient." I am (for the reason I have given) therefore of opinion that the plaintiffs are entitled to recover, and I shall give them a decree, which I think is in accordance with the truth and honour of the case. As I said before, the very same seed was sold at the rate of £18 per ton (making a difference of £2 10*s.* a ton) on the day the plaintiffs objected to the 6 tons delivered to them. The plaintiffs would then have to pay for seed inferior to the sample they purchased by £37 10*s.*, and the difference in value between the sample and seed delivered by the defendant was proved to be £1 5*s.* a ton, which, if added to the £37 10*s.*, would greatly exceed my jurisdiction. I decree for £40. *Northern Whig.*

Enquiries.

He that questioneth much shall learn much.—BACON.

166. ORCHARD GRAPE GRASS.—Will any of your readers say if they know the "Orchard Grape Grass" of America? We generally understand, when our American brethren mention "Orchard Grass," they mean "Cocksfoot," or Dactylis glomerata. *K. O. F.*

Answers to Correspondents.

BOX HEDGE: *C. D.* Your Box hedge, 3 feet high, should transplant readily enough, if done with proper care. The Box is a free-rooting subject, preferring a calcareous soil. If done in dry weather the plants should be well watered.

DENDROBIUM SPECIOSUM: *T. C.* Your plant is D. speciosum, but not so fine a variety as that figured last week.

FICUS COOPERI: *Constant Reader.* The plant was introduced by way of Sydney, and was understood to be from the South Sea Islands. It fruits occasionally when grown under glass. It was named after Sir Daniel Cooper, who brought it home.

GOODYERA DISCOLOR: *X. Y. Z.* Pot in chopped sphagnum and broken lumps of light peat earth, with good drainage below.

GRAPES FOR INARCHING: *A. B. P.* Black Hamburgh and Royal Muscadine.

MANETTI ROSES: *M.E.* We presume you mean to inquire how low these should be worked. Certainly close to the ground.

NAMES OF FRUIT: *R. Hall.* Your Grape is the same as a variety grown in the Royal Horticultural Gardens, Chiswick, under the name of Large Black Ferral. It seldom becomes black, however, in this country, and is not of much value.

NAMES OF PLANTS: *John Illman.* The spotted variety of Trifolium repens, or some closely allied species.—*L. E. C.* 1, Ceanothus azureus; 2, Garrya elliptica.—*Mrs. C. M.* We do not recognise the Acorn, nor do we believe you will succeed in getting them to grow, as Acorns do not long retain their vitality.—*X. Y. Z.* 1, Thyrsacanthus rutilans; 2, Asplenium obtusatum.—*A. B.* 3, Aster carneus var.—*Hoyo.* Statice fruticans probably, but the specimen was too poor to determine it exactly.—*W. B.* Grisellinia littoralis.

POPLAR SCREEN: *Subscriber.* As a screen 12 feet high, quickly formed, to hide some cottages, you can

scarcely do better than plant Lombardy Poplars, as large as you can obtain them (8—10—12 feet would do), at about 3 feet apart. They will bear heading down to 12 feet, and may be kept pruned at the top and sides so as to form a thin wall-like hedge.

POULTRY DUNG: *G. J. M.* This may be used for the purpose indicated, but not in excess.

RHODODENDRONS: *C. D.* If made up specially for these plants the bed should be, say, 2 feet deep; but it need not be all peat earth, unless that is abundant, and easily procurable; leaf-mould and some loams may be intermixed with advantage.

SEEDLING PELARGONIUM: *G. Taylor.* The flowers of your seedling are very bright in colour, but not more so than many others that have been sent out; and in form are not quite up to the florist's standard.

SPORE: *W. T. C.* There were no fungus spores in the material sent.

THE LARGEST LEAVED VINE: *P.* Which is the largest leaved Vine? is not an easy question to answer, but Vitis sikkimensis, V. lanata, and V. imperialis are, at any rate three of the largest leaved; the two first from India, the third from Sumatra. V. amurensis is comparatively a small leaved species, the leaves varying from 3—5 inches in breadth, whereas in the three named they vary from 8—12 inches or more.

TURNIP SEED: *Joseph Clark.* It is impossible to name Turnips by the seeds only. You must grow the seeds, and see what they come to.

CATALOGUES RECEIVED:—MESSRS. Hooper & Co. (Covent Garden, London), Illustrated Seed Catalogue.—V. Lemoine (Nancy, France), Catalogue of New Plants.—Messrs. Smith & Simons (36 and 38, Howard Street, St. Enoch Square, Glasgow), Descriptive Seed Catalogue.—H. Low (Leith Grove Nursery, Hoxton), Descriptive Catalogue of Vegetable and Flower Seeds.—Messrs. G. Cooper & Co. (29, Iron Gate, Derby), Descriptive Catalogue of Kitchen Garden, Agricultural, and Flower Seeds.—W. Thompson (Tavern Street, Ipswich), Catalogue of Flower Seeds.—Messrs. Drummond Brothers (52, George Street, Edinburgh), Catalogue of Roses, Liliums, Seeds, and Gladioli.—Messrs. J. Carter & Sons (Sunnyside and Hoghall Nurseries, Aberdeen), Descriptive Catalogue of Vegetable and Flower Seeds.—W. Dawson (2, Ironmonger Row, Coventry), Catalogue of Vegetable, Agricultural, and Flower Seeds.—Messrs. Little & Ballantyne (Carlisle), Spring Seed List.—C. Pocock (Wincanton, Somerset), Catalogue of Vegetable and Flower Seeds, &c.—Messrs. Brunning & Co. (3, Regent Street, Great Yarmouth), Illustrated Descriptive Catalogue of Seeds, &c.—Messrs. Paul & Son (The "Old" Nurseries, Cheshunt, Herts), Descriptive List of Vegetable and Flower Seeds, Potatos, &c.—W. Bull (King's Road, Chelsea, London), Retail List of Flower, Vegetable, and Agricultural Seeds.—Messrs. W. Thompson & Co. (16, St. Giles' Street, Edinburgh), General Catalogue of Choice Seeds for the Flower and Kitchen Gardens.—Messrs. Felton & Sons (55, Harborne Street, Birmingham), General Seed Catalogue.—Thos. Sibbald (Market Place, Bishop Auckland), Descriptive Catalogue of Kitchen Garden and Flower Seeds.—Messrs. W. Rust & Son (Waltham Cross, London), Catalogue of Vegetable, Flower, and Agricultural Seeds.—Messrs. J. L. Schiebler & Son (Celle, Hanover), General Seed Catalogue.—Messrs. W. Barron & Son (16, Market Street, Nottingham, and Elvaston Nurseries, Borrowash, Derby), General Seed Catalogue.—F. R. Kinghorn (Sheen Nursery, Richmond, Surrey), Catalogue of Select Culinary and Flower Seeds.—Messrs. Edmondson Brothers (19, Dane Street, Dublin), Spring Catalogue of Vegetable and Flower Seeds, Flower Roots, Tools, &c.—R. B. Matthews (65 and 67, Victoria Street, Belfast), Spring Seed Catalogue and Cultural Guide.—John Sherratt (Knypersley Nursery, Biddulph, near Congleton), Catalogue of Select Vegetable, Farm, and Flower Seeds.

*** Numerous communications are unavoidably postponed.

COMMUNICATIONS RECEIVED.—L. H.—G. T. M. (very curious, but not worthy of publication).—T.—J. W.—J. C.—C. D.—J. L.—A. F.—W. O.—W. F.—R.—J. S.—J. D.—C. W.—B. and P.—C. Y. M.—J. M.—H. E. W.—W. H.—F. W. E.—J. D.—J. S. J. G. B.—J. H.—T. B.—W. J.—C. J. R.—J. C. McA.—J. W. (no, thanks).—J. C.—E. B.—J. C.—G. J. McB.

BIRTH.—On January 28th, at Keswick Mount, Ephraim Road, Streatham, the wife of N. N. SHERWOOD, of 6, Leadenhall Street, of a daughter.

Markets.

COVENT GARDEN, February 1.

Our main supply of Pears is now reaching us from San Francisco, consisting of Easter Beurrés, which reach this country in good condition, and are superior to any grown here or on the Continent. We have still a moderate supply of home-grown Apples, and prices remain unchanged. Cobs quiet. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Apples, per ½-sieve	1 6	0	Oranges, per 100	8	0 12 0
Cobs, per lb.	1 0	1 6	Peaches, per doz.	0	0 0
Grapes, per lb.	3 0	8 0	Pears, per doz.	2	0 12 0
Lemons, per 100	8 0	14 0	Pine-apples, per lb.	1 6	4 0
Melons, each	1 6	3 0			

VEGETABLES.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Artichokes, per bush.	4	0 ..	Leeks, per bunch	0	2 0 4
— Eng. Globe, doz.	4	0 6 0	Lettuces, per score	1	6 2 0
Asparagus, Fr., bun.	0	0 ..	— French, per doz.	1	0 2 0
— English, p. bun.	0	10 0	Mint, green, bunch	0	0 ..
— Sprue, per bun.	1	6 ..	Mushrooms, per pott.	0	1 6
Beans, French (new), per 100	1	6 3 0	Onions, per bush.	5	0 8 0
Beet, per doz.	0	2 0	— young, per bun.	0	8 0
Brussels Sprts. bush.	7	0 ..	Parsley, per bunch	0	4 ..
Cabbages, per doz.	1	0 2 0	Peas, green, per lb.	1	6 ..
Carrots, per bunch	0	6 ..	Potatos, new, per lb.	1	0 2 0
Cauliflowers, per doz.	2	0 4 0	Radishes, per bunch	0	2 0 3
Celery, per bundle	1	6 2 0	— Spanish, doz.	1	0 ..
Chilis, green, per 100	1	0 ..	— New Jersey, doz.	2	0 ..
Cucumbers, each	1	6 3 0	Rhubarb, per bundle	1	0 ..
Endive, per doz.	1	2 0 3	Salsafy, per bunch	1	0 ..
— Batavian, p. doz.	2	0 3 0	Seakale, per punnet	1	6 2 0
Garlic, per lb.	0	0 ..	Shallots, per lb.	0	0 6 ..
Herbs, per bunch	0	2 0 4	Spinach, per bushel	3	0 ..
Horse Radish, p. bun.	4	0 ..	Tomatas, per doz.	2	0 3 0
			Turnips, per bundle	0	4 0 6

Potatos.—Kent Regents, £5 to £6; Essex Regents, £4 10s. to £5; Kidneys, £8 per ton.

PLANTS IN POTS.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Azaleas, per dozen	24	0 60 0	Heliotrope, per doz.	6	0 12 0
Begonias, per doz.	6	0 12 0	Hyacinths, per doz.	8	0 18 0
Bouvardias, do.	12	0 24 0	— Roman, per doz.	9	0 18 0
Cineraria, per doz.	9	0 18 0	Lily of Valley, each	2	0 5 0
Coleus, per dozen	3	0 9 0	Mignonette, do.	6	0 9 0
Cyclamen, per doz.	12	0 30 0	Myrtles, do.	3	0 9 0
Cyperus, do.	6	0 12 0	Palms in variety, each	3	6 21 0
Dracena terminalis	30	0 60 0	Pelargoniums, scarlet per doz.	6	0 12 0
— viridis, per doz.	18	0 24 0	Primula sinensis, doz.	4	0 9 0
Epiphyllum, per doz.	18	0 42 0	Solanums, per doz.	6	0 24 0
Ferns, in var., p. doz.	6	0 30 0	Tulips, per dozen	8	0 12 0
Ficus elastica	2	6 15 0	Valotta purpur., doz.	12	0 18 0
Heaths, variety, doz.	9	0 24 0			

CUT FLOWERS.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Azaleas, 12 sprays	1	0 4 0	Mignonette, 12 bun.	6	0 12 0
Bouvardias, per bun.	1	0 4 0	Narcissus, 12 sprays	3	0 6 0
Camellias, 12 blooms	2	0 12 0	Pelargoniums, 12 spr.	2	0 4 0
Carnations, per dozen	1	6 4 0	— zonal, 12 sprays	1	0 4 0
Cyclamen, per doz.	0	3 0 9	Poinsettia, 12 sprays	4	0 12 0
Epiphyllum, 12 blms.	1	0 3 0	Primula, dbl., p. bun.	1	0 2 0
Eucharis, per doz.	6	0 12 0	Roses, indoor, p. doz.	3	0 12 0
Euphorbia, 12 sprays	2	0 9 0	— Christmas, bun.	0	6 ..
Gardenia, per doz.	4	0 12 0	Stephanotis, 12 spr.	9	0 15 0
Heliotropes, 12 spr.	0	6 1 0	Tropæolum, 12 bun.	2	0 6 0
Hyacth. Rom., 12 spr.	2	0 4 0	Violets, 12 bun.	1	6 4 0
Lily of Valley, 12 spr.	1	6 9 0			

SEEDS.

LONDON: *Jan.* 31.—Our seed markets during the present week have been well attended, and for the time of year a fair steady business has been doing. American red Clover seed commands an advance in London of 1*s.* per cwt. This improvement in value is in response to a greater rise on the other side of the Atlantic of about 5*s.* per ton. The imports of seeds from New York during the month of January were 11,146 bags. Of home-grown samples there have been less offering during the last few days, and the tendency of prices is upwards. From France the exports of Clover seed at the present season absolutely *nil*; and of German seed only a few weathered parcels have found their way to Mark Lane. English Trefoils, meeting a slack inquiry, are dull; but French sorts are rather dearer. In Alsike and White Clover the transactions just now are not numerous, the chief interest being for the moment centred in red seed. Grasses of all kinds maintain a steady front. Of Timothy there is a good supply at previous rates; in fact, this variety is relatively the cheapest of the present season. Koenigsberg Tares, although lower in price than they have been for two years past, attract as yet but little attention. The Canary seed trade is without life; present currencies must prove very unremunerative to growers. Fine samples of white Mustard and black Rape seed are held for more money. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London. E.C.*

CORN.

At Mark Lane on Monday the small supply of English Wheat on offer changed hands slowly at barely the rates of Monday se'nnight, while foreign Wheat was occasionally 1*s.* per quarter cheaper. Barley was slow to move, and except for very fine malting parcels prices were a trifle easier. Malt was unaltered in value. Oats were flat at a reduction of from 6*d.* to 9*d.* per quarter. Maize was cheaper to sell, as also were Beans and Peas. There were very few transactions in flour, and the quotations tended lower for all descriptions.—On Wednesday the few dry samples of English Wheat on offer realised former prices, but damp produce sold slowly on former terms. In foreign Wheat only a moderate business was transacted at late rates. Choice Barley realised full prices, but medium and inferior produce was in slow request at late rates. The Oat trade was rather quiet at former prices, and the value of Beans and Peas was unchanged to-day last place. The demand for flour ruled inactive at Monday's currency.—Average prices for week ending Jan. 27:—Wheat, 52*s.* 3*d.*; Barley, 39*s.* 11*d.*; Oats, 24*s.* 10*d.* For the corresponding week last year:—Wheat, 44*s.* 2*d.*; Barley, 35*s.*; Oats, 25*s.* 4*d.*

POTATOS.

The Borough and Spitalfields markets reports state that a steady demand prevails, and prices remain pretty firm. The supplies are moderate. Kent Regents, 120*s.* to 160*s.* per ton: Essex do., 100*s.* to 140*s.*; Scotch do., 95*s.* to 170*s.*; rocks, 80*s.* to 100*s.*; flukes, 140*s.* to 180*s.*; Victorias, 110*s.* to 160*s.*—The imports into London last week comprised 14,264 bags from Antwerp, 12,856 Hamburg, 4605 Harlingen, 1638 Bremen, 1042 Amsterdam, 3849 Ghent, 472 Rotterdam, 200 Rouen, 406 sacks Broomside, and 300 Boulogne.



DANIELS'
SEED POTATOS.

Our Stocks of POTATOS are warranted True to Name and Free from Disease, all being carefully selected at the time of growth, and afterwards passed through the hands at least three or four times before being sent out, and all inferior, mis-shapen and forked tubers carefully discarded.

To improve the culture and encourage the diffusion of really good varieties, we have determined to offer at the lowest possible rates COLLECTIONS OF POTATOS FOR EXHIBITION PURPOSES, and trust our efforts in this direction will meet a want so much felt by our Customers and the gardening community generally. The selection in all cases must be left to us; it will be very carefully made, and only those of known excellence and superior qualities included.

COLLECTIONS.

	1 lb. each.	7 lb. each.	14 lb. each.
	s. d.	*s. d.*	*s. d.*
12 varieties	3 6 ..	17 6 ..	34 0
18 ,,	5 0 ..	25 0 ..	48 0
24 ,,	7 6 ..	32 6 ..	63 0
36 ,,	10 6 ..	50 0 ..	98 0

All carefully labelled and packed.

The above are nett prices for cash, with no charge for packing.

Seed Orders of the value of 20*s.* and upwards, including Potatos, carriage free to any Railway Station in England or Wales.

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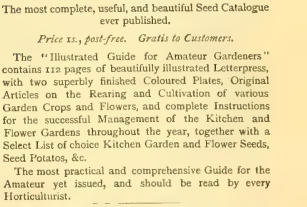
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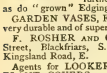
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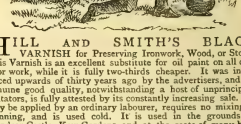
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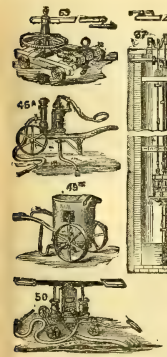
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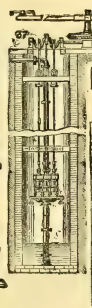
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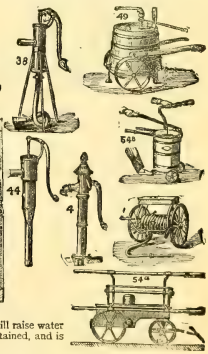
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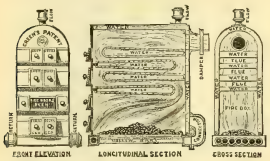
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Wrought-iron Hot-water Boilers,
With Shelves and Hollow Grate Bars.

Specially adapted for heating Greenhouses, Conservatories, Churches, Chapels, Schools, Public Buildings, Entrance Halls, Warehouses, Workshops, &c.

They are the neatest, cheapest, most effective, and durable of any extant.



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This System of HEATING WINTER GARDENS, CONSERVATORIES, ORANGERIES, FERNERIES, VINERIES, FORCING HOUSES, PINERIES, CUCUMBER, MELON and MUSHROOM HOUSES, STOVES, PITS, &c.—also for WARMING MANSIONS, PUBLIC BUILDINGS, FACTORIES, &c., is steadily making progress in public estimation, effecting as it does

Great Economy of Fuel and Steadiness of Heating Power,

and rendering the hitherto onerous duties of Stoker comparatively light—no night stoking whatever being necessary.

List of Places where the System is in Operation, with full address in each case, will be sent post-free on application.

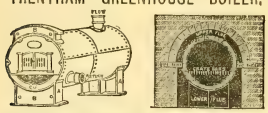
Gentlemen and Gardeners wishing to adopt this System will then be enabled to view the Apparatus nearest to their own Establishments, or write to the Gardener, and thus get independent testimony as to the value of this method of Heating.

Estimates will be submitted, on receipt of particulars, free of charge.

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☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

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Can be obtained in all sizes and qualities, of
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B. & S. have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., in 16-oz. and 21-oz.

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FOR THE
JOINTS of HOT-WATER PIPES.



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Warming and Ventilating Small Conservatories.



The only Gas Stove in which the product of combustion is entirely excluded from the Conservatory.
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Heights, 28 inches; diameter, 14 inches.
It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Conservatories, Offices, &c. Exhibited at the Exhibition of 1871 (Department of Scientific Inventions).

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FOR ARCHITECTS, CIVIL AND MECHANICAL ENGINEERS
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Railings; Balconies; Verandahs; Conservatories; Shop and Warehouse Fronts; Arcades; Winter Gardens; Covered Ways; Saloons; Semi-inclosed Airing Rooms, Smoking Divans, &c.; Waiting Rooms; Clock and Water Towers; Pavilions; Bandstands; Arbours; Garden Entrances; Garden Screens; Boathouses, &c. Plain and Ornamental Castings of every description for Mansions, Halls, Schools, Barracks, Factories, Markets, Railway Stations, Bridges, Esplanades, Parks, Gardens, Pleasure Grounds, &c.

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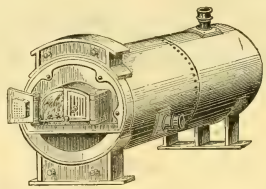


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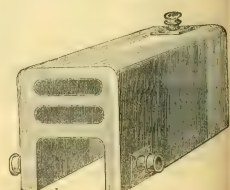


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("TRENTHAM IMPROVED" BOILER.)



("WITLEY COURT" BOILER)

NEW PATENT "CLIMAX" BOILER (1874). See p. 666, 1874, *Gardeners' Chronicle.*
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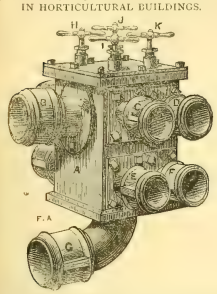
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"TUBULAR," and every other Boiler of known merit or excellence.
☞ *Prize Medal Awarded at the National Contest, Birmingham,* 1874.

MILL'S PATENT AUXILIARY FUEL ECONOMISER,
Which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boilers, Fire-Bars, and Furnace Fronts ever yet introduced to the public

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AN APPARATUS FOR REGULATING THE HEAT IN HORTICULTURAL BUILDINGS.



A, Iron Box fitted up water-tight. B, Pipe for Supply of Water from Boiler. C, D, Pipes for Circulating Hot-Water. F, F, Pipes for Return of Water to Iron Box. G, Pipe for Returning Water to Boiler. H, I, J, K, Piston-Rods for Opening and Closing Valves.

The advantages of these Regulators are that houses may be kept at different decrees of heat, or the circulation of water and heat entirely stopped in one part and not in others. They may be fitted with as many valves as required, and are particularly adapted for forcing houses where top and bottom heat is used. They may be fixed in any part of the apparatus most suitable for working, without regard to the position of the Boiler.

The following Testimonial has been received :—

"Gentlemen, —I am happy to inform you, now that the late severe winter is past, that the Hot-Water Apparatus erected by you does its work to my entire satisfaction. As to the two Heat Regulators, which represent thirty valves, I have had ample opportunities of practically proving them, and unhesitatingly admit they are far superior to any other valve; in fact, I think it the greatest improvement that has come out for horticultural purposes.

"I am, Gentlemen, yours truly, "R. H. CRONK,
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Estimates and Plans furnished for Warming Gentlemen's Mansions and Public Buildings. Orders attended to in any part of the kingdom, and guaranteed to answer their intended purposes. Prospectus and Price Lists post-free.

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The curved house is more durable, stronger, lighter in construction, and no bent glass is required.

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Prices per Lineal Yard, 24 inches high.—

Size of Mesh.	Mostly used for	Gauge, or Light.	Gauge, or Medium.	Gauge, or Strong.
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**** Price Lists, with further particulars of WIRE NETTING, IRON FENCING, POULTRY FENCES, DIAMOND and other TRELLIS WORK, on application.

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The FRENCH SYSTEM of WIRING GARDEN WALLS, &c., FOR TRAINING FRUIT TREES.



GALVANIZED EYED NAILS for Stretching Wires, one at each end of wall, 12. 6*d.* per dozen. Smaller Size for supporting the wire every 10 feet, 8*d.* per dozen. Smaller Sizes, not recommended, 6*d.* per dozen.

STRAINING SCREWS and NUTS, one to end of each wire, for Tightening Wires, 3*s.* per dozen.

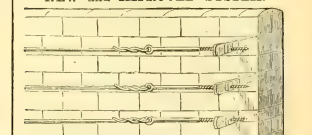
No. 14 GALVANIZED WIRE, placed 10 inches apart on the walls, 12. 9*d.* per 100 yards.

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NEW and IMPROVED SYSTEM.



The following prices give the total cost of each line of wire, including holdfasts, straining bolt, intermediate guiding eyes, to feet apart, and best quality galvanised wire.

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	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
No. 14 Gauge Wire	1 1	1 8	2 2	2 8	3 2
No. 13 "	1 4	1 11	2 6	3 1	3 8

Illustrated Lists, with full particulars of the above, and Fittings for Espalier Trainers, on very economical principles, free on application.

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E. T. ARCHER'S "FRIGI DOMO."—Patronised by Her Majesty the Queen, for Windsor Castle and Frogmore Gardens, the late Sir J. Paxton, and the late Professor Lindley, &c.

MADE of PREPARED HAIR and WOOL.

A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for Pits and Forcing Frames.

PROTECTION from COLD WINDS and MORNING FROSTS.

"FRIGI DOMO" NETTING, 2 yards wide, 12. 4*d.* and 12. 6*d.* per yard.

"FRIGI DOMO" CANVAS.

2 yards wide .. .. .. 12. 10*d.* per yard run.
3 yards wide .. .. .. 3*s.* per yard.
4 yards wide .. .. .. 3*s.* 10*d.* per yard.

ELISHA T. ARCHER, only Maker of "Frigi Domo,' Brockley Road, Forest Hill, London, S.E.; and of all Florists and Seedsmen. All goods carriage paid to London.

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FOR NEATNESS—Because all the Wires are kept perfectly tight, without the use of the Raidisseur.

FOR STRENGTH—Because very much stronger Wire can be used, therefore not liable to be drawn out of the horizontal line by the branches of trees.

FOR DURABILITY.—Because, being able to use the strong Wire, it is not so likely to be eaten through with the galvanism as the thin Wire, as used in the French system.

The above engraving is an Example of our system of Wiring Garden Walls. We have recently completed the Wiring of the New Garden Walls for the Marquis of Salisbury, Hatfield House. The Walls are 12 feet high and 753 yards long, wired on both sides; making a total length of 1506 yards—our system being chosen in preference to any other.

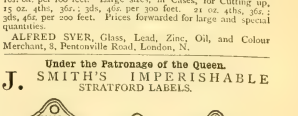
Illustrated Catalogues of Garden and Conservatory Wirework, Rabbit-proof Hurdle Fencing, &c., may be had on application as above.

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The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.

The Gardeners' Magazine says :—"We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

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LONDON and COUNTRY BANKING COMPANY.

Established in 1836, and incorporated in 1874 under "The Companies' Act, 1862."

Subscribed Capital—£3,750,000, in 75,000 Shares of £50 each.

REPORT ADOPTED at the ANNUAL GENERAL MEETING, February 1, 1877.

ABRAHAM HODGSON PHILLPOTTS, Esq., in the Chair.

The Directors, in submitting to the Proprietors the Balance Sheet of the Bank for the Half-year ended December 31st last, have to report that after paying interest to Customers and all charges, allowing for Rebate and making provision for Bad and Doubtful Debts, the Nett Profits amount to £103,447 6*d*. This sum, added to £25,779 2*s*. 3*d*., brought forward from the last account, produces a total of £131,166 8*s*. 3*d*.

They recommend the payment of a Dividend of 8 Per cent. or the half-year, which will absorb £120,000, leaving a balance of £11,166 8*s*. 3*d*. to be carried forward to Profit and Loss New Account.

The present Dividend added to that paid to June 30 makes 16 per cent. for the year 1876.

The Directors retiring by rotation are James Cater, Esq., Edward Harbord Lushington, Esq., and William Henry Stone, Esq., who, being eligible, offer themselves for re-election.

By the retirement of Stephen Symonds, Esq., on account of ill-health, there is a vacancy in the Auditorship, which it is in the power of the meeting to fill up.

The Dividend, £1 12*s*. per Share, free of Income Tax, will be payable at the Head Office, or at any of the Branches, on or after Monday, 19th instant.

BALANCE SHEET OF THE LONDON AND COUNTY BANKING COMPANY, DECEMBER 31, 1876.

Dr.	£	*s.*	*d.*	£	*s.*	*d.*
To Capital paid up				2,500,000	0	0
Reserve Fund				700,000	0	0
Amount due to the Bank for Customers' Balances, &c.	22,245,031	3	5			
Liabilities on acceptances, covered by Securities ..	3,048,341	9	10			
				25,293,354	13	3
Profit and Loss Balance brought from last Account	25,719	2	3			
Gross Profit for the Half-year, after making provision for Bad and Doubtful Debts, viz.:	314,936	19	4			
				340,656	1	7
				£27,834,010	14	10

Cr.	£	*s.*	*d.*	£	*s.*	*d.*
By Cash on hand at Head Office and Branches, and with Bank of England ..	2,254,314	15	8			
Cash placed at Call, and at Notice, covered by Securities	3,410,195	13	11			
				5,664,510	9	7
Investments, viz.:— Government and Guaranteed Stocks	2,728,744	8	9			
Colonial Government and other Stocks and Securities	316,707	12	4			
				3,045,452	1	1
Discounted Bills, and Advances to Customers in Town and Country ..	15,419,456	15	4			
Liabilities of Customers for Drafts accepted by the Bank (as per contra) ..	3,048,341	9	10			
				18,467,798	5	2
Freehold Premises in Lombard Street and Nicholas Lane, Freehold and Leasehold Property at the Branches, with Fixtures and Fittings				476,248	17	6
Interest paid to Customers				48,790	17	10
Salaries and all other Expenses at Head Office and Branches, including Income-tax on Profits and Salaries				131,210	3	8
				£27,834,010	14	10

Cr. PROFIT AND LOSS ACCOUNT.	£	*s.*	*d.*
To Interest paid to Customers, as above ..	48,790	17	10
Expenses, as above	131,210	3	8
Rebate on Bills not due, carried to New Account	20,488	11	10
Dividend of 8 per Cent. for Half-year ..	120,000	0	0
Balance carried forward	11,166	8	3
	£340,656	1	7
Dr. By Balance brought forward from last Account,	25,719	2	3
Gross Profit for the Half-year, after making provision for Bad and Doubtful Debts ..	314,936	19	4
	£340,656	1	7

We, the undersigned, have examined the foregoing Balance Sheet, and have found the same to be correct.

(Signed) WILLIAM NORMAN, RICHARD H. SWAINE, } *Auditors.*

By Order, GEO. GOUGH, *Secretary.*

London and County Bank, January 25, 1877.

London and County Banking Company.

NOTICE IS HEREBY GIVEN that a DIVIDEND on the CAPITAL of the COMPANY, at the rate of 8 per cent. for the Half-year ended December 31, 1876, will be PAYABLE to the Proprietors, either at the Head Office, 21, Lombard Street, or at any of the Company's Branches, on or after MONDAY, the 19th instant.

By order of the Board,
W. McKEWAN, *General Manager.*

21, Lombard Street February 2, 1877.

Now ready, in cloth, 16s. 6d.,

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L. REEVE and CO., 5, Henrietta Street, Covent Garden, W.C.

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H. J. VAN HULLE, Botanical Gardens, Ghent, Belgium.

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THE

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Established 1841.

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VOLUME for JULY to DECEMBER, 1876.

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Schedules of Prizes are ready, and can be had by post.

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The ANNUAL GENERAL MEETING of the ROYAL HORTICULTURAL SOCIETY will be held in the Council-room at South Kensington on TUESDAY, February 13, for the Election of Members of Council, Officers, Expenses Committeemen, Auditors, and for the Election of Fellows, and for the purpose of sanctioning certain alterations in the Bye-laws. Chair to be taken at 3 o'Clock P.M.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

Notice—SCIENTIFIC, FRUIT, and FLORAL COMMITTEES' MEETINGS, on WEDNESDAY next, February 14, at 11 o'Clock. GENERAL MEETING at 3 o'Clock for Election of Fellows, &c. Admission 1s. Band from 2 o'Clock P.M.

N.B.—On this occasion the Fruit and Floral Committees will meet in the Conservatory, where exhibits will also be shown.

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CRYSTAL PALACE.—FOURTEENTH ANNUAL EXHIBITION of CANARIES and BRITISH and FOREIGN CAGE BIRDS, on SATURDAY, February 17, and MONDAY to THURSDAY, February 19 to 22 (inclusive). Post entries close on Saturday, February 10.

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SUTTON'S £2 2s. and £1 11s. 6d. COLLECTIONS of CHOICE VEGETABLE SEEDS. Carriage free to any Railway Station in England.

For a Small or "Amateur's" Garden.

SUTTON'S £1 1s. COLLECTION of CHOICE VEGETABLE SEEDS. Carriage free to any Railway Station in England.

Every one who has a Garden should read

SUTTON'S AMATEUR'S GUIDE IN HORTICULTURE. Now ready, post-free for 14 stamps.

The Formation and Improvement of Garden Lawns. SEE

SUTTON'S AMATEUR'S GUIDE IN HORTICULTURE.

SUTTON'S SPRING CATALOGUE and PRICE CURRENT is also ready. Gratis and post-free on application.

SUTTON'S CHOICE SEED POTATOS. —For Particulars and Prices see "Sutton's Descriptive List," which may be had, gratis and post-free, on application.

SUTTON AND SONS, The QUEEN'S SEEDSMEN, Reading.

ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

SILVER FIR.—Fine clean grown and clean leaders. Transplanted Silver Fir, 9 to 12 inches, 20s. per 100: 12 to 18 inches, 25s. per 100.

W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

SPIRÆA PALMATA.—Fine crowns for forcing, 75s.: smaller, 25s. to 30s. per 100.

CHARLES NOBLE, Bagshot.

HAWS, or THORN QUICK SEED.—Sound Haws, 6s. for sowing at present, or spring coming; guaranteed free from soil or other mixture, and thoroughly well preserved. About 30 tons on hand. For lowest prices apply to GRANT AND CO., Park Nursery, Portadown, Ireland.

SYMPHYTUM ASPERRIMUM (Prickly Comfrey).—Roots Purchased at per cwt. after examination. State price delivered at Railway Station.

F. CHRISTY AND CO., 155, Fenchurch Street, E.C.

TO THE TRADE. — RHODODENDRONS, named—"beauties"; AZALEAS, Ghent, named —"a treat"; KALMIA LATIFOLIA, unsurpassed; HOLLY, Green, 9 inches to 6 feet; do., variegated, 1½ to 2 feet.

WANTED, 200,000 MANETTI STOCKS, for Cash.

D. HEFFERMAN, Nurseryman, High Street, Egham, Surrey.

VINES for SALE or EXCHANGE.—Pearson's Golden Queen, Venn's Black Muscat, Waltham Cross, and Gros Colman

WANTED.—200 Garibaldi Strawberry Plants (true), Rhubarb Roots for Forcing, 1 Vine of Gros Guillaume, 1 Standard Maréchal Niel Rose on own roots, and Nerters depressa.

J. R. METCALFE, Gardener, Granthorpe, Lincolnshire.

WANTED, to PURCHASE, for Cash, or liberal EXCHANGE in Plants, some good Specimens of CAMELLIA, alba plena and Mastersii rosea, 4 to 5 feet high.

Apply to JOHN STANDISH AND CO., Royal Nurseries, Ascot.

WANTED, QUICKS, about 200,000, 3-yr. transplanted. State price and quantity, with sample.

C. MACLAREN, East Dereham, Norfolk.

WANTED, Transplanted SCOTCH FIRS, from 2 to 2½ feet. Address, stating price and quantity, to

WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

WANTED, at Once, offers of PINUS AUSTRIACA, transplanted, 15 to 20 inches; P. LARICIO, transplanted, 15 to 20 inches; OAK, English, 2-yr. seedling; HAZEL, 2-yr. seedling; ALDER, 2-yr. seedling; ELM, Wych, 2-yr. seedling

TO SELL, Cheap, IRISH YEW, 3 to 4 feet; SNOWBERRY, strong.

WILLIAM PONTEY, Nurseries, Huddersfield.

All who have a Garden should send for

WEBB AND SONS' SPRING CATALOGUE of VEGETABLE and FLOWER SEEDS, the best work on Gardening matters yet published, which will be found invaluable to the Amateur as well as to the Professional Gardener. Post-free, 12.; gratis to customers.

WEBB'S COMPLETE COLLECTIONS of choice VEGETABLE SEEDS produce a constant supply of the best Vegetables all the year round.

COMPLETE COLLECTIONS for Small Gardens, 10s. 6d., 15s., and 21s. each.

COMPLETE COLLECTIONS for Medium-sized Gardens, £1 10s. and £2 2s. each.

COMPLETE COLLECTIONS for Large Gardens, £3 3s. and £5 5s.

All goods of 20s. value and upwards carriage free to any Railway Station in England or Wales. 5 per cent. discount for cash.

WEBB AND SONS, The QUEEN'S SEEDSMEN, Wordsley, Stourbridge.

CAUCASIAN PRICKLY COMFREY (Symphytum asperrimum).—Sets, 80s. per 1000; larger quantities at reduced prices. Allowance to the Trade. Circulars and all particulars on application.

JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

JOHN PERKINS AND SON beg to offer the following:—

BEECH, fine transplanted, 2 to 3 feet, 18s. per 1000.

BLACKTHORN, 1½ to 2 feet, 10s. per 1000.

Billing Road Nurseries, Northampton.

To the Trade.

JAMES BIRD, NURSERYMAN, Downham, has to offer extra fine Standard MAYDUKE CHERRIES.

To the Trade.

CARDNO AND DARLING have to offer extra fine transplanted LARCH, 18 to 24 inches; also 1-yr. and 2-yr. seedlings. Sample and prices on application.

Aberdeen, N.B.

SNOWFLAKE POTATOS.—Warranted true and free from disease, 14s. per bag, free, and carriage paid to any Railway Station in England on receipt of Post-office Order or Cheque.

DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

SEED POTATOS in several excellent Garden varieties, grown specially for Seed. List, with prices per cwt. or ton, on application. A change of Seed always advantageous.

W. P. LAIRD AND SINCLAIR, Seed Merchants, Dundee.

Johnstone's St. Martin's Rhubarb.

EARLIEST and BEST in CULTIVATION for Open Ground, has a splendid colour and excellent for Forcing. Strong roots, 9s. per doz. Trade price on application.

W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

To the Trade.

VINES, extra strong Fruiting Canes, all the leading varieties.

DICKSON AND ROBINSON, Nurserymen, 12, Old Millgate, Manchester.

Vines, Vines, Vines.

B. S. WILLIAMS begs to announce that his GRAPE VINES this year are unusually fine, and are now ready for distribution.

For Detailed List, see Bulb Catalogue.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

POT VINES.—3000 Pot Vines, of all the best varieties, on Sale at the Garston Vineyard, 6 miles from Liverpool. Price LISTS post-free.

COWAN PATENTS COMPANY, Garston, near Liverpool.

Grape Vines.

FRANCIS R. KINGHORN has still to offer strong planting and fruiting Canes of most of the leading sorts. Particulars on application.

Sheen Nursery, Richmond, Surrey.

CABBAGE PLANTS for Sale.—Seedsmen, Market Gardeners, and Others can be supplied—select Stock, at moderate price—from the seed.

Elm Farm, Barnes, Surrey.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden.—"Gee's superior Bedfordshire-grown Plants and Seeds have attained much celebrity."—*Vide Bedford Mercury*, July 29, 1876. "The soils of the district offer facilities enjoyed at few places for bringing away plants, &c., in perfection, the skill and perseverance of Mr. F. Gee they are turned to good account."—*Vide Agricultural Gazette*, July 31, 1876. See other opinions of the Press, also a Treatise on the Cabbage. CATALOGUES, lowest prices, &c., on application to FREDERICK GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

Gentlemen's Gardeners, Amateurs, and Others REQUIRING

GARDEN POTS of best quality, are requested to send their orders to

J. MATTHEWS, Royal Pottery, Wenson-super-Mere.

Price List on application.

SALES BY AUCTION.

Auction Mart, Tokenhouse Yard, London, E.C.

SALE of 6000 LILIUM AURATUM, just arrived in splendid condition from Japan; an unusually fine importation of TREE FERNS from New Zealand, nearly the whole of which are starting into growth, including magnificent trunks of Cyathea dealbata, Dicksonia squarrosa and Smithii, together with a quantity of GLADIOLI and other Hardy Bulbs.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the Mart, London, E.C., on MONDAY, February 12, at 12 o'Clock precisely.

On view the morning of Sale. Catalogues may be had at the Mart, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Edgware, N.W.

IMPORTANT CLEARANCE SALE OF VALUABLE NURSERY STOCK, comprising a great variety of Lawn Trees, including some splendid specimens of Picea Nordmanniana, Lowii, grandis, nobilis, magnifica, Douglasii, 4 to 20 feet high; a valuable collection of other Coniferæ and Evergreen Shrubs, recently transplanted and adapted for Ornamental Planting; also a fine collection of Orchids, in all the choice varieties, and a number of Camellias and other Greenhouse Plants.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, on the Premises, the Whitchurch Rectory, Edgware, N.W., on SATURDAY, February 17, at 12 o'Clock precisely.

May be viewed prior to the Sale, and Catalogues had on the Premises, and of the Auctioneers as above.

Tooting, S.W.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. R. Parker, to SELL by AUCTION, on the Premises, The Exotic Nursery, Tooting, S.W., on THURSDAY, February 22, at 12 o'clock precisely: a splendid assortment of thriving young NURSERY STOCK, comprising several thousands of choice Evergreen and Coniferæ shrubs in specimen bushes, admirably adapted for effective planting; a splendid assortment of Ornamental and Forest Trees, fine Fruit Trees, Box edging, Bambusa, Ivies, Roses, Clematis, Virginian Creepers, Lily of the Valley, &c.

May be viewed prior to the Sale, and Catalogues may be had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Clearance Sale.—Lee, Kent, S.E.

MESSRS. POTHEROE AND MORRIS are instructed by Mr. B. Maller to SELL by AUCTION, on the Premises, The Burnt Ash Lane Nurseries, Lee, Kent, S.E., adjoining the station, on WEDNESDAY, February 28, at 12 o'Clock precisely, the valuable NURSERY STOCK, and about 1200 choice Ericas of sorts, Azaleas, Camellias, &c.

More detailed particulars in future advertisements. Auction and Estate Offices, 98, Gracechurch Street, E.C., and Leytonstone, E.

6000 Gigantic Bulbs of Lilium auratum.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, February 12, at half-past 12 o'Clock precisely, 6000 splendid Bulbs of LILIUM AURATUM, just arrived from Japan in the best possible condition: also a quantity of other LILIES, GLADIOLI, &c., for present planting: 2 cases of ARAUCARIAS, &c.

On view the morning of Sale, and Catalogues had.

P.S. Mr. S. wishes to draw particular attention to the Lilium auratum included in the above Sale, as they comprise some of the finest Bulbs ever imported.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, February 13, at half-past 12 o'Clock precisely, Spanish, Silver-spangled Hamburghs, and Black East India DUCKS, from Miss E. Browne; Buff COCHINS from Mrs. W. Steven; Mr. South's well-known stock of TURBITS, BEARDS, BALDHEADS, JACOBINS, and ROLLERS, for Unreserved Sale; Fine JACOBINS from Mr. W. Woodhouse; the Surplus Stock of young CARRIERS, from Mr. T. Crisp, of Southall; WIRE POULTRY NEEDLES, &c.

On view the morning of Sale, and Catalogues had.

Hardy Plants and Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 14, at half-past 12 o'Clock precisely, specimen CONIFERS, SHRUBS, ROSES, trained and pyramid FRUIT TREES, &c., from Surrey; choice GLADIOLI, LILIUMS, &c., for present planting.

On view the morning of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'Clock precisely, part of the Collection of ESTABLISHED ORCHIDS, the property of E. W. Walker, Esq., and sold in consequence of removing. Amongst them will be found many rare and choice varieties.

On view the morning of Sale, and Catalogues had.

FOR DISPOSAL, SEED and FLORIST'S BUSINESS, in the best possible position of a large Market Town. This is an undeniable opportunity for an energetic Man with small Capital. Suitable Partner not objected to. Proprietor having other business is the sole reason for Disposal. Rent £50 per Annum, and Goodwill will be accepted from an immediate purchaser.

H. H., Messrs. Smith & Sons, Victoria Station, London, Chatham and Dover Railway, S.W.

TO BE LET, a NURSERY, with Immediate Possession, seven miles from London, containing a seven-roomed Dwelling-house, in good repair, Water and Gas laid on; four newly-erected Greenhouses, Heated with Hot-water, with Range of Pits, stocked with a choice collection of Plants (can be sold with or without the Nursery). Lease 17 years unexpired; all at the low rental of £25 per annum. The above to be Disposed of, on account of ill health, on moderate and liberal terms.

Apply personally, on the Premises, to W. HOWITT, Ilford, Essex.

GRAND FLORAL FETE, YORK, JUNE 13, 14, and 15. PRIZES, including several Special ones for Roses, SIX HUNDRED POUNDS. Schedules now ready.

13, New Street, York. JOHN WILSON, Secretary.

INTERNATIONAL HORTICULTURAL EXHIBITION, 1877.

A GREAT INTERNATIONAL HORTICULTURAL EXHIBITION will be held at SOUTH KENSINGTON, FRIDAY, and SATURDAY, September 6, 7, and 8, when nearly £1200 will be OFFERED FOR COMPETITION in FRUITS, FLOWERS, EXOTIC and NATIVE PLANTS, &c. SPECIAL PRIZES have also already been promised; and as the SCHEDULE OF PRIZES will be issued in a few weeks, it is hoped that Gentlemen interested in the Advancement of Horticulture, and inclined to give SPECIAL PRIZES, will communicate with the Acting Secretary, in time to insure their appearance in the Schedule. A select number of Advertisements will also be inserted at £3 2s. per Page, £1 12s. per Half-page. LEADING PRIZES at 1877 EXHIBITIONS.

Stove, Greenhouse, and Ornamental Plants..	..	£125 0 0
Table Decorations, Vases, and Table Plants	..	90 0 0
Ferns, Cut, and Specimen	..	75 0 0
Azaleas, Camellias, Fuchsias, and Ericas	..	50 0 0
Roses, £44; Dahlias, £26; Hollyhocks, £10	..	80 0 0
Liliums and Gladioli, £25; Fruit, £65	..	90 0 0
Hyacinths, Spring Plants, &c.	..	80 0 0
		£530 0 0

Two thousand new Members enrolled. Apply for Schedules to WM. J. TAYLOR or J. H. FRENCH,
Hon. Secs., Newcastle.

Corporation of Preston.

DESIGNS and TENDERS are requested for an IRON FOOT-BRIDGE over the Serpentine Lake at the Moor Park, Preston. Span, 60 feet; width, 9 feet clear; and to be of sufficient strength to carry half a Ton on each square yard of Roadway. The Girders or Railing on the sides not to be less than 5 feet high above the Roadway.

Any further particulars may be obtained on application to MR. GARLICK, Town Hall, Preston.

Tenders, with Designs, to be forwarded to the Town Clerk before March 1 next.

CHARLES FRYER, Town Clerk.
Town Hall, Preston, February 6, 1877.

HARRIET SCOTT, WOOD-BROKER, COMMISSION AGENT, and SALESMAN in all kinds of Garden Materials, begs to notify that Mr. W. Uwins, late Manager, is now NO LONGER IN HER EMPLOY, and requests that all ORDERS, Correspondence and ACCOUNTS PAID TO HER SON, who will call in a few days.

Woodside, S.E.—February 1, 1877.

PROTHEROE AND MORRIS, HORTICULTURAL MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

Roses.

CHARLES TURNER has still fine plants to offer. In addition to his own varied stock C. Turner has purchased Mr. Laxton's Roses.

The Royal Nurseries, Slough.

GERANIUMS, strong, from Store Pots.—Bijou, Vesuvius, Beauty of Calderdale, Perilla, Master Christine, Amy Hogg, William Seeling, Aurond, Crystal Palace Gem, Indian Yellow, 9s. per 100.

W. BROADBRIDGE, Wellesbourne, Warwick.

LARCH, 1-yr. 2-yr., fine, Scotch, 2-yr. 2-yr., native, fine; GOOSEBERRIES, 3-yr. and 4-yr., Warrington and all the usual sorts. Application to THOS. SMITH, Nurseryman, Stranraer.

Special Offer—Extra fine Larch.

WAND D. STEWART have to offer a quantity of very fine, extra transplanted LARCH, about 4 to 6 feet. Samples and prices on application.

Ferndown Nurseries, Wimborne, Dorset.

To the Trade.

J. C. DUNCAN has to offer 500,000 extra fine Seedling THORNS, from 9 to 24 inches in height. Price and sample on application.

The Nurseries, Calne, Wilts.

GARRYA ELLIPTICA.—Healthy, well-grown plants of the above, from open ground, 1½ to 2 feet, 12s. each, 6s. per dozen. Ditto, extra fine, 2 to 3 feet, 6s. per dozen, 30s. per 100; 8 to 9 feet, 9s. per dozen, 60s. per 100. Other Stock as per List.

J. J. MARRIOTT, Mellish Road, Walsall.

For Cover.

PONTICUM RHODODENDRONS, 1½ to 3 feet, fine, £8 per 1000.

J. JACKSON, Nursery, Kidderminster.

Winter-flowering Orchids.

CALANTHE VESTITA RUBRA OCULATA. Price, 9s. per dozen, 6s. per 100. per 50.

S. WOOLLEY, Nurseryman, Cheshunt, Herts.

SPANISH CHESTNUT, 50,000, 2 feet, 35s.; 30,000, 1½ foot, 30s; LARCH, 50,000, 1½ to 2 feet, 25s.; ASH, 30,000, 2 feet, 21s.; ALDER, 30,000, 3 feet, 30s.—per 1000 well-rooted, transplanted. A large quantity of seedling SPANISH CHESTNUT, 5s. per 1000.

GEORGE CHOKLEY, Midhurst, Sussex.

To the Trade.

WILLIAM FLETCHER has the following to offer, good clean-grown trees:—
CRAB STOCKS, 35s. per 1000.
PEAR STOCKS, 40s. per 1000.
CHERRY STOCKS, 40s. per 1000.
APRICOTS, dwarf maiden, 55s. per 100.
CATALOGUE of General Nursery Stock on application.
Ottershaw Nursery, Chertsey, Surrey.

To Purchasers of Large Quantities, Market GARDENERS and OTHERS.

SUTTON AND SONS can offer true stocks of the following Peas at very moderate prices, viz.:—

SUTTON'S IMPROVED EARLY CHAMPION, the best and most productive in cultivation.

Sutton's Ringleader	Advancer
Daniel O'Rourke	Sutton's Racehorse
Fortyfold	Champion of England
Scimitar	Veitch's Perfection,

and other leading kinds.

SUTTON and SONS, Seed Growers, Reading.

Cucumber Plants, clean, strong and healthy.

F. W. GOOPER can supply the above: Rollisson's Telegraph, Mumer's Duke of Edinburgh, Blue Gown, and Tender and True; also seed of all the varieties grown under his own supervision and guaranteed true. The Trade supplied. Florist, Huntingdon.

ARECA BAUERI (Seaforthia robusta).—Of this rare species, one of the finest of Greenhouse Palms, a fine stock of young plants is to hand, and offered at unprecedentedly low prices, viz.:—

Nice young Plants, in single pots, 32s. per dozen.

2-yr. seedlings, in store pots, 48 per 100.

Early orders solicited by

JEAN NUYTENS VERSCHAFFELT, Ledeberg, Ghent Belgium.

To the Trade.

H. AND F. SHARPE'S Special Priced LIST of HOME-GROWN GARDEN and AGRICULTURAL SEEDS of 1876 growth, is now ready, and may be had on application.

Seed Growing Establishment, Wisbech.

Fox and Game Covert.

ENGLISH FURZE, 1-yr. old, fine, 5s.; 2-yr., extra fine, 10s. per 1000. ENGLISH BROOM, 8 to 9 feet, 15s. per 1000. MAHONIA AQUIFOLIA, extra bushy, 25s. per 100.

WILLIAM MAULE AND SONS, The Nurseries, Bristol.

Spring Seed Guide.

LITTLE AND BALLANTYNE, the Queen's Seedsmen, Carlisle, intimate that their illustrated CATALOGUE of SEEDS is now ready, and may be had post-free. It contains every requisite for the Garden and the Farm, and much valuable information to Amateurs.

To the Trade.

WM. WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex, have to offer:—
AUCUBA JAPONICA, fine bushy plants, 9 to 12, 12 to 18 and 18 to 24 inches.
CEDRUS DEODARA, splendid stuff, each plant a specimen 1 to 1½, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.
Price on Application.

NEW DRACÆNAS.—Twelve of the finest in cultivation for 21s., well established young plants, growing freely. If potted on now will do for exhibition in the autumn—D. Baptisii, D. Bausei, D. Imperialis, &c., included. Packages gratis for cash with order.

JOHN H. LEV, Royal Nursery, Croydon.

CALCEOLARIA, Golden Gem, strong healthy plants, 5s. per 100, 40s. per 1000.
GERANIUM, Vesuvius, strong, autumn-struck, 10s. per 100. Cash with order, package free.
WILLIAM FIELD (late Field Brothers), Tarvin Road Nursery, Chester.

EUONYMUS EUROPÆUS.—Strong 2-yr. seedling plants, 5s. per 100, 40 per 1000. Offers for Cash.

A. RATHBE AND SON, The Nurseries, Praust, near Danzig, Germany.

To the Trade.

HENRY BENNETT has a few hundred dwarf ROSE LA FRANCE, strong bushy plants, to offer, at 30s. per 100.

Manor Farm Nursery, Stapleford, Salisbury.

FOR SALE, CHEAP.—Box Edging, 10,000 yards; Orchid Sphagnum, Spiræa japonica, Sempervivum californicum, Sedum glaucum, Polemonium cæruleum var. Particulars from

J. B. YOUNG, Landscape Gardener, Bridge of Allan.

To the Trade.

STANDARD and DWARF ROSES of the leading sorts—splendid Plants, no better in the Trade, well-ripened wood—about 1,500 Standards and 2,000 Dwarfs, guaranteed true to name. For lowest prices apply to

GRANT AND CO., Park Nursery, Portadown, Ireland.

Genuine Garden Seeds.

WM. CUTBUSH AND SON have for many years held some of the finest Stocks of SEEDS in the Trade, and they believe that no house can possibly supply better quality. CATALOGUES post-free on application.

HIGHGATE, LONDON, N.; and BARNET, HERTS.

Begonia Frœbeli.

BEGONIA FRŒBELI.—Extra fine Roots, 15s. per dozen, carriage free; single bulbs, 2s. 6d. each. Illustrated CATALOGUE of New and Choice Seeds, Begonias, and Novelties, post-free.

FARROW AND CO., Seedsmen, Bulb Growers and Importers, Sittingbourne.

Now Ready,

CHARLES TURNER'S Descriptive CATALOGUE of SEEDS. Post-free on application.

The Finest Dwarf Marrow Pea is

TURNER'S DR. MACLEAN. See CATALOGUE, now ready.

New Early Prolific Pea.

ALLAN'S CHAMPION. Full description in CATALOGUE, now ready.

Schoolmaster.

FINEST ROUND POTATO. Description, with testimonials, in CATALOGUE, now ready.

CHARLES TURNER, The Royal Nurseries, Slough.

VERBENAS, VERBENAS, VERBENAS. —Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6s. per 100, 50s. per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, for 8s. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

ALDERS.—Fine stout stuff, 3 to 4 and 4 to 5 feet, can be supplied at a very reasonable rate.
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

AUSTIN AND MCASLAN, GLASGOW.
Established 1727.
GARDEN and IMPLEMENT (64 pages) CATALOGUE
Free on application.

To the Trade.

OSBORN AND SONS can still supply dwarf maiden PEACHES, NECTARINES, and APRICOTS of the leading kinds, and a few Standards. Also Dwarf and Standard APPLES, PEARS, PLUMS, and CHERRIES.
Fulham Nurseries, London, S.W.

TWELVE BEAUTIFUL ORCHIDS, 42s., established plants of fine sorts, as Cattleya citrina, Lælia autumnalis, Lælia albida, Odontoglossum, Dendrobium, and upwards of fifty other sorts. They have all made fine growth this season.
JOHN H. LEY, Royal Nursery, Croydon.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, NURSERYMEN, Ussy, Calvados, France, have an immense Stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted. Priced CATALOGUES may be had of
Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

HANDSOME STRAIGHT TREES, for Avenues or Park Planting.
ELMS, Chichester, broad leaved, 14 to 18 feet.
LIMES, 10 to 14 feet.
TURKEY OAKS, 9 to 12 feet.
SYCAMORE, 12 to 16 feet.
Price on application to
ROBERT F. DARBY. The Cirencester Nurseries.

RHUBARB (Hawkes' Champagne), the best in the London Markets, large stools, 4-yr. old, or in sets ready for planting, to be sold for cash. Price according to quantity required. Apply to
Mr. MYATT, Manor Farm, Harefield Road, Brockley, S.E.

Grape Vines.—Strong Fruiting and Planting Canes.

WM. CUTBUSH AND SON have a large Stock of the leading sorts, price on application.
Highgate Nurseries, London, N., and Barnet, Herts.

STEPHANOTIS FLORIBUNDA.—Strong specimen plants of a very free-flowering variety, 10s. 6d. each; smaller, but fine half specimens, which will produce abundance of flower early, the buds just appearing on some, 7s. 6d. each, 6s. per dozen; in 48-pots (flowered last summer), 30s. per dozen. This offer is for six weeks only, to make room, the plants being worth double the money.
JOHN H. LEY, Royal Nursery, Croydon.

LARGE ESPALIER APPLES.—Very fine large Trees, full of fruit-buds, measuring 6 to 10 feet wide and 4 to 6 feet high. Names and price on application to
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

EWING AND COMPANY'S LIST of NEW ROSES for 1877 is now ready, and may be had gratis. Additional Houses have this season been built specially to extend the Propagation and Growth of NEW and TEA ROSES. The plants are making vigorous, free growth, and will be unusually large and fine.
Their GENERAL LISTS of Roses, Fruit Trees, Ornamental Trees for Avenues, Conifers, Evergreens, Clematis, &c. (104 pages), with full descriptions, gratis.
The Royal Norfolk Nurseries, Eaton, near Norwich.

Centaurea candidissima (Wholesale Price).

WOOD AND INGRAM offer fine summer-sown-plants, of the above, thoroughly established in thumb-pots, at 20s. per 100. Package 3d. per 100, or 12 6d. for 50, not less than which will be sold at the price.
The Nurseries, Huntingdon.

The Best Late Broccoli.

BROCCOLI, Christie's Self-protecting Late White. Proved by all who have seen it as the finest self-protecting Broccoli in cultivation. Price per packet, 1s. 6d. A limited quantity to offer to the Trade, price on application.
EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

Large Evergreen Trees for Screens.

WILLIAM MAULE AND SONS offer Norway SPRUCE and CEDRUS DEODARA, 20 to 35 feet high, well-rooted—the former at 5s. each, the latter 20s. 6d.
The Nurseries, Bristol.

Notice.

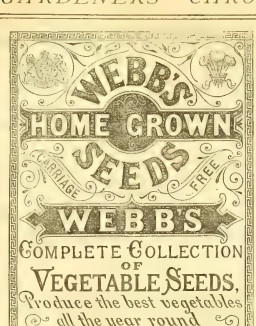
EDMUND PHILIP DIXON'S CATALOGUE of NEW and CHOICE SEEDS is now ready, and will be forwarded gratis and post-free on application.
EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

Pelargoniums, Pelargoniums.

JAMES HOLDER AND SON have a fine healthy Stock of the above to offer, at the following low prices for cash, or C.O.D.: per 100, distinct sorts, hanger and package included; also extra strong plants, in 32-pots, 18s. per dozen, in 48-pots, 9s. per dozen, 60s. per 100, basket and packing extra. Crown Nursery, Reading.

Green Ivies of Sorts in Six Kinds.

ROBERT PARKER, having a Surplus Stock of fine Plants in pots of the above-named, will be pleased to Dispose of them in quantities, at very low prices. Names, sizes, and prices per dozen, 100, or 1000, will be given on application.
Exotic Nursery, Tooting, Surrey, S.W.



WE ALSO SUPPLY COLLECTIONS AT
10s. 6d., 15s., 30s., 42s., 63s., and 105s.
The above contain liberal assortments of the best varieties in cultivation.

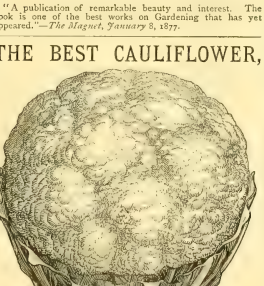
WEBB'S SPRING CATALOGUE FOR 1877

Contains full instructions for the successful cultivation of
THE BEST VEGETABLES and THE CHOICEST FLOWERS.

Post-free, 1s. Gratis to Customers.

"A publication of remarkable beauty and interest. The book is one of the best works on Gardening that has yet appeared."—*The Magnet, January 8, 1877.*

THE BEST CAULIFLOWER,

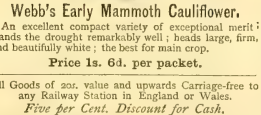


Webb's Early Mammoth Cauliflower.

An excellent compact variety of exceptional merit; stands the drought remarkably well; heads large, firm, and beautifully white; the best for main crop.

Price 1s. 6d. per packet.

All Goods of 20s. value and upwards Carriage-free to any Railway Station in England or Wales.
Five per Cent. Discount for Cash.



The Queen's Seedsmen,
WORDSLEY, STOURBRIDGE.

SPECIAL OFFER.

20,000 CHESTNUT, Spanish, transplanted, 4 to 7 feet.
20,000 ASH, 4 to 6 feet.
The above are one of the finest lots of plants ever offered.
E. TANNER, Plant Merchant, Groombridge, Sussex.

Vines in Pots

MESSRS. PHILLIPS AND CO. have a quantity of first-class Planting Canes, true to name, all leading kinds, to offer for Sale, or EXCHANGE for Nursery Stock. The Torbay Nurseries, Torquay.

POTATOS.—For Sale, 25 Sacks of improved selected Red-skin Flourball, warranted true, 12s. per sack of 168 lb., sacks included. Single sacks supplied. Post-office Order. G. BALLS, Thetford, Norfolk.

SEEDS—SEEDS—ALL KINDS.—Before ordering your Seeds, send for Illustrated CATALOGUE, which contains full Directions,
How, When and What to Sow.
PENGILLEY AND POOL (successors to the Heatherside Nurseries Company), 59, Queen Victoria Street, London, E.C.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS: also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.
Mr. WEBB, Calcot, Reading.

CHOICE TUBERS AND ROOTS.—Twelve tuberous BEGONIAS, including Evansiana, intermedia, Sedeni, vivicans, &c., for 21s.; very fine bulbs. Twelve CALADIUMS, splendid tubers, fit for exhibition, ready to start, 21s. A few collections of these left at 60s. per dozen, consisting of bulbs averaging 10 inches in circumference.
JOHN H. LEY, Royal Nursery, Croydon.

Special Offer of Surplus Stock.

FRUIT TREES.—CHERRIES, Standard and Trained Morello; PLUMS, extra strong Standard and Half-standard; APPLES, Standard and Pyramid. All the leading varieties of the above can be supplied in large quantities. Also Red and Black CURRANTS and Warrington GOOSEBERRIES.
T. EVES, Gravesend Nurseries. Established 1820.

FAST LOTHIAN INTERMEDIATE STOCK (true).—New Seed of the above splendid Stock, for present sowing, in packets of White, Purple, Scarlet, and White, wall-leaved, at 1s., 2s. 6d., and 5s. each colour. Price per ounce to the Trade on application.
THOMAS METHVEN AND SONS, 15, Princes Street, Edinburgh.

LARGE TREE BOX and EVERGREEN HOLLY.—Handsome, bushy, and well-rooted, will transplant with good balls, 1 yr. 5, 6, 7, and 8 feet high. Tree Box lives under trees better than any other Evergreen tree. An inspection invited. Price on application to
T. JACKSON & SON, Kingston, Surrey.

The Best Scarlet-fleshed Melon.

SUTTON'S HERO OF BATH. —*From* Mr. W. Wildsmith, *Gr. to* the Right Hon. Viscount Eversley.—"I consider your Hero of Bath the best scarlet-fleshed Melon yet in existence, being A 1 in quality, appearance, and productiveness. His Lordship, who previously had a prejudice against scarlet-fleshed Melons, pronounces this variety superb."
From Mr. Thomas Lockie, *Gr. to* the Right Hon. Lord Ocho Fitzgerald, *August 27.*—"I consider your Hero of Bath Melon the best I have ever grown of the scarlet-fleshed class. It is very handsome, of good constitution, and excellent in flavour."
Price 2s. 6d. per packet.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

WILLIAM HOLMES has to offer the following:—
JASMINUM NUDIFLORUM, in pots, strong, 50s. per 100.
" common White, in pots, strong, 50s. per 100.
IVIES, Irish, in 32's, extra fine, 100s. per 100.
" " from ground, fine, 25s. per 100.
CLOVES, old Red, true, 20s. per 100 pots.
And in the spring—
ALTERNANTHERA AMCENA, 12s. per 100.
" PARONYCHIOIDES, 8s. per 100.
" MAGNIFICA, 8s. per 100.
Frampton Park Nursery, Hackney, London, E.

Half a Ton, Guaranteed True Native, SCOTCH FIR SEED.

W. WISEMAN AND SON have to offer the above, prepared by themselves, on very moderate terms. Also—
500,000 SCOTCH FIR, 2-yr. seedlings, very fine stuff.
200,000 " 1-yr., 1-yr. "
150,000 LARCH, 2-yr. seedlings " "
300,000 " 1-yr., 1-yr. "
As the ground is wanted all will be disposed of cheap Samples and prices on application.
Grove Terrace and Friars' Haugh Nurseries, Elgin, N.B.

Special Offer.

GEORGE FARNSWORTH has to offer large quantities of the following:—
ASH, Mountain, 2½ to 3½ feet, 16s. per 100: 4 to 5 feet, 20s. per 100
BERBERIS AQUIFOLIA, bushy, 1 to 2 feet, 40s. per 1000; 2 to 3 feet, 8s. per 100.
CHESTNUT, Horse, 7 to 9 feet, 10s. per 100.
LIMES, 2-yr. layers, 1-yr. trans-planted, 3 to 5 feet, 9s. per 100; 6 to 8 feet, 25s. per 100.
LAUREL, Common, 2 to 3½ feet, 90s. per 1000.
POPLARS, Balsam, 5 to 7 feet, 8s. per 100.
" Black Italian, 5½ to 7½ feet, 17s. 6d. per 1000: 4 to 5 feet, 20s. per 1000: 5 to 6 feet, 6s. per 100.
RHODODENDRONS, Hybrid and Pontica, mixed, 3-yr. seedling, fine, 5s. per 1000; 4to. and 5-yr. bedded, 18s. per 1000; extra transplanted, 1 to 1½ feet, 12os. per 1000: 1½ to 2 feet, 60s. per 100, 18os. per 1000.
SYCAMORE, 2 to 3 feet, 20s. per 1000; 3½ to 5 feet, 30s. per 1000.
Also other Nursery Stock as per LIST.
Messrs. W. TAIT AND CO., Seed and Nursery Establishment, 45, Capel Street, Dublin.

GLOXINIA CRASSIFOLIA GRANDIFLORA.—Magnificent strain, quite distinct; sown now will flower in autumn. Erecta and horizontalis, separate or mixed, 1s. and 2s. 6d. per packet.

PETUNIA, double large-flowered.—Yields a large percentage of double flowers, 1s. 6d. per packet.

STEPHANOTIS FLORIBUNDA. — Remarkably free-flowering variety from the Mauritius, 1s. 6d. per packet.

CATALOGUES free on application.

JAMES TYNAN, Seed Warehouse, 68, Great George Street, Liverpool.

From Paris.—Roses, Peonies, Camellias.

LÉVÊQUE AND SON, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand ROSE TREES, Standards, Half-standards, Dwarfs, and on own root—New and Old sorts.

LÉVÊQUE AND SON respectfully solicit Gentlemen and Nurserymen visiting Paris to inspect their Stock, the largest in Paris.

SPLENDID PYRAMID CAMELLIAS, price 12s. to 50s. each; small, 2s. 6d. to 10s.

CATALOGUES and LISTS on application.

From Paris.—Large Bulbs of Gladioli, Seedlings and NAMED SORTS.

LÉVÊQUE AND SON, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand strong, healthy Flowering BULBS of GLADIOLI. The Seedling Bulbs are particularly recommended—their flowers equal to the named sorts (seeds have been taken from the best sorts of the collection). GLADIOLI, Seedlings, per 100 sorts, 4s per 1000, 40s per 10,000; mixed white, red, pink. Separate colours, 12s. to 20s. per 100: yellow, 25s. per 100. Named sorts per 100, 10 sorts, 20s.; 25 sorts, 50s. per 100 sorts (unrecommended). Comprising 250, less or more, according to the novelty. All good flowering bulbs. English Cheques on London, or Post-office Orders on Paris accepted in payment.

PYRUS or CYDONIA, the NEW JAPAN APPLE or QUINCE.—This gorgeous hardy scarlet May flowering fruit tree ripened a fine crop of its golden, deliciously-scented fruit in September last, notwithstanding the general failure of our common Apple crop. The jam made is most delicious, which may be tasted at the nursery, or sample sent to those who really take an interest in the delicacies of the dinner-table.

Original plants 21s. and 15s. each; younger, 10s., 7s. 6d., and 5s. each.

WILLIAM MAULE and SONS, The Nurseries, Bristol.

Splendid New Melon, 1877.

CHARLES LEE AND SON (Successors to MESSRS J. & C. LEE) have the pleasure to announce that they have purchased the entire Stock of MANN'S HYBRID GREEN-FLESH MELON, which they now offer for the first time. It has already earned a high reputation in London and the provinces for its many excellent qualities, among which may be mentioned a remarkably high and exquisite flavour at all seasons of the year—perfection of shape and size for dessert—a thin rind and melting flesh, with an overflow of perfumed juice. It is also a heavy cropper, and forces well.

Dr. HOGG has spoken of this excellent Melon in the highest terms, and after tasting it pronounced it a fruit of the highest merit.

Mr. CULVERWELL, of Thorpe Perrow, fellow judge with Mr. FOWLER, of Harewood House, at the Leeds Horticultural Show, where they awarded a First-class Certificate to "Mann's Hybrid Green-flesh Melon," speaks of it as "an exceedingly fine Melon, especially at that early season—the early part of June."

Mr. INGRAM, of Belvoir Castle, writes, in the third week of October, "that in spite of the disadvantage of a long term of gloomy weather, at that season of the year, Mann's Hybrid Green-flesh Melon was sweet, tender in flesh, very juicy, and distinct in character."

Messrs. CHARLES LEE & SON are now prepared to offer this very useful and delicious new Melon in sealed packets, at 3s. 6d. per packet.

CHARLES LEE AND SON, Hammersmith, W.

RHODODENDRON PRÆCOX, the raised by me and sent out eighteen years ago, is still a great favourite with all lovers of early-blooming plants. I can now supply good bushy plants, covered with flower-buds, at 18s. per dozen.

SWEET-SCENTED RHODODENDRONS, also raised by me, and which I can recommend, feeling confident that they will be highly esteemed for many years, being of a bushy habit, early, and very free-blooming, the flowers large, white, and most deliciously fragrant.

I am happy to state that these plants have been found to withstand the winter in the open ground without the least injury. In addition of the undoubted value of these novelties, I should be glad to give references to many Noblemen's Gardeners of high standing, also to the Curator of the Botanic Gardens, Manchester.

Prices and full descriptions of these and other novelties post-free to any address on application.

ISAAC DAVIES, Nurseryman, Ormskirk.

To the Trade.

W. P. LAIRD AND SINCLAIR, NURSERYMEN, Dundee, N.B., have to offer :—

TRANSPLANTED.—Larch, 2 to 3 feet; Scots Fir, 2-yr., 3-yr. cut; Silver Fir, 9 to 15 inches; P. Laricio, 2-yr., 3-yr. cut; Limes, 3 to 4 feet: Walnuts, 4 to 6 and 6 to 8 feet; Green Hollies, 4 to 6, 6 to 8, and 8 to 10 to 24 inches; Irish junipers, 4 to 5 feet; Laurustinus, 12 to 18 inches; Irish Yews, 4 to 5 feet.

SEEDLINGS.—Larch, 1-yr. and 2-yr.; Scots Fir, 1-yr.; Silver Fir, 2-yr. and 3-yr.; Pinus austriaca, 2-yr.; P. Strobus, 2-yr.; Beech, 1-yr.; Spanish Chestnut, 2-yr.; Hazel, 1-yr.; English Oak, 1-yr.; Turkey Oak, 3-yr.; Sycamore, 2-yr.

RHUBARB.—Johnstone's St. Martin's.

SEED POTATOS.—Garden sorts.

Special offer of above may be had on application.

American Plants Without Peat.

WILLIAM MAULE AND SONS beg to offer the choicest hardy English and Continental RHODODENDRONS, with BELGIC and other AZALEAS, at 30s. per dozen, or £10 per 100.

The plants are grown in stiff loamy soil, on an exposed and elevated situation, and will thrive in almost any soil, free from iron, lime, or chalk.

Handsome Standard RHODODENDRONS, with fine heads, well set with bloom, 10s. 6d., 21s., and 42s. each.

Large bushes of PONTICUM, CATAWBIENSE, and other common varieties, at 25s., 75s., and 100s. per 100.

The Nurseries, Bristol.

Surplus Nursery Stock—Special offer to the Trade FOR CASH, BY

B. M A L L E R, Lewisham, S.E.

VINES, strong, 36s. per dozen.

ERICAS, ventricosa, hardy hybrid, in 48-pots, at 12s. per dozen, 80s. per 100.

CHERRIES, dwarf-trained, strong, 18s. and 24s. per dozen.

NECTARINES, dwarf-trained, strong, 24s. per dozen.

ROSES, Standard, 2 to 3 feet stems, with fine heads, 60s. per 100.

Asparagus, Asparagus, Asparagus.

ROBERT AND GEORGE NEAL have the above to offer in large or small quantities, 1-yr., 2-yr., and 3-yr. old :—

1-yr. old, 20s. per 1000.
2-yr. old, 25s. per 1000.
3-yr. old, 35s. per 1000.

Price to the Trade on application.

The Nurseries, Wandsworth Common, S.W.

MESSRS. JNO. STANDISH AND CO.'S CATALOGUE for Autumn, 1876, and Spring, 1877, is now ready, and can be had, post-free, on application.

It contains the following :—

Plants of Recent Introduction.	Conifers.
Stove and Greenhouse Plants.	Hardy Climbers, Clematis, &c.
Plants for Winter Forcing.	Rhododendrons, Azaleas,
Azalea indica and Camellias.	Kalmias, &c.
Tree Carnations and Ericas.	Roses, Standards and Dwarfs,
Ferns and Lycopods.	also in pots.
Hardy Trees and Shrubs.	Fruit Trees.
Transplanted Forest Trees.	Grape Vines.
Dutch Bulbs, Flower Roots, &c.	
Royal Nurseries, Bagshot.	

Complete Liberal Collections of

CHOICE VEGETABLE SEEDS, 15s., 21s., 42s., 63s., and 105s. each, carriage paid. As my new and choice seeds are now in large demand, please order early. SPECIALITIES :—

CAULIFLOWER, Veitch's Autumn Giant, true, 1s. 6d. per packet.

LETTUCE, Alexandra Cos, true, 1s. per packet.

ONION, Cantello's Prize, true, 1s. per packet.

BROCCOLI, Leamington, finest late, 1s. 6d. per packet.

CARBAGE, Rich, fine, large, and early, 1s. per packet.

CATALOGUE of New and Choice Seeds on application.

R. B. M'COMBIE, Grower of Choice Seeds, &c., Christchurch, Hants.

Special Offer to the Trade.

WOOD AND INGRAM beg to offer the following, well grown and well rooted :—

ACACIA INERMIS, Standard, fine, 24s. per dozen.

BLACKTHORN, 1½ to 2½ feet, nice clean stuff, 10s. 6d. per 1000.

BOX, Green, 1½ to 2 feet, 12s. per 100; 2 to 2½ feet, 17s. 6d. per 100.

,, Gold-tipped, 1½ to 2 feet, 21s. per 100.

,, Handsworth, 1½ to 2 feet, 17s. 6d. per 100.

CUPRESSUS LAWSONIANA, 3 to 6 feet, 12s. per dozen; 6 to 7 feet, 30s. per dozen.

FIR, Balm of Gilead, 2 feet, 21s. per 100; 5 to 6 feet, 35s. per 100; 6 to 7 feet, 55s. per 100; 7 to 8 feet, 65s. per 100.

GLEDITSCHIA TRIACANTHOS, Standards, 9s. per dozen.

HORNBEAM, 5 to 6 feet, 8s. per 100; 6 to 8 feet, 12s. per 100; 8 to 9 feet, 20s. per 100.

OAK, Evergreen, 3 to 4 feet, 8s. per dozen; 4 to 5 feet, 15s. per dozen.

PAMPAS GRASS, established in pots, 2½ to 3 feet, 5s. per dozen, 35s. per 100.

PINUS, Weymouth, 6 to 7 feet, 9s. per dozen.

,, INSIGNIS, 5 to 6 feet, 36s. per dozen; 6 to 7 feet, 60s. per dozen.

ASH, Mountain, 6 to 8 feet, 12s. 6d. per 100; 8 to 10 feet, 21s. per 100.

ELM, Huntingdon, 8 to 10 feet, 60s. per 100; 10 to 12 feet, 80s. per 100.

,, narrow-leaved English, 6 to 7 feet, 40s. per 1000; 8 to 10 feet, 50s. per 1000.

LIME, finest red-twigged, layers, 2 to 3 feet, 12s. per 100; 6 to 7 feet, 30s. per 100; 7 to 8 feet, 40s. per 100.

MAPLE, Norway, 14 to 18 feet, 24s. per dozen.

The Nurseries, Huntingdon.

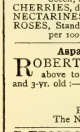
AVENUE TREES.

Chestnut, 2 kinds, 8 to 12 feet.
Elms, 6 kinds, 8 to 12 feet.
Oaks, 2 kinds, 8 to 12 feet.
Laburnum, 2 kinds, 8 to 12 ft.
Poplars, 3 kinds, 8 to 12 feet.
Sycamores, 3 kinds, 8 to 12 ft.
Sorbus, 3 kinds, 8 to 12 feet.
Limes, 8 to 12 feet.
Hornbeam, 8 to 12 feet.

All the above are very fine and very cheap.

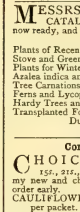
CHARLES NOBLE, BAGSHOT.

Vines.



E. G. HENDERSON AND SON offer splendid Fruiting Canes of all leading kinds. Planting Canes, 3s. 6d., 5s., and 7s. 6d. each; Golden Queen, Vem's Black Muscat, and Waltham Cross, 42s. and 60s. per dozen. Trade supplied.

Pine-apple Nursery, Maida Vale, W.



Mr. SHIRLEY HIBBERD describes it, after two years' trial, as "*the very model* of a gentleman's Potato."

Price 2s. 6d. per lb., 7 lb. 15s.

HOOPER AND CO., Covent Garden, London, W.C.

The Best Cucumber in Cultivation.

SUTTON'S DUKE OF CONNAUGHT. —*From* Mr. ROBERT DRAPER, *Gr. to the* Right Hon. Earl Vane, *July* 29.—"Your new frame Cucumber, Duke of Connaught, is the best kind I ever saw; suitable for exhibition."

Price, 2s. 6d. per packet.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

ROBERT AND GEORGE NEAL, Wandsworth Common, Upper Tooting, and Garrett Lane Nurseries.

These Nurseries comprise about 50 Acres of well-grown and a most useful assortment of STANDARD, ORNAMENTAL, FOREST, FRUIT TREES, and SHRUBS, all of which are in a most healthy and fit condition for removal. A personal inspection invited. CATALOGUES free on application.

The Nurseries are within a few minutes' walk of the Clapham Junction and Wandsworth Common Railway Stations.

Garden Seeds, Gladioli, &c.

IRELAND AND THOMSON have much pleasure in intimating that their Descriptive Priced CATALOGUE of VEGETABLE and FLOWER SEEDS, GLADIOLI, IMPLEMENTS, &c., is now ready, and will be sent post-free on application.

CELOSIA PYRAMIDALIS PLUMOSA, AUREA and RUBRA, per packet, 1s. and 2s. 6d. each.

EAST LOTHIAN INTERMEDIATE STOCK, in three colours, per packet, 1s., 2s. 6d., and 5s. each.

WHITE WALL-LEAVED EAST LOTHIAN INTERMEDIATE STOCK, per packet, 1s., 2s. 6d., and 5s. each.

Seed Warehouse, 20, Waterloo Place, Edinburgh.

Superb Ridge Cucumber.

CUCUMBER, Foster's X.L. Superb Ridge. —This variety is a remarkably fine hardy, long, dark green Cucumber, and one that can be recommended with the greatest confidence. It is very prolific, and keeps its colour to the last; all who have seen it growing are satisfied that it cannot be surpassed, and those who have tried it flavour are convinced of its excellent quality: length, 12 to 18 inches. Price 6d. and 1s. per packet: price to the Trade on application.

EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

Shallot Seed.

DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild; with ordinary treatment bulbs have been grown to and weighing in circumference—by far the best method of growing the Shallot. Treatment same as Onions. Price 1s. per packet. May be had of Seedsmen in sealed packets with fac-simile of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C., or

B. R. DAVIS, Nursery and Seed Warehouse, Yeovil.

CHARLES NOBLE, Bagshot, can offer the following :—

ROSES, Dwarf, 4s. per dozen, 25s. per 100, 210s. per 1000.
PEACHES and NECTARINES, dwarf-trained, 21s. per dozen.
RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1½ to 2 feet, 21s. per dozen, 150s. per 100.
,, ,, ,, for immediate effect, 2½ to 4 feet, and same through, 42s. per dozen, 300s. per 100.
,, Seedling, 6 to 9 inches, per dozen, 200s. per 100.
,, PONTICUM, 1½ to 2 feet, bushy, 6s. per dozen, 35s. per 100.
KALMIA LATIFOLIA, 1 to 1½ foot, buds, for potting, 75s. and 100s. per 100.
ANDROMEDA FLORIBUNDA, buds, for potting, 75s. and 100s. per 100.
ERICA CARNEA, very fine, 21s. per 100.

VINES.—Strong, well ripened Canes of the following—(Fruiting Canes of those marked F):—

Alicante,	F. Mill Hill Hamburgh,
F. Barbarossa,	F. Mrs. Pearson,
F. Black Frontignan,	each,
Black Prince,	Mrs. Pince's Muscat,
Buckland Sweetwater,	Muscat of Alexandria,
F. Burchard's Black Prince,	F. Muscat Hamburgh,
F. Calabrian Raisin,	Muscat Muscadine,
Chasselas Musqué,	F. Royal Muscadine,
Canon Hall Muscat,	Royal Vineyard,
De Coster,	Syrian,
Duchess of Buccleuch,	Tottenham Park Muscat,
F. Duke of Buccleuch, 7s. 6d. to 15s.,	F. Trebbiano,
Dutch Sweetwater,	Venetian Black,
Esperione,	F. Venn's Black Muscat, 7s. 6d. to 15s. each,
Golden Hamburgh,	F. Waltham Cross Seedling,
Golden Champion,	7s. 6d. to 15s. each,
Gros Colman,	F. White Frontignan,
Gros Doré,	F. White Nice,
F. Lady Downe's,	F. White Tokay,
F. Madresfield Court,	F. West's St. Peter's.

Fruiters, 10s. 6d.; medium, 7s. 6d.; Planters, 5s., except those priced.

CHARLES LEE AND SON, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, S.W.—Jan. 1877.

Calceolarias (James').

H. CANNELL begs to announce that he has a splendid stock of the following, established in 60's, just ready for shifting :—

CALCEOLARIAS, 2s. 6d. per dozen.
PRIMULAS, 2s. 6d. per dozen.
CINERARIAS, 2s. 6d. per dozen.

Smaller, 1s. per dozen less, and post-free. Special prices per 100 or 1000. H. CANNELL, Swanley, Kent.

FISHER, HOLMES, AND CO.'S GUIDE TO VEGETABLE SEEDS AND GARDEN REQUISITES, also of FLOWER SEEDS and GLADIOLI (which is published separately), has been forwarded to all their Customers. As there may be instances where they have not been received, F. H. & Co. will have pleasure in posting another on application.

Handsworth Nurseries, Sheffield.

SPECIMEN AZALEAS (Winter flowers).—An abundance of splendid flowers can be had in a week or two, or at once, by purchasing a few Specimen Azaleas, now opening flower. The plants are from 2 to 3 feet over, perfect shape, some hundreds of flowers and buds, which will last for months at this time of the year. All new and valuable sorts, 21s., 31s. 6d., and 42s. each, according to size and sorts. Eighteen plants only are for Sale. They are all worth double the money. Packages gratis for cash with order.

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JAMES VEITCH & SONS

HAVE MUCH PLEASURE IN DIRECTING ATTENTION TO

THIS VERY VALUABLE BROCCOLI

FOR AUTUMN AND EARLY WINTER USE.

This Plant is of robust but upright growth, and the heads, which are beautifully white, firm, and compact, are thoroughly protected by the foliage, and remain a long time fit for use. It will be found extremely valuable as a succession to our Autumn Giant Cauliflower, which has met with so much approval, and is now an established favourite in all gardens.

Mr. WESTCOTT, *Gr., Raby Castle, writing Nov.* 11, *says:*—"I am now commencing to cut some splendid heads of the new Broccoli you sent me for trial. It is evidently a variety distinct from any one I am acquainted with, and from its splendid protecting habit, short and immensely hard woody stem, I am under the impression it will stand uninjured many degrees of frost, which will ensure it to be a great acquisition as an early winter variety. The plants are of immense strength, and the heads, both in size, texture, and odour, all that can be desired."

Mr. PERKINS, *Gr. to* Lord Henniker, *Thornham Hall, says:*—"It comes in just as the Autumn Giant and other Cauliflowers are going out, and is, therefore, most invaluable. It is quite distinct, and also wonderfully self-protecting; some rows of it at this place withstood 13° of frost last night, November 23, 1874. Wherever a long succession of Cauliflower is required this must be the one for late use."

Mr. JAMES ADAMSON, *Brynkinalt, writing in the "Journal of Horticulture" of January* 4, *says:*—"This variety of Broccoli seems to me to be quite distinct from any other I know, and, like the Autumn Giant Cauliflower, is a grand acquisition to our list of autumn and early winter vegetables. The stem is short and stout, the head well protected, close, and compact, and of excellent size for table use. I cut the first early in November, and am still cutting as wanted now (December 22). We had 10° frost in November, and while numbers of Autumn Giant Cauliflowers were destroyed, this Broccoli was uninjured. To those who have not grown it the past season I would say—do so the next, and you will not be disappointed."

Mr. MCINDOE, *The Gardens, Hutton Hall, Guisborough, December* 30, 1876:—"I beg to take this opportunity of congratulating you upon sending out such a splendid acquisition as your Self-protecting Autumn Broccoli is turning out to be. I consider it by far the best addition to our vegetable list for many years. In June last we planted-out 300, which began to be ready for cutting about the middle of November, and from that date until now we have been cutting from six to ten heads daily. When vegetables are wanted in quantity during November and December, no gardener will be safe without this choice Broccoli."

Mr. W. JOHNSON, *Bayham Abbey, writing to the "Gardeners' Chronicle" of December* 30, *says:*—"At this season of the year Cauliflower is in constant demand, and to find a reliable variety that will fall-in from the middle of November onwards is a great boon to gardeners. In this matter we have Veitch's Self-protecting Autumn Broccoli, a gem of the first water, and I think it requires nothing further from me than to say it is simply unique."

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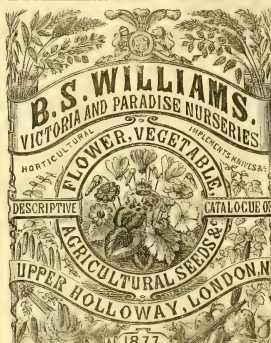
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HOLLIES, Green, 1 foot, 20s. per 100.
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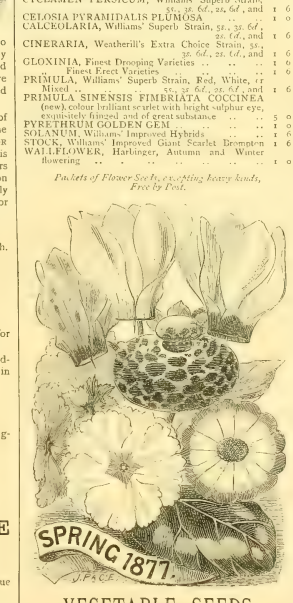
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UPPER HOLLOWAY, LONDON, N.

SATURDAY, FEBRUARY 10, 1877.

THOMAS ANDREW KNIGHT.

CIRCUMSTANCES render the publication of a portrait of THOMAS ANDREW KNIGHT particularly appropriate at the present time (see p. 177). In the first place, as was the case with the portrait of Hales, the founder of vegetable physiology in this country, and which we gave in a recent number (p. 16), there is a special fitness in calling to mind their services to horticulture at a time when a laboratory — the great want of our times from the point of view of vegetable physiology —has just been erected at Kew. In the next place, the publication of the portrait of Knight at this juncture may serve as a protest against a policy which would so degrade and fetter the Royal Horticultural Society as to prevent it proceeding in the useful, honourable career that it did when Knight was its President. Thomas Andrew Knight was born of a good Herefordshire family in 1759, and died on May 11, 1838. The story of his life is written in "A Selection from the Physiological and Horticultural Papers" published by him in the *Transactions* of the Royal and Horticultural Societies. With our crowded columns, it is impossible for us to offer a sketch of his career, but this omission is the less important from the existence of the memoir just quoted. We can only allude to a few points of salient interest. He appears to have been of such shy and retiring habits that, had it not been for his introduction to Sir Joseph Banks, it is probable that vegetable physiology would have not had the services of one of its most original expositors, and horticulture would —so far as this country is concerned—have been deprived of almost the only modicum of science, so far as that relates to plant-growth, it has possessed till of late years. Knight seems to have read but little, and to have known but little of what his predecessors had done; and whatever may be the disadvantages of this, it had its compensating advantage in a freedom from preconceived opinion and from what has been termed the "dust of the schools."

In 1804 the Horticultural Society was founded by Mr. John Wedgewood, Sir Joseph Banks, and others. Knight was one of the original members, the Earl of Dartmouth being President, and Mr. Wedgewood Secretary. In 1811, after the death of Lord Dartmouth, Knight was elected President of the Society, and held that office for the remainder of his life. Mr. Sabine became Secretary shortly after Mr. Knight's election as President, and "his zeal and activity, supported by the reputation of the President, gave a new impulse to its exertions, and enlisted among its supporters not only men of science and practical gardeners, but nearly all the rank and wealth of the kingdom. With the ample means thus placed at the disposal of the Society information and produce were collected from all parts of the world, and were distributed with unsparing liberality; and by the sound physiological principles taught by the President and the unceasing activity of the Secretary, a complete revolution was effected in the science and practice of gardening, and a great public benefit was conferred throughout the kingdom by inducing many in every class of life to employ their leisure hours in an innocent and healthy pursuit. . . Long before his death, Mr. Knight could safely contemplate this Society as a permanent means of applying to the

benefit of the community those physiological principles which he had laboured through life to establish."

Mr. Knight's first paper to the Royal Society was that famous one in which he maintained *inter alia* that the life of a graft or of a cutting was limited like that of the stock from which it was taken, and in that way he accounted for the decay and degeneration of many old varieties. Though this opinion was stated with great ingenuity, and backed up by many facts, yet the balance of evidence has shown that in this particular Knight was in error. Of more practical importance were his researches on crossing fruit trees for the purpose of obtaining new and improved varieties. To Knight has sometimes been attributed the first practice of hybridisation, but this is an error. Camerarius a century, and Linnæus half a century before Knight, had suggested if not practised it, while Kölreuter, forty years before Knight, actually put it into practice. To Knight's labours in 1798 must, however, be attributed the practical realisation of the idea so far as fruit trees are concerned.

Among his other papers, to which we can only cursorily allude, are those curious ones, wherein by sowing seeds on wheels revolving vertically and horizontally, he was enabled to determine that the descent of the radicle into the ground was due to gravity, and to demonstrate the effect of centrifugal force upon seedlings. The rise of the sap, the channels through which it passes, its change in the leaves, the consequent formation of wood, bark, and buds; the growth of roots according to the nature of the soil, and the fact that fibrous roots are not always, as Mirbel and others thought, annual, but only in certain plants—these were among the points which occupied Knight's attention. Knight was no microscopist, indeed in his day the microscope was a rare instrument, and it had not attained to the perfection it now has. Hence it is that many of his notions are no longer tenable, being contradicted by the minute structure of plants, of which he knew comparatively little. Knight's papers on physiological horticulture are, for the most part, based on his scientific investigations, and are indeed the application to practical ends of those researches. His paper before the Horticultural Society in 1804, on the means of producing new and early fruits, is a case in point.

These practical papers are very numerous. They form the mine from which Lindley and other writers on scientific horticulture have borrowed largely, and furnish excellent examples of the kind of research which a horticultural society should promote. We do not cite more of these papers because they are probably well known to many of our readers, and much that Knight taught is now interwoven into the daily practice of horticulture. It may, however, be of interest to add a list of the varieties of the best fruits raised by him.

Apples.—Spring Grove Codling, Downton Lemon Pippin, Herefordshire Gillyflower, Grange Apple, &c.

Cherries.—Elton, Waterloo, and Black Eagle.

Strawberries.—Elton and Downton.

A large and long-keeping red Currant.

Plums.—Ickworth Impératrice, a large purple Plum not named, and two improved Damsons.

Nectarines.—Impératrice, Ickworth, Downton, and Althorp.

Pears.—Monarch, Althorp Crassane, Rouse Level, Winter Crassane, Belmont, and many others.

Many excellent and productive varieties of Potatos, of which the only one named is the Downton Yam.

The Knight Pea, and improved varieties of Cabbage.

MIMICRY IN FUNGI.

FOR many years past I have observed a phenomenon in connection with the higher fungi which, had it been observed in the case of animals, would, I have little doubt, been put down under the head of "Protective Resemblance." Quite recently a case was published in the columns of the *Gardeners' Chronicle*, where Agaricus fastibilis, a poisonous fungus (greatly resembling the common Mushroom, but widely separated by anatomical characters), grew upon a Mushroom bed. During the past week a correspondent of the *Gardeners' Chronicle* has sent a dense mass of fungi from a Mushroom bed to be named. At first sight the plants of which the mass consisted had apparently all the characters of the subgenus Clitocybe, and I was inclined to refer them without doubt to Agaricus dealbatus, because this white-spored plant (which generally grows in Fir plantations) is in the habit of occasionally forsaking its normal place of growth and appearing on Mushroom beds. The Mushroom-bed variety of Agaricus dealbatus is well known, as (when in this position) it always grows in groups, and the caps of the fungi are much lobed and undulated. My surprise, therefore, was great, on examining the spores of the plants, to find them not white but pink: the fungus was not A. dealbatus but A. orcella. Both species have exactly the same white, lobed and undulated tops, the same anatomical characters, and the same strong fungoid odour; moreover, both are edible.

In the *Gardeners' Chronicle* for November 16, 1872, p. 1528, I published several instances of a similar mimetic habit in fungi, as—1. Cantharellus carbonarius and Agaricus atratus, two totally different fungi, with strong external resemblances; these commonly grow in company on wood ashes. 2. Agaricus fascicularis, A. alnicola, and A. conissans, diverse fungi, with almost exactly the same coloration and habit, which grow in company on stumps. 3. Agaricus carbonarius and A. spumosus, found on wood ashes, &c.

Every fungologist is acquainted with Agaricus cucumis. It is known in an instant by its strong odour of stinking fish; it grows upon the ground and upon fragments of dead wood, and has red-brown spores. Now I have found a plant with every anatomical character of A. cucumis, in exactly the same habitat, with the same abhorrent odour, but with white spores. According to Fries, this colour of the spores makes the plant another species belonging to a different section of Agarics. Is it so, or is it possible for a brown-spored Agaric to have a white-spored variety? There are white varieties of several of the larger fungi, and every mycologist will remember the case of A. cretaceus which has been placed at various times by different authors in the white, the pink, and the purple-brown spored sections.

Agaricus parilis, a white-spored Agaric, and A. popinalis, a pink-spored species, are distinct, but they have strong external resemblances, and I have frequently found them growing together. I have seen the white-spored Agaricus ostreatus and the pink-spored A. cuosmus so much alike in general aspect that it was simply impossible to distinguish one from the other without reference to the spore-colour, and the odour has been the same in both. With me they grow on the same trees, and at the same season of the year.

Had I time to refer to my drawings and notes, I could give many other instances of "mimicry" (or what might pass as "mimicry") in fungi. *W. G. Smith.*

NITROGEN AND VEGETATION.

IN a lecture by Dr. J. H. Gilbert, delivered at South Kensington, which has recently appeared in these columns, the subject of the agricultural statics of nitrogen has been very fully treated. The lecturer showed, from the Rothamsted experiments, what quantity of nitrogen is actually found in various agricultural crops grown for many years without any supply of nitrogen in the manure; he discussed the various natural sources of nitrogen which are available to plants; and, finally, he considered the losses of nitrogen which the soil suffers by drainage, and possibly in other ways. It is clear that if our knowledge of the subject were complete, we should be able to account for the increase of nitrogen in a soil and crop at harvest by merely summarising all the gains and losses of nitrogen which had taken place throughout the year. At present, however, so much information is still needed as to the supply and the loss of nitrogen, both in the case of soils and plants, that no such account can be attempted, even in general terms. Fresh light on such a subject is therefore especially welcome. We propose to give in the present paper a short account of some recent French investigations of peculiar interest: they were published for the most part after the delivery of the Kensington lecture.

It is a well-known fact that ammonia is one of the substances which are capable of supplying nitrogen to plants; every farmer is indeed familiar with the potency of ammoniacal manures. It has also been long known that air contains an exceedingly small quantity of ammonia, and that this substance is also found in rain, dew, and all terrestrial waters, including the ocean. Soils also contain very small quantities of ammonia. This wide distribution of ammonia is due to the fact, that both free ammonia, and its carbonate, are gases which diffuse rapidly in the atmosphere, and are thus carried to every part of the globe.

With these general facts chemists have long been acquainted, but the laws which regulate on the one hand the volatilisation of ammonia from water or soil into the air, and on the other its absorption from the air by water and soil, have never been made the subject of study. M. Th. Schlösing has quite lately treated this subject in a masterly manner in a series of papers read before the French Academy of Sciences. By logical deductions from known facts, and by an extended series of new and ingenious experiments, he has indicated the laws under which the transference of ammonia takes place. The following is an outline of his general conclusions.

When air containing ammonia (or carbonate of ammonium) comes in contact with pure water, the ammonia is absorbed by the water till a point is reached at which the ammonia in the water and air are at the same tension. At this point the ammonia is probably by no means equally distributed between the two, but the air and water are then in equilibrium. Did the water contain more ammonia it would yield it to the air; did the air contain more ammonia it would yield it to the water. This equilibrium is at once disturbed by a rise or fall of temperature. If the temperature rises, the tension of the ammonia in the water is increased, and ammonia passes into the air until a new equilibrium is established. If the temperature falls, the contrary takes place, and ammonia is transferred from the air to the water.

M. Schlösing has constructed an apparatus in which air containing a known proportion of ammonia can be passed through water, and the quantity of ammonia taken up by the water ascertained. He has experimented with pure water and with sea water, using air containing those proportions of ammonia which are actually present in the atmosphere. He has also varied the temperature from near the freezing-point to the highest heat attained by a tropical ocean. By such experiments he has succeeded in reducing to a mathematical expression the laws which regulate the interchange of ammonia between air and water.

These fundamental laws being known, it is now possible to calculate the percentage of ammonia in the rain formed by the cooling of any warm wind of known composition, and to solve by calculation all questions as to the distribution of ammonia between air and water of known tension. The result of these calculations is to show the impossibility of rain ever completely washing out the gaseous ammonia from the air through which it falls. The whole of the nitrate of ammonium in the air may indeed be removed by rain, as this salt must be assumed to exist as floating particles of dust, but the gaseous ammonia can never be thus abstracted. Indeed rain falling from a colder to a warmer region of the atmosphere must frequently give up ammonia on entering the warmer stratum. Schlösing has, in fact, observed that the air is sometimes richer in ammonia after rain. Calculation also shows that the rain successively formed during the cooling of a warm wind will become richer in ammonia as the cooling progresses. This is again consistent with the fact that the rains of winter are sometimes richer in ammonia than those of summer, although in winter the air contains less ammonia than in summer time.

Some of the most important of Schlösing's conclusions are those drawn from experiments on sea-water. The ammonia in sea-water exists in a diffusible form, and not in the state of fixed salts as supposed by some chemists; sea-water, therefore, readily parts with its ammonia to air when the tension of ammonia in the water is greater than that in the atmosphere. In the tropics, where the surface water is raised to a high temperature, the conditions are most favourable for a transference of ammonia from the ocean to the atmosphere. Schlösing believes that the principal source of the ammonia of the atmosphere is to be found in tropical regions; here the tension of the ammonia held by water or soil is so much

increased by the high temperature that a far larger proportion of the ammonia must pass into the atmosphere than in colder regions. Once in the atmosphere the ammonia is immediately diffused in all directions, and is carried by winds to all quarters of the globe. In Schlösing's determinations of the ammonia present in air, he found much more in southerly winds than in northerly, especially in winter time.

The ammonia of the atmosphere Schlösing regards as of primary importance in the nutrition of natural vegetation. That plants are capable of assimilating gaseous ammonia Schlösing himself has shown, in confirmation of the earlier results of Sachs and Meyer. The absorption of gaseous ammonia by the leaves of plants is, however, not the only mode in which the ammonia of the atmosphere becomes available for nutrition—ammonia is also absorbed from the atmosphere by soil. The action of the soil is probably more important than that of the living plant. *R. Warrington.*

(*To be continued.*)

THE GENUS AGAVE.

The illustrations which will accompany the present series of papers are selected from photographs which were made three or four years ago of the principal specimens in the collection of Mr. Wilson Saunders. In selecting these, as well as in planning the *Refugium*, the principal idea of Mr. Saunders was to place on record plates of those plants of which it was not possible to preserve satisfactory specimens in a herbarium. In Agave and its allies this seemed particularly desirable, because there are a very large number of closely-allied forms, of very few of which figures have been published. Accordingly, Mr. Saunders had photographed all the different forms in his collection which were in a sufficiently mature condition to make it worth while to do so. Altogether about sixty forms were thus recorded, and at the same time I made notes upon the specimens. Mr. Saunders has presented to theKew Herbarium a complete set of the photographs, and it has been thought that many readers of the *Gardeners' Chronicle* would feel an interest in having an illustrated account of the genus to refer to. My original idea was simply to print with the figures the descriptions of the plants to which they refer. But now that we have lost General Von Jacobi, who devoted himself to the group with so much enthusiasm and perseverance for a long course of years, it seemed desirable to attempt something more than this, little as I feel myself competent for the task. The naming of these plants has for so long rested in General Jacobi's hands that, as so often happens in similar cases, others have neglected them, and now that he is gone we are in great danger of drifting into a state of utter confusion.

Any one accustomed to determine plants knows how difficult it is to work from descriptions alone, and here we have a very large number of described species, of which there are neither figures nor herbarium specimens to fall back upon. It is greatly to be wished that some one who has the necessary time and opportunity would step forward and take up the matter. In the meantime, while waiting for the appearance of this coming monographer, having, after studying the collection of Mr. Saunders, gone through our own collection at Kew with Jacobi's book in hand, and having also studied the very rich series belonging to Mr. J. T. Peacock at Hammersmith, I propose to take advantage of this opportunity to give a summary descriptive enumeration of all the species with which I am acquainted, treating the matter from the point of view of a general botanist.

For a non-specialist to have his say about them is, perhaps, in the present state of things, the best thing that could happen, for there cannot be any doubt that a large proportion of the so-called species to which names have been given cannot be considered as established on safe grounds. Many rest solely upon notes taken upon one or a very small number of flowerless individuals, and no doubt when they are fully studied in a mature and flowering condition a great many of the 155 names that stand in General Jacobi's list will have to be placed as varieties or mere synonyms. Besides the writings of Professor Karl Koch and General Jacobi—the latter contained in his well-known monograph that came out in the *Hamburg Gartenzeitung* from 1864 to 1867, and two supplements which appeared in the *Abhandlungen der Schlesischen Gesellschaft*—there is an excellent recent paper on the Agaves found within the limits of the United States by Dr. G. Engelmann in the third volume of the *Transactions of the Academy of Science of St. Louis*. Jacobi's latest catalogue will be found in Regel's *Gartenflora* for the year 1868, at p. 346.

Key to the Genera.—Agave and its three American allies may be distinguished from one another by the following characters, the only other genus that approximates to them being the Australian Doryanthes :—

Perianth forming a distinct tube above the ovary.	
Segments of the perianth oblong-lanceolate, as long as or longer than the oblong or funnel-shaped tube. Stamens much exserted.	Agave.
Segments of the perianth minute, oblong-deltoid; tube long, cylindrical. Stamens included.	Bravoa.
Perianth slit down to the ovary, or very nearly so	
Segments of the perianth broad oblong, spreading horizontally. Filaments much swollen and tuberous at the base.	Furcroya.
Segments of the perianth linear-lanceolate, permanently connivent. Filaments uniform in the lower half.	Beschorneria.

Subgenera of Agave, founded on Inflorescence.—The best primary subdivision of the genus Agave is furnished by the inflorescence, in which we have the three following well-marked types, which were defined long ago by Salisbury (*Genera of Plants*, edit. Dr. J. E. Gray, p. 78) as three distinct genera.

Subgenus I. Euagave (Agave, Salisb.).—Flowers in clusters, crowded at the end of branches, which form a broad deltoid chandelier-like panicle. Examples—A. americana, A. Scolymus.

Subgenus II. Littæa.—Flowers in pairs (rarely in threes), arranged in a dense simple cylindrical subspicate panicle. Examples — A. geminiflora, A. filifera.

Subgenus III. Manfreda. — Flowers solitary, arranged in a lax simple spike. Examples—A. virginica, A. maculata.

These correspond to the three sections of Dr. Engelmann, who calls them Paniculatæ, Geminifloræ, and Singulifloræ, and as the structure of the perianth is quite uniform in general character in all the three, we certainly cannot properly regard them as divisions of a higher than sectional value. Although I would much rather use these as my primary subdivisions, if it were practicable, yet as the inflorescence of a large number of the species is not known I shall be obliged to follow Jacobi's plan of adopting a sequence founded upon leaf character. Where I give between the generic and specific name of the plant the word Euagave, Littæa, or Manfreda in brackets, it implies, therefore, that the inflorescence is known, and that it conforms to the character of the type as just defined ; and where no subgenus is mentioned, it implies that I am not aware that the inflorescence has been noted. The Manfreda inflorescence is restricted to one peculiar type of leaf, but Littæa cannot be known from Euagave by any foliage characters, and both as regards the leaves run through a wide range of variation.

Groups of Agave founded on Leaf-character.—The best groups founded upon leaf-character, which I am able to construct, run as follows, viz. :—

Series I. Coriaceo-carnosæ.—Texture of the leaf rigid, not fleshy nor yielding to the touch when mature. End spine large, hard and pungent. Teeth usually large and very horny, rarely small, or the edge minutely denticulate or filiferous.

I. Group Filiferæ. — Edge of the leaf splitting off into distinct threads. Examples—A. filifera, A. schidgera.

II. Group Marginatæ.—Edge of the leaf furnished all the way down from the top to the bottom with a distinct horny border, of the same texture as the teeth. Examples—A. lophanta, A. univittata.

III. Group Submarginatæ.—Edge of the leaf with a distinct horny border as in the last group, but beginning at the top and failing to reach the bottom. Examples—A. applanata, A. Hookeri.

IV. Group Americanæ.—Edge of the leaf without any distinct horny border ; teeth large. Examples —A. americana, A. potatorum.

V. Group Rigidæ.—Edge of the leaf without any distinct horny border ; teeth small, but distinct, deltoid. Examples—A. rigida, A. xalapensis.

VI. Group Striatæ.—Edge of the leaf without any distinct horny border, and only minutely serrulate. Examples—A. striata, A. dasylirioides.

Series 2.—Carnoso-coriaceæ.—Texture of the leaf thick, fleshy, and yielding to the touch when mature. End spine small, scarcely at all pungent. Teeth never large, as is commonly the case in the first series, small but distinct, deltoid, horny at the tip, the edge sometimes filiferous, minutely serrulate or subentire.

VII. Group Geminifloræ.—Edge of the leaf splitting off into distinct threads. Example—A. geminiflora.

VIII. Group Aloideæ.—Edge of the leaf furnished with distinct deltoid teeth $\frac{1}{8}$—$\frac{1}{6}$ inch long. Examples —A. Celsiana, A. Sartorii.

IX. Group Gasteroideæ.—Edge of small ensiform leaf minutely serrulate. Examples—A. virginica, A. variegata. (This is the group with the Manfreda inflorescence.)

X. Group Subintegrifoliæ.—Edge of the large oblong-spathulate leaf minutely serrulate or subentire. Examples—A. attenuata, A. Ellemeetiana.

Series III. Flexiles, or Yuccoideæ —Texture of the leaf thin, firm, flexible, like that of a Yucca. End spine small, slightly pungent. Teeth always distinct, small or moderately large. Only a single group, XI. Examples—A. vivipara, A. yuccæfolia.

Most of these eleven groups contain only few species, the large ones being the second, fourth, and eighth. *J. G. Baker.*

PLEASANCE SMITH.

This lady, who died on the 3d inst., in her 104th year, has claims upon the respectful memory of our readers. Apart from her great age—which is in this case sufficiently authenticated—Lady Smith, for her own sake and that of her husband, deserves a tribute of respect from all interested in natural history. We cull some particulars of her life from the *Times* of the 5th inst., and to them we are enabled, through the kindness of Mr. Kippist, to add some few details :—

"She was born in 1773, two years before the outbreak of the American War, sixteen years before the fall of the Bastille. At the age of twenty-three (1796) she was married to Sir James Edward Smith, who was then a young physician of limited means, but had the courage to purchase on his own responsibility the collections and library of Linnæus, and thus became the founder and first President of the Linnæan Society. Sir James found in his young wife a helpmate who took the deepest interest in his pursuits, and their house at Norwich became the centre of the literary and scientific society which then distinguished that ancient city. He died in 1828, so that Lady Smith, after thirty-two years of wedlock, lived in widowhood for nearly half a century ; for twenty-eight of those years she resided in the house built by her father in the High Street of Lowestoft. She had a constitution without a blemish ; she hardly knew what illness was till within the last two or three years ; she had preserved almost all her teeth, and her eyesight was good enough to enable her to read reports of speeches in the *Times* ; her hearing remained almost unimpaired to the very end. To the time when her eyesight began to fail her handwriting was of that clear and beautiful kind which in these days is seldom seen. Even when her eyes grew dim she continued to write letters to those she loved, and though the lines disclosed the difficulty she had in carrying her pen evenly along the paper, the thoughts and language showed no decay of vigour in her mind. In youth she was extremely handsome, as may be seen from a picture of her as a gipsy, painted by Opie, soon after her marriage. She preserved many traces of this beauty, and at the age of 100 her undimmed eyes and fresh colour never failed to call forth the admiration of those who saw her. But what still more caused admiration was the unabated freshness and youthfulness of her sympathies and affections."

The history of Sir James Smith's purchase of the books and collections of Linnæus, of the chase of the treasure by a Swedish vessel sent to recover it for the Swedish nation, which had allowed so great a prize to become the property of a foreigner—all this is well known to naturalists. What follows is not so well known outside the Linnean Society, and therefore it is worthy of mention here. Sir James Smith was the founder (1788) and first President of the Society, and the latter at his death became the possessors by purchase of the library and collections of the great Swede. Lady Smith kept up to the last an unabated interest in the prosperity of the Society, and from

time to time corresponded with its officers, and contributed memorials and relics of Linnæus, as well as of her husband.

Amongst other donations to the Society may be mentioned the correspondence of Sir James Edward Smith, beautifully mounted and arranged, and occupying nineteen quarto volumes, with occasional explanatory notes written in that neat roundhand writing which was characteristic of her even to the last. From these notes and letters in great measure were compiled the published memoirs of Sir James Smith. In order to make the gift the more complete, the officers of the Society requested Lady Smith to favour them with a portrait of herself, to be inserted among these letters; and in complying with this request Lady Smith, in September, 1872, forwarded a photographic copy of the portrait by Opie above alluded to, and which does indeed represent a lady of singular beauty. On the back of this photograph is written by Lady Smith herself this inscription—which is the more interesting as she was then in her hundredth year—"PLEASANCE SMITH, Lowestoff, b. 11 May, 1773, copied from Opie's portrait 1798."

In May, 1869, she presented to the Society a curved rhinoceros horn, accompanied by a note, mentioning the fact that the horn had been sent to Linnæus from China, and had been described by Sir James E. Smith in his *Exotic Botany*, and which is figured in Lady Smith's *Memoir* of her husband, vol. ii., p. 230. The hollow base of the horn is carved to represent a Lotus (Nelumbium) leaf, and on its surface are representations of the flower and seed-vessels of the plant as well as of the Litchi, the Mangosteen, and other fruits. On another occasion she presented to the Society Toland's *Life of Milton*, which had formerly been the property of Linnæus, accompanied by a letter which showed, as almost all her letters do, how she retained a cheerful even playfully happy tone of thought and expression into extreme old age. Alluding to the *Life of Milton*, just referred to, she says she gives the book to the Society without apprehension, inasmuch as it is "too small to be an incumbrance, and too valuable not to be welcome."

In May, 1873, Mr. Bentham being then President of the Society, a congratulatory address on the part of the Fellows was sent to Lady Smith on the completion of her hundredth year, and a characteristic letter was received in reply.

It is quite clear, from the statements of those who had the privilege of knowing her personally, as well as from her letters, that the grave has closed over one not more remarkable physically than for the virtues, the graces, and the charms of her mind.

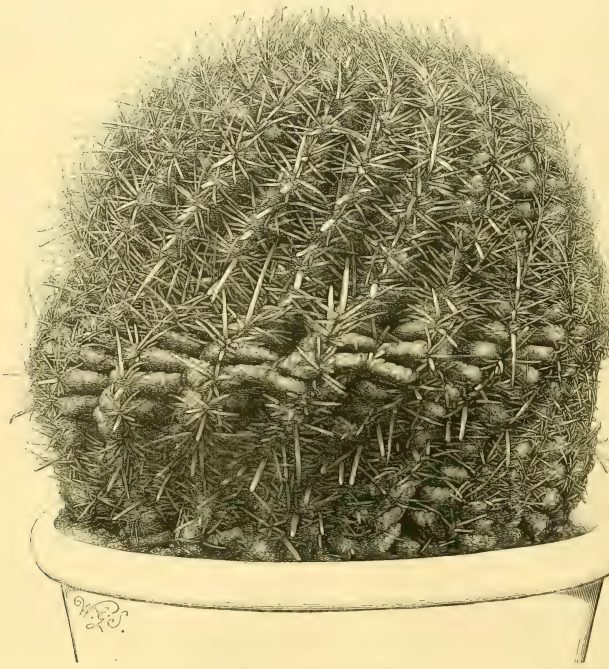


FIG. 26.—ECHINOCACTUS VIRIDESCENS.

New Garden Plants.

ECHINOCACTUS VIRIDESCENS.*

Some plants of this striking Cactus have lately been introduced by Mr. J. T. Peacock, to whose courtesy we are indebted for the privilege of illustrating the species. Dr. Engelmann, the learned monographer of the Cactaceæ of the Mexican boundary, has also kindly identified the plant for us so far as the materials before him would allow. The plants are usually simple, but when injured by fire "they branch from the base, and form a pile of prickly balls." The flowers are greenish, the fruit nearly an inch long, blueish, and of the shape and taste of a Gooseberry. E. viridescens is described in the latest recension of the Californian flora (*Botany of California*, vol. i.; *Polypetalæ*, by W. H. Brewer and Sereno Watson; *Gamopetalæ*, by Asa Gray, 1876, p. 245) quoted below.

TELIPOGON CRŒSUS, *Rchb. f.**

The Telipogons form a wonderfully æthereal genus. They have narrow thin stems with distichous leaves, now crowded together, now distant. The generally ancipitous racemes bear very conspicuous bracts with dorsal keels; and the flowers are

* *Echinocactus viridescens*, Nut.—Heads solitary (1–7 in. diam., 3–6 in. high), globose or depressed, with about thirteen obtuse tuberculated ribs, and a woolly depressed summit; spines stout, reddish, straight, or recurved, all annulated, about twelve, radiating, and four to six stouter central ones; flowers greenish, 1½ inch long, with numerous (twenty-five or more) 1 undish, denticulate, imbricated sepals on the ovary, as many on the tube, and about the same number of oblong, obtuse, denticulate petals; stigmas twelve to fifteen, linear; berry pulpy, green, scaly, with numerous small pitted seeds.—Torr. and Gray, p. 554; Eng. Cact. Mex. Bound. 214, t. 29. The plant is said to be cultivated in Europe as *E. californicus*. Botany of California, p. 245.

Telipogon Crœsus.—Aff. T. Hausmanniano Rchb. f.: sepalis trianguliis acuminato-aristatis trinervis supra nervum medium extus carinatis, lepalis cuneato-rhombeis obtusangulis dentato antice bene brevi ter, latis quinquenervis, nervis exterioribus nervillis ascendentibus rete efficientibus, nervis lateralibus ramulosis, labello valde transverso, labello antice rotundato vix apiculato; nervis tredecim rete nervilium exceptis margine denticulato; base velutina, columna calva.—Nov. Granat. det. C. Baumhuber (dedit anno 1869). Linden and Smithsonia.—Telipogon Crœsus, Rchb. f. in *Linnæa*, xli., p. 52.

usually very striking. The narrow triangular sepals are totally hidden by the thin, very broad, grand petals, and the lip. Originally two species were discovered by Humboldt and Bonpland; by-and-bye, after a long interval, a few more came. Lately, however, it became necessary to publish no less than twenty-seven species at once. My collection at the present time contains more than half a hundred species, many of them due to Messrs. Wallis, Roezl, Klaboch, Krause, Bruchmüller, and Patin.

These beautiful butterfly-like things—provided we had such creatures with three wings!—have yellow flowers and a short column, now full of violet hairs, now with a fabulous crown of striking forked hairs, now with white senile hairs, seldom quite naked. The variation of the petals and lip, too, is very great; a considerable number have those organs equal, others unequal; some from the revolutionary States of Colombia. Amidst these is, I am glad to say, Telipogon Cræsus, the first flowers of which Mr. Low gave me many years ago. It is one of the best species of the genus, well covering with its flowers a modern German five-shilling piece, yellow, with a dark network. It would be a great success to secure the Telipogons in Europe, since they afford some new types. Their cousins, the Trichoceras, are rather pretty, and much easier to introduce for their more plump bulbous growth, but their flowers are too small; while the majority of Telipogons have much larger flowers. There is no doubt that they would prefer a very cool treatment. Director Linden, who was the first modern traveller who met with Telipogon, indicated them as growing in their native country at an elevation of 10,500 and 7840 feet (see Lindley, *Orchideæ Lindenianæ*, p. 23). *H. G. Rchb. f.*

Another magnificent garden, or rather park, is in course of completion on the heights of San Miniato, from which a fine view of the city and its surround-



FIG. 27.—VIEW IN THE MAIN ENTRANCE OF THE BOBOLI GARDENS, FLORENCE.

are as thin as the thinnest tracing paper, others have a stronger texture; some have few, others numerous nerves, and these are either quite simple or connected by transverse bars. There are some with many projecting small dots on the side of the nerves.

At present the writer of these lines only knows of a single case of a Telipogon having flowered in Europe. It was in 1847, when Messrs. Veitch flowered Telipogon obovatum, Lindl. The late A. Bruchmüller, who discovered several new species on the old hunting-grounds of collectors at Ocaña (Cræsus, hastatus, auritus, Alberti, Bruchmülleri), made it a point to try to bring the Telipogons alive. Sitting on mule-back, he had his small cases with his pets before him, but they died when he came to the hot regions. I have now a reasonable hope of our at length seeing the plants alive, since Mr. W. Bull sends me specimens to name, of Orchids brought home by Messrs. Carder and Shuttleworth

FLORENTINE GARDENS,

AT the back of the Pitti Palace, and immediately adjacent to the botanical garden, are situated the famous Boboli Gardens. From the higher part of them a fine panorama of the city is obtained, enriched by the pleasant foreground of the garden. Grand specimens of Cupressus pyramidalis break the beautiful distance and rise out of a charming labyrinth of terraces, pools, fountains, sculpture, and noble walks deeply sheltered by avenues of Oriental Plane, Quercus Ilex, and Laurus nobilis. The evergreen Oak is the *pièce de résistance* of the garden, here trimmed into wall-like masses enclosing long vistas, again trained overhead into a complete arcaded shelter from the summer sun, and occasionally rising up as separate individuals above the general level of the sea of leafy verdure. One notable feature is the absence of bright colour. There are scarcely any flowers in the garden, and yet nothing can be more pleasant to the eye than the arrangement, by judicious forethought, of scarcely half-a-dozen species of common trees.

The gardens bear a matured aspect of antiquity, and are of great age. They were planned in 1550, by H. Tribolo, under Cosimo I., and carried out, in the latter half of the sixteenth century, by Buontalenti. Many of the statues are restored antiques, and include four unfinished works by Michael Angelo, said to have been intended for the tomb of Pope Julius II.

Another magnificent garden, or rather park, is in course of completion on the heights of San Miniato, from which a fine view of the city and its surround-

Crocus" of British gardens, which Dean Herbert supposed was derived from it, it is a weedy little plant, and on looking through Gussone's herbarium at Naples I was fortunate in finding a specimen from a native habitat on the road between Ariano and Monte Calvello, near Salerno, labelled pusillus var. b. Tenore, precisely identical with our garden plant; so that there is little doubt that the Scotch Crocus was derived from South Italy. Intermixed with the Crocuses at the Cascine was Colchicum Levieri, apparently of smaller habit than C. autumnale, but its flower is unknown to me.

On March 3 Mr. Sommier accompanied me on a pleasant excursion to the north-west of the city. Passing out of Florence by the Via Bolognese we visited the Villa Herzen, the grounds surrounding which are interesting to the botanist as the habitat of various bulbous plants. In the terraced Olive gardens and vineyards both the white and blue varieties of Hyacinthus orientalis occur in great profusion. There are also five or six species of Narcissi, including Bertoloni, Tazetta, odorus, italicus, papyraceus, and a species allied to papyraceus of shorter and more robust habit and rather larger flowers, bulbs of which I obtained through the courtesy of Dr. Herzen. Gagea arvensis is an abundant and attractive little plant in the fields surrounding Florence; and Narcissus etruscus, a species separated by Professor Parlatore from N. Tazetta, occurs on the south side of the city.

From the Villa Herzen we ascended to the village of Pratolino, passing *en route* the grounds of Prince Demidoff, who is one of the most successful cultivators of stove plants in Italy.

In a wood about half a mile beyond the village of Pratolino the lowland form of Crocus vernus occurs in the greatest profusion, including an endless series of varieties from pure white to deep purple, corresponding with nearly every variety produced by the Dutch cultivators. Scarcely two individuals were precisely alike, and seminal variation must be a constant character of the species. The ground was covered with a dense matting of dead leaves, and often through seven or eight thicknesses the flowers had penetrated without the slightest displacement or deviation. The leaves of the late winter's fall were tough, and as yet undecayed, and it seems difficult to believe that the penetrating force of the delicate flowers is merely mechanical. Mr. Sommier informs me that a much larger form of Crocus vernus is found at higher elevations about Florence, and specimens sent me by Mr. Groves of Florence, from Monte Marone, in the Abruzzo, obtained at an elevation of 6500 feet, are larger than the Pratolino form. A parallel variation in size occurs in the case of Crocus minimus in Corsica, the typical small form being restricted to low elevations, whilst on the mountain tops, from 2500 feet up to 6000 feet, it attains the size of Crocus versicolor. *Geo. Maw, F. L. S.*

Florists' Flowers.

"THE AURICULAS are delightfully on the move," wrote a well-known cultivator a few days ago. This was the experience of a northern locality; here in the South they also commenced to move days ago. A revived root-action is taking place, and this manifests itself in an awakening growth. It is the occasion when the Auricula cultivator braces himself to action, for his plants now need all his care and attention. One important duty required at his hands is that of top-dressing the plants. This is of great value to them, for during the autumn and winter the roots fill up the body and bottom of the pot. When they commence to root in spring they are put forth from the stem of the plant just beneath the soil, and they are at work near the surface; hence the necessity, therefore, for a supply of good rich soil for these roots to feed upon, for they are the main feeders during spring. Without good roots actively at work among the soil, it is useless to look for finely marked pips of excellent quality. Some cultivators do something else than top-dress their plants: they also make a point of giving them freshly cleansed quarters. The plants are taken out of the frame on a fine day, and carried into a summer-house or any place of temporary security; and then the interior of the frame is carefully cleansed and brushed. In the case of an old-fashioned garden frame, in which the plants are stood on an ash or gravelled bottom, it is customary to stir up the surface and take some of it away, and add a fresh covering of sand, coal-ashes, &c. Mr. John Hepworth, of Huddersfield, a well-known amateur cultivator of the Auricula, prefers to make his bottom of clean washed sand from the road, with which is mixed a quantity of fresh slaked quicklime. Next comes the cleansing of the plants. The process can scarcely be better expressed than in Mr. Hepworth's own words, as given in the *Florist and Pomologist*. "After clearing the frames," he states, "I commence to clean the plants. Having first obtained a small threepenny painter's brush, I take the pots one by one, give the plants a good brushing all over the leaves, also underneath, and round the bole of the plant." This is very necessary, for during the prevailing mild weather green-fly congregates quickly about the hearts of the plants, especially on plants kept in rather close quarters. This done, then follows the process of top-dressing. Mr. Hepworth well describes this act in plain and simple terms. "I take a wooden skewer, run it round inside the rim of the pot to the depth of an inch or so, then turn the pot on one side, just giving it a slight tap with the open hand till all the loose mould has fallen off, and having at my hand some fresh well-sweetened mould, not over old, as some folks recommend, I fill up the pot with a small tin scoop to its usual depth of about half an inch from the rim—not too full up to the leaves of the plants, but leaving the bole of the plants slightly visible. This done, the pots are placed in their usual place in the frame, laying a mat or two temporarily over the lights at night till I have gone through the entire collection. Then, having got them in the frames, I put on the lights, and keep them on for a fortnight or so, tilting them slightly at the back, but allowing the plants no rains or artificial waterings during that fortnight." The soil used for top-dressing is generally one with some unctuous food in it for the young rootlets. That generally employed is one part good hearty loam, one of leaf-mould, and the remaining two parts well-decomposed cow or sheep manure. The application of water carries the fertilising properties on the surface soil down to the large root-feeders below, and they do derive benefit from the dressing. *R. D.*

Forestry.

THE difficulties of growing GAME COVERT are in most districts very considerable, owing to the circumstance that what should constitute shelter, protection, and food for one class of game, is eaten, destroyed, and rejected by others. The rearing of covert for pheasants alone, for example, is cheaply and easily accomplished; but when the threefold object of growing plants productive of food for birds, and shelter and protection for winged and ground game is to be attained, the work is difficult, and often impossible, not to speak of the expense and tediousness of the operation. When to the ordinary difficulties and obstacles of growing game covert in inland and favourable districts we add those arising from a maritime severe exposure, it takes the most experienced and skilful forester severely to know how best to attain it. After many abortive efforts under the latter adverse circumstances I have at least partially succeeded under the following practice.

Thorough drainage, by whatever means, is an essential condition; for although we hear much about certain trees and shrubs that luxuriate on wet soils, observation and experience very clearly demonstrate that no arborescents will succeed, and endure for any length of time, in soils other than dry.

The numerous kinds of Willow, the Alder, American hag, or Bird Cherry, Spiræa, with wild Briar, and common Bramble, all grow more or less successfully upon comparatively wet ground, but it must not on that account be concluded that they either prefer such, or that they will not thrive better upon good dry soil. Willow and Alder are frequently consigned to cold wet bogs and marshes, but that is simply because in such situations most other trees refuse to grow at all, and the former at best, under such circumstances, are but short-lived and unsightly, unmistakably indicating that they also prefer dry to wet soils.

In planting game covert within the influence of the sea, other matters than those for inland planting have to be considered, which the following examples will illustrate. On a bank sloping towards the open German Ocean, soil dry and of good quality, well adapted for the growth of most hardy evergreens commonly planted for game covert, and which was desired to be grown on the site for that purpose, especially to afford protection during winter, it was evident that no evergreen would stand the winter in such an exposure, and it was chiefly winter covert that was required. What was to be done? Deciduous plants would grow, but they would not produce winter covert. Evergreens would grow to some extent in summer, but they would not stand the winter. On seeing a young Beech tree with its seared leaves adhering tenaciously, I concluded such might, in some measure at least, meet the requirements of the case, and I forthwith proceeded to plant it closely and extensively, and with very satisfactory results. The Beech, as is generally known, retains its leaves throughout the winter, so long at least as it is low and bushy, as in hedges clipped or pruned; and in this state the leaves, though dry and withered, afford comparatively good protection to game, the best at least that can be produced under such a combination of adverse circumstances.

The Lucombe Oak, and also the common Oak, when the latter is kept low, like the Beech, retain their leaves during winter, and only defoliate when the buds begin to expand in spring. Unlike the Beech, however, the former is expensive, and the latter more choice of soil, while neither of them branch and spread out so well as the Beech. The common Bramble to some extent fulfils the requirements of such situations by partially retaining its foliage, but it requires better soil than the Beech to grow luxuriantly.

The Daphne and Berberis make excellent undercovert, as they both spread and rise to a fair height. They also produce berries which pheasants are very partial to.

The common Privet is again a well-known favourite covert for game, and will succeed upon any dry soil, even under the shade of deciduous trees. Neither of the three latter, however, will endure severe maritime exposure, and hence should not be relied upon for that purpose.

The Sea Buckthorn is an excellent plant for seaside planting, and none endures the salt spray better. As it defoliates in winter, however, it is on that account less suitable than Beech.

The common Elder, where the soil is good, grows well at the very margin of the sea, and though rendered leafless several times during the summer months, will yet shoot forth anew, and overcome its privations. *C. Y. Michie, Cullen House, Cullen, January 30.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—Allamandas not yet started into growth should be got to work at once, cutting them well back, soaking their balls, getting away half of the old soil, and repotting in new, which make quite solid; at the same time putting them on their trellises, by doing which now before they begin to grow the danger of breaking the young shoots in the operation is done away with. Clerodendron Thompsoni and Balfourianum, that are still at rest, ought to be started now. Do not cut them back, but soak the balls, and train them on the trellises they are to bloom upon. Caladiums, too, should be started: the amount of pot-room given them will of course be regulated by the size the plants are intended to grow to. If desired big they must not be stinted in the size of their pots; where they are wanted small, say, in 6 or 8-inch pots, the bulbs can be divided, not having the pieces too big in this case. As a decorative plant for conservatory use the small-leaved C. argyrites is very serviceable; for this purpose it should not be grown too hot, and ought to have a place not far from the glass; by these means it will be somewhat prepared for the lower temperature it will get during the summer. The majority of the fine-leaved occupants of the stove can now have their annual potting. Alocasias of the Veitchii and metallica type will not succeed if potted in material that is at all adhesive, their roots rotting directly they come in contact with it. These plants ought to be shook out each spring, and the soil renewed; that which is best suited to their requirements is the fibrous part of good peat, to which add a liberal quantity of sphagnum and rotten manure that has been exposed to the air till quite dry, as also a fair amount of sand; for A. macrorhiza nothing answers better than turfy loam and half-rotten dung in equal proportions, with the addition of some sand. Where it is desirable to increase Marantas, the

crowns can now be divided—an operation which is better done in the spring, before they commence to grow, than at any other time. Where it is the intention to use these plants for conservatory decoration in the middle of summer, or for exhibition purposes, it will be well to grow them at the coolest end of the house. The tops of Dieffenbachias that have got shabby at the bottom should be taken off and struck; in a warm close atmosphere they will root easily: bits of the old stem, &c., having two or three joints, if put in little pots and not suffered to get too wet, will also strike. Allamandas, Bougainvilleas, &c., that were started some short time ago, will now be sending up their new shoots, and where it is the intention to increase the stock of these plants their propagation should be attended to. As soon as the young growths are 6 inches long take them off with a heel and put them in little pots well drained and two-thirds filled with good peat to which has been added one-sixth of sand, filling them up with sand. For early blooming cuttings should very soon be put in of Euphorbia jacquiniæflora; when the young shoots which the earliest plants make have got 6 inches long, take them off with a heel; if this is not done with this Euphorbia not many will strike. Some cuttings of Luculla gratissima should also be got in now. By putting some in at the present time, and others later on, a succession of this useful decorative subject may be obtained. Euphyllums that have finished flowering and are beginning to grow should, if they need it, be potted at once; but do not overdo them in the matter of root-room. Where, as recommended about two months ago, the old tan was got out and new brought in, it will be a good plan to now add more, mixing it well with the old, with that which is in. By so doing the atmosphere of the house will be improved, and through the heat which will be generated a saving will be effected in fire. It will not heat so well if it is trodden too hard. It will be well to introduce into heat another lot of Cheiranthus, Erythrina crista galli, Statice gracilis, double Prunus, Andromedas, and Kalmias. Some more Azaleas ought also to be put in to succeed the earlier ones, as likewise Richardias. Tulips, Narcissus, and Hyacinths will at this time need less heat to bring them into bloom. There is no hardy plant that is better suited for forcing than Dielytra spectabilis; not only is it a fine subject for conservatory decoration, but the flowers, for form, and also for colour, are well fitted for mixing in a cut state with other things. It must not be submitted to much heat, and it ought to be near the glass.—*Ferns.*—A commencement should now be made in potting. If this is left till the young growth is pushed up, it is sure to get a check which will make it come crippled. If it is desirable to restrict the plants in size, this may be managed by only giving them small pots. Where, on the other hand, they are wanted to be as large of their kind as can be grown, they must have abundance of root-room. The material that answers best for the generality of Ferns is good peat, to which add a little sand and about a seventh of coal cinders, broken up, or crocks broken small: the cinders I prefer. A mixture of this kind does not often get into a bad, sour state. *T. Baines.*

FLOWER GARDEN, ETC.

Where alterations have been going on, and turf-laying is not completed, let it be hastened forward, as it will still get well rooted before the drying winds of March set in. Any planting not quite finished had better be brought to a close as early as possible, for the busy time will soon be upon us, when all hands are expected to be fully occupied. Hardy climbers and Roses on walls and trellises may be pruned, nailed, and tied as required. Hybrid Roses in sheltered places that are pruned now, will bloom some time before the general collection, the cutting of which may stand over for a few weeks longer; all tender kinds had better remain protected until all danger from sharp frost is past. Spire-like plants, such as Irish Yews, Cupressus, &c., where the ties which keep them in form have come loose had better be attended to without delay; the rain and heavy gales of wind have been very trying for such plants. Nurserymen now prepare and send out those trees with single stems, and they are a great improvement on the plants which were formerly grown. Where spring gardening is carried on, the flower-beds or borders will require attention, and the surface of the ground to be stirred, which will assist the plants. The open winter has been extremely favourable for the growth of weeds; let them be hand-picked, and the beds, walks, &c., all made clean and orderly. Box and all other edgings may be made, but the plants or slips of Box, which are usually cut and trimmed before being planted, are better left untopped until the middle of May; by that time they will have made some roots, and got hold of the ground. Should the stock of any of the varieties of Pelargonium be short of the number required for turning out, put in strong cuttings as fast as they can be had; they soon root and make fair plants in a temperature of about 60° if kept near the glass, which makes them strong and short-jointed. Spring cuttings of the variegated sorts, if small when taken off, seldom make good plants. *T. Blair, Shrubland Park, February 6.*

FRUIT HOUSES.

VINES.—When the Grapes are well set and thinned in the early house, the inside borders should have a thorough soaking with tepid liquid manure at a temperature of 85°. If the drainage is satisfactory, the water should be applied until every particle of soil has received a liberal supply. Where the sun-heat without cost, which was driven into the outside border last August, was preserved by a good covering of dry leaves or Fern, with wooden shutters over all to throw off wet, the external roots will have been doing good service. Fruit and foliage will make rapid progress, with every chance of colour being satisfactory, and red-spider will be placed at a discount as compared with houses in which attempts have been made to confine the roots to the interior. Attend to tying out until every part of the trellis is covered with foliage. Mulch with horse-droppings, which may be sprinkled every evening, or the borders may be syringed with tepid liquid manure; close early in the afternoon, running up to 85° with sun-heat, and give a little night air on all favourable occasions. Houses from which the fruit has been removed to the Grape-room should now be ready for closing when the proper time arrives; if pruned late, bleeding should be guarded against by dressing with styptic; and if the borders are unsatisfactory, steel forks should be brought into requisition, every particle of sour or inert soil removed, and the roots relaid in good turfy loam, burnt earth, old lime rubble, and crushed bones. If the roots have the range of inside and outside borders one or other of these may be operated upon without the slightest fear of losing a crop of Grapes. Get Vine eyes plump. Prepare a bed for the reception of pot Vines intended for next year's forcing; shake out and repot when they have commenced growth, and plunge when the bed falls to 80°. *W. Coleman.*

MELONS.—Where very early Melons are required, a few of the strongest plants should be selected for special treatment, and as some varieties bring their fruit to maturity much quicker than others, I may here state that Gilbert's Victory of Bath, Eastnor Castle, and Read's Scarlet Gem, are free setters, very prolific, and of exquisite flavour. Assuming that the cultivator has full command of top and bottom heat from hot-water pipes, the pit should be filled with fermenting Oak leaves or tan for the reception of the fruiting pots, which should be arranged in rows nearly touching each other, and having filled them to within 3 inches of the rim with the compost previously recommended, turn out the plants singly, train up the trellis, under generous treatment, and when they have thrown out sufficient shoots, which invariably show on the first joint, to ensure a set of two to four fruit on each plant the points may be pinched out of the leaders, and the laterals in their turn may be stopped one joint below the fruit after it begins to swell. Select two of the most promising for the crop. Thin out the laterals, to prevent overcrowding of the foliage; support the fruit well up to the trellis, feed with liquid manure, and keep all second growths closely pinched. Ply the syringe freely, close at 80°, and run up to 90° with sun-heat. The stems and foliage of Eastnor Castle, being densely covered with hairs, which hold moisture, this variety is impatient of morning syringing. If closely followed up this system will admit of their crops being taken in time for planting the pit with winter Cucumbers. Plants intended for pits and frames should be stopped and allowed to break before they are turned out on the hills. The latter should not be made large at first, as the soil is liable to burn in the centre. Make frequent sowings for succession, as sturdy young plants are preferable to those which have become pot-bound. *W. Coleman, Eastnor Castle.*

THE CHERRY HOUSE.—The temperate nature of the weather so far this season has been such as to allow us almost wholly to dispense with fire-heat in this department, and a very satisfactory state of progress in the trees will be apparent under the influence of such suitable conditions. At this time the buds and blossoms will be rapidly unfolding. At this stage of development we usually apply over the trees, with a syringe, water in which Quassia chips at the rate of about 1 lb. to every 4 gals. of water has been steeped for four or five hours. This will be found an effectual remedy for removing any green-fly which may exist. Attend to former directions in regard to regulating the temperatures, to syringing, &c., until the flowers are fully expanded, when the use of the syringe should still be continued, but in moderation, according to existing circumstances. Take advantage of fine days for the purpose of fructifying the flowers as soon as the pollen is in a fit state. Give regular attention to trees in pots, using only clear water, until such time as the fruit is set. These conditions in detail, are likewise applicable to Plum trees which are placed under similar aspects.

STRAWBERRIES IN POTS.—Early started plants which are in flower now should have the best suitable position which is possible where the fullest benefit can be derived from sunshine, warmth, and air. These plants should be lightly syringed twice every day, and it will be advantageous to brush the flowers over, or give them a shake with the hand during the time they are in flower. To hasten the ripening period of such the plants will, when the fruit is fairly set, stand a higher temperature — even 65° or 70° at night, and 10° more during the daytime, will not be too much, providing they can have the advantage of an airing daily. Maintain the supply by introducing fresh plants as the space and requirements demand. Now is a good time to start in cold pits a good batch of these plants. *G. T. Miles, Wycombe Abbey.*

HARDY FRUIT GARDEN.

There are few gardens at the present day, either large or small, but what have a certain number of pyramidal Pear trees, or what bear the name of such, however much they may deviate from that most natural and pleasing of all forms of training. If managed in a proper manner the branches ought to be as nearly equidistant as possible, and about 18 inches apart, regularly decreasing in length from the bottom to the top, so that the solar rays may have full and free play among them, without which any fruit they bear is sure to be deficient in colour, and all those good qualities that constitute a really first-class Pear. Now that the time has arrived for the pruning of these, any that have become misshapen or in an unsatisfactory state from being crowded with weak, superfluous wood, should be taken in hand at once, and have it cut out close to the branches from whence it originated, and any long awkward spurs on those remaining should be shortened back, that the strength of the tree may be concentrated in those left, by which means they will become stiff and strong, and able to carry a fair crop of fine fruit without being dragged down from their proper position. Some, however, prefer what may be termed the pendulous pyramid, which is a very graceful and desirable form to grow them in, and one in which the sap, having a salutary check, does not run into the ends of the branches and cause them to push strong terminal shoots in the way it does when they are in an upright position, and which results in robbing the spurs lower down of their due share of nourishment. The plan some adopt to get them in this shape, by tying brickbats on them, to cause them to droop down, is a most objectionable one, not only in appearance, but in many other ways; and although it can be done at less cost, it is accomplished in a far neater and more satisfactory manner by running a piece of fine galvanised wire from the tip of the branches to pegs or stakes in the ground, round which they can be drawn and tightened at pleasure. In the training and support of those on walls I have found galvanised wire staples most valuable, and not a tithe of the labour and expense of nails and shreds, that require annual renewal, and which are so objectionable from the disfigurement and damage caused to the wall by their use, besides affording, as they do, a lurking-place for all kinds of insects. By driving a few of these staples, which may be bought at a cheap rate, into any of the joints along the course the main branches take, they may be firmly secured to them by pieces of tarred twine, that will last for years without any further attention, and do away with what in tree management has hitherto been a constant source of expense and annoyance. Among hardy fruits the Raspberry is one that is in very general esteem, and now is the time to overhaul any plantations of these, to get the canes thinned out and regulated, and any stakes that may have decayed renewed, for their proper support. The manner of using one of these to each is not to be commended, as when they are so placed it is very rarely that the old rotten piece can be got out, and these left in the ground immediately contiguous to each plant are often a source of mischief by generating fungus, which, attaching itself to the main roots, paralyses their action and throws the top out of health. The only time the case, but the young canes from growing up among the fruit-bearing branches become drawn from having an insufficiency of light and air playing upon them. If stakes are used, the best way is to place them midway between each plant and bend half the canes each way to one stake, so as to form a series of arches. Trained in this way much shorter stakes suffice, and both fruit and young growth have a fair chance by standing clear of each other. Where fresh plantations are needed, set about them now, which should be done by deeply trenching the ground it is intended they should occupy, working in at the same time plenty of thoroughly decomposed manure. Soil of a loose sandy nature suits them best, and in planting select the strongest or most fibrous rooted canes, one of which is sufficient to put in each position at from 3 to 4 feet apart. *T. Sheppard, Woolverstone Park.*

THE

Gardeners' Chronicle.

SATURDAY, FEBRUARY 10, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Feb. 12	Sale of Lilium auratum from Japan at Stevens' Rooms.
TUESDAY,	Feb. 13	Royal Horticultural Society: Annual General Meeting, at 3 P.M.
WEDNESDAY,	Feb. 14	Royal Horticultural Society: Meeting of Fruit and Floral Committee, at 11 A.M.; Scientific Committee, at 1 P.M. Sale of Shrubs, Roses, Bulbs, &c., at Stevens' Rooms.
THURSDAY,	Feb. 15	Linnean Society: Meeting at 8 P.M.
SATURDAY,	Feb. 17	Sale of Orchids at Stevens' Rooms. Sale of Conifers, Fruit Trees, Roses, &c., at Stevens' Rooms.

THE apprehensions felt by many at the recent utterances of the Council of the ROYAL HORTICULTURAL SOCIETY in the *Times* will, it is to be hoped, be allayed at the forthcoming ANNUAL MEETING. If not, we can but look upon the change of policy hinted at as altogether retrograde—nay, absolutely suicidal, and almost a justification of those who would seek to found a new Society. What has been the general outcome of all the meetings, stormy and peaceable, the discussions, the letters, the varied expression of opinions during the last few years? What but this, that the Royal Horticultural Society must revert to first principles, be a horticultural society in fullest reality, not half real, half sham, as now? We are weary of reiterating the proper scope and duties of a horticultural society. The right key-note has been struck again and again, in the Council-room, and out of it, by some whose voices are now quiet in the grave, as by others happily still among us, even by members of the existing Council.

But, we are told that the debenture-holders and the Commissioners between them play the part of PHARAOH, and refuse to let the horticulturists go, and that, under these circumstances, we are to make the best of a bad bargain—grin and bear it—eat our Leek, and do other unpalatable things. What the best of a bad bargain in the opinion of the Council is, is shown in the following extract sent us some time since for publication; this we had not the heart to print then, but now, in view of the approaching annual meeting, we must do, though with bitter humiliation:—

"4. The Council have determined to continue the South Kensington Gardens on their former footing, and to make them as attractive to the residents in their neighbourhood and of London generally as the means and nature of the Society will permit.

"5. If the subscription income of the Society for next year be raised to £10,000, the South Kensington Gardens will be secured to it certainly until 1892, to the great advantage of the residents and owners of property in their neighbourhood. If such income be not raised, those gardens will pass into the possession of the lessors, and probably be built over.

"6. To place the Society in a more prosperous and secure position than it has ever occupied nothing more is wanting than, for the present year, a renewal of a part only of the subscriptions which have recently been discontinued, and for the coming year an effort which wealthy South Kensington would scarcely feel, and which will raise the £10,000 above referred to.

. . . . "The Council are trying, so far as their funds will allow them, to meet the wishes of their London Fellows. The principal western entrance has been reopened; the gardens, which have suffered nothing that a few days' labour will not repair, are being put in order; and the bands and promenades in the conservatory will be resumed on an early date."

The horticultural expenses have been reduced to a minimum. Such men as BERKELEY, DYER, HEMSLEY, and others have been with scant ceremony dismissed from their offices, on account of insufficient funds; even the salary of the librarian has been cut off. The work at Chiswick has been reduced to a point lower than which it can hardly go. We have acquiesced in all this because we were told it was essential; we assented to it because we saw the Council bravely struggling to pay its debts; nay, we are told, and no doubt truly, that there are now no obligations whatever save the lien of the debenture-holders, and that is looked on as a debt and not a debt! We witnessed with the greatest pleasure the paying up of prize-money, and the distribution of the long-overdue medals. We saw a general desire to conciliate the horticulturists, and to do, so far as extremely crippled means would permit, good horticultural work. On these grounds we assented to the economising policy of the Council, though it was often pain and grief to us to have to do it. But now what reward are the horticulturists—those self-sacrificing horticulturists who have kept what little life there has been in the Society for the last few years—to have for all this? Doubtless an extension of true horticultural work—something towards the reorganisation and reconstruction of the Society on a proper footing. But no; will it be believed that the "gardens are to be continued on their former footing"? Bands and promenades, and all the worn-out machinery that have proved the downfall of the Society, are to be restored. Does not every one know that it is the South Kensington Garden upon which the Society has absolutely thrown away £73,000, which has been the main cause, if not the only one, of all the Society's troubles?—and yet it is to be reinstated as before, if means permit. If this were only intended as a temporary measure, no objection could be made to it, but the gardens are to be kept till 1892 if—oh, the force of that little if!—if the income can be raised to £10,000. Most earnestly do we wish it may not be, if such is to be the result.

At any rate, in place of expanding the basis of the Society, making it national and popular, searching the gardens of the country for new Fellows at a low subscription, instituting local committees and local secretaries all over the country, encouraging local societies, teaching gardeners of all degrees by precept and example, striving to create a general interest in gardening, and to do good to peer and peasant in every accessible corner where a flower can blossom, a fruit tree grow—in place of all this, we are to go on piping and fiddling to a South Kensington audience, who neither understand our work, nor care for our play. It may be said, and with truth, that hitherto the horticulturists have not of themselves been able to maintain their own society. But why? Mainly because the Society has neglected its proper work to provide a recreation ground for the inhabitants of wealthy Kensington, and has taken no pains to do good to the people and the country at large. And, on the other hand, what have the South Kensington residents done for the Society? Have they enabled the Society to pay its way, to keep up the gardens? Have they done the horticultural work of the Society, made its exhibitions, served on its committees? Have they even had the grace to come and look on with a smile of approval? Not a bit of it. They have not done any one of these things. Had it been otherwise it might have been prudent, nay just, to consider their interests, but, like rats, they have left what they thought a sinking ship. If they come back they will be as useless to a horticultural society as before, for it has been proved that they will not come in numbers sufficient to make the gardens pay their own expenses. They have no sympathy with the objects of the Society, so that even if they did come forward in their thousands we should still cry, warned by past experience, *non tali auxilio nec defensoribus istis*.

But it may be this is all a jest on the part of the Council, to be explained on Tuesday next—that their utterances are meant to be taken in a non-natural sense, as some persons are said to interpret the Thirty-nine Articles; or in a Pickwickian sense—any sense but what seems to be the right one. If this be the real interpretation we may perhaps admit that "It was right to dissemble your love," but ask, "Why did you kick us downstairs?"

—— THE judges in the Horticultural Department of the Philadelphia International Exhibition, 1876, recommended to the United States Centennial Commission for awards a "very choice collection of new and rare plants, well grown and in excellent condition after transhipment of such delicate articles—an exceedingly creditable display," exhibited by Mr. B. S. WILLIAMS; also "a small collection of Filmy and other Ferns," exhibited by the same gentleman; "a very rare collection of Rhododendrons, Hollies, new and rare Conifers, broad-leaved evergreens of the best kinds for lawn decoration," exhibited by Messrs. JAS. VEITCH & SONS, Chelsea; also "an exhibit of evergreen plants, consisting of the best varieties of Rhododendrons, Hollies, Aucubas, &c., for fine growth and careful training, and unique in new kinds," shown by the same firm. A medal was also awarded to Mr. W. BULL for "coloured plates of flowers." The judges were:—Dr. GEORGE THURBER, Messrs. W. D. BRACKENRIDGE, F. PENTLAND, and W. SAUNDERS.

—— We are requested to state that the SCHEDULE OF PRIZES for the AURICULA SHOW to be held on April 24, at the Crystal Palace, as a Southern offshoot of the National Auricula Society, will be ready for issue in the course of a few days, and may be obtained from Mr. E. S. DODWELL, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W. The subscriptions, which amount to nearly £70, will be nearly sufficient to admit of a liberal prize list being issued, and to meet the incidental expenses. The classes seem to be framed to suit growers of every grade, so that if the competition is at all what may be expected the show will be a most interesting one for the lovers of the Auricula, much more so than any which has taken place in the South of England during the present generation at least. It has been decided to adopt as few restrictions and limitations as possible, in order to secure greater breadth of and variety in the several classes. The chief of those adopted are:—To require *dissimilar* varieties in classes containing two or more plants; to permit only one truss in Auriculas, but not to limit the trusses in the classes of alpines; to admit shaded and unshaded varieties amongst these latter; and not to confine Polyanthuses to the gold-laced types. In every class it is desired that the best should win, and so that the leading properties are not violated no rigid or fast rules beyond those indicated above will be observed. The premier class will be that for twelve dissimilar varieties—and here it may be pointed out, for the consolation of our Northern friends, who generally adopt very rigid rules in these matters, that although the committee does not in this case bind the exhibitors to show an equal number of the four usual types—green, grey, and white-edged and selfs—or even representatives of each, yet those who best illustrate these several types will assuredly come nearest to the only essential limitation, that of dissimilarity. The success of this attempt to organise an Auricula show in London shows that the taste has not altogether died out, and that it is possible, if set about in a right manner, and by the right men, to obtain the support of the growers and admirers of a particular flower, in an honest attempt made to advance the interests of floriculture through any of its many channels.

—— The whole of Mr. LAXTON'S valuable stock of seedling and other Pelargoniums, including Vesta and Mrs. Trevor Clarke, which have been awarded First-class Certificates by the Floral Committee of the Royal Horticultural Society, has passed into the hands of Mr. R. GILBERT, of Burghley. The stock of named and unnamed seedling Roses, grown by Mr. LAXTON, has been acquired by Mr. TURNER, of Slough; and Messrs. VEITCH & SONS have secured all his seedling Peas, including five Certificated varieties, and all the seedling Strawberries, including Pioneer.

—— The continuous rainfall has so soddened the ground that those among GLADIOLUS cultivators who are in the habit of planting in February will, unless a quick drying time soon happens, have to postpone the operation beyond the usual time. The bulbs will remain plump and fresh till April if properly preserved during winter. They require to be kept dry and cool—dry enough to keep them from being affected with mildew and rot, and cool enough to prevent a premature growth and shrivelling up. In the warmer and milder districts of England planting may be safely commenced in February in well prepared ground, but in the North, where it is bleak and cold, it is best to defer the operation till the end of March or beginning of April. In the latter case the bulbs cannot be too carefully preserved. In the case of extra choice varieties, it would be a wise precaution to pot the bulbs now, and transplant them to the open ground in April. A good many cultivators in the North make an annual practice of this, and find they gain considerably in doing so.

—— Some time since a correspondent criticised the conduct of the committee of a large horticultural society in the South of England because SPECIAL PRIZES in the shape of casks of beer were admitted into the society's schedule. The expression of opinion brought to bear on the committee would seem to have borne good fruit, as the offer by a well-known gardener and an enthusiastic total abstainer of a special prize in cash, conditionally that the beer special prizes were refused, has been accepted, and this year at least the society's schedule will be purged of any association with the beer-barrel.

—— The unusual mildness of the winter has already made TURNIP TOPS almost a drug in the market, the general abundance of this homely vegetable having been added to by the drought last summer, in consequence of which comparatively few of the summer sowings came up sufficiently early to produce good market roots. There has indeed been an abundance of green stuff of all kinds available for the season, Spinach also having been very abundant, not the least check so far having been given to its growth. The pinch for green stuff will probably come presently, for the Broccolis, whether purple or white, are neither large nor plentiful, drought and club having proved enemies of potent strength at and after planting. If the open mild weather should long continue, all kinds of green tops will soon be running off to flower, thus considerably shortening the green crop season.

—— The accounts from different parts respecting the EFFECTS OF THE MILD WEATHER—disregarding the rainfall—on vegetation vary very widely. Some correspondents assert that they find very few things in advance of their usual state at this period; our experience is that a large number of plants, whose ordinary flowering season is in March or April, are already in flower, though, it should be stated, in many cases imperfectly. During the whole of December, and the greater part of November, the mean temperature was considerably above the average; and although we have experienced a few sharp frosts, they have only exercised a retarding influence. During the first week in January the mean temperature was (at Blackheath) 10° above the average for the last sixty years, namely, 46°.8; during the second week, 41°.9, or 5°.6 above the average; during the third week, 45°.5, or 8°.7 above the average; and during the fourth week, 39°.4, or 1°.7 above the average. With the exception of the last week the mean temperature was as high as the average mean temperature for the same weeks at Nice, Toulon, and Marseilles. To the absence of sun-light may be ascribed the relatively slight stimulation plants have received. But a couple of hours in Kew Gardens on the 5th of the present month gave us some insight into the number of hardy things in advance of their normal season. The following, among others, were noted, and doubtless many others escaped notice. Of course, a certain proportion of them are flowering at the usual period. Several common things are omitted. First among trees and shrubs there were in flower, or bursting into flower, Amygdalus communis, Berberis nepalensis, japonica, Darwinii, and fasciculata; Cor-



THOMAS ANDREW KNIGHT. (SEE P. 169.)

nus paniculata and mas, Chimonanthus fragrans, Corylus (♀ flowers,) Coronilla glauca, Erica codonodes and carnea, Kerria japonica (single-flowered), Lonicera Standishii and fragrantissima, Nuttallia cerasiformis, Oreodaphne californica, Prunus cerasifera, Pyrus japonica, Shepherdia argentea, and Yucca gloriosa, the spikes of many of which were injured beyond recovery. Among herbaceous subjects the most noteworthy were Iris stylosa, Saxifraga ligulata, Iberis Garrexiana and semperflorens, Alyssum saxatile, various species of Crocus and Helleborus, Eranthis hyemalis, Viola floribunda alba, double Daisies, Wall-flowers, &c. A few of the foregoing plants deserve a word of commendation, whilst others are so commonly seen and known that they recommend themselves. Berberis nepalensis is a grand subject in light soils and sheltered situations, as also its close ally, B. japonica; Erica codonodes is a fine hardy Heath, normally in bloom this month and last. The single-flowered Kerria against an east wall is a mass of blossom, finely shown off by the beautiful green of its foliage. Most people would prefer it to the double-flowered variety. Nuttallia cerasiformis is a rosaceous shrub or small tree with the aspect of a white-flowered Ribes, and equally as profuse a bloomer as R. rubrum. Oreodaphne californica is a handsome evergreeen Lauraceous tree, which has frequently been mentioned in the columns of this journal. Of the less familiar herbaceous plants noted above, Iris stylosa and Helleborus caucasicus are specially worthy of consideration. Finally, the old Saxifraga ligulata is a fine sturdy plant, very ornamental both in foliage and flowers. Another thing that attracted our attention was the bed in the herbaceous ground containing some nine or ten species of Ferula, the leaves of which were already in an advanced stage of development, and among the most beautiful objects to be found in leaf early in the year.

—— The annual GRAND FLORAL FÊTE AT YORK is announced to be held on June 13, 14, and 15.

—— A correspondent informs us that he has received from a publisher in Belgium a copy of a small book (which he had given no order for), accompanied by a post-card requesting that thirty stamps might be sent in return for it. Our correspondent thinks this is a good plan to adopt to sell works which are not in demand, but as he objects to being victimised himself, he would equally regret to hear of others being so treated, and recommends his *confrères* in the trade not to pay.

—— The next INTERNATIONAL POTATO SHOW will be held in the gardens of the Royal Horticultural Society, and probably the Council will add to the prize list a set of medals. The date is not yet fixed, but we understand the promoters contemplate holding the show somewhat earlier than hitherto.

—— In large ORCHID-HOUSES great difficulty is frequently experienced in keeping up a sufficient supply of ATMOSPHERIC MOISTURE during the growing season, and especially is this the case in those establishments where it is necessary to keep the paths sufficiently dry to be walked on with comfort. In some houses the paths are covered down the centre with ornamental iron gratings, and we have seen them covered with cocoa-nut matting, but both of these plans are somewhat expensive, and we do not think either of them so effective as a plan adopted by Mr. J. T. PEACOCK in one of his structures at Sudbury House, Hammersmith, and which simply consists in paving the floors with the small, square, bevel-edged blue bricks used in stables, which floors, while containing an innumerable number of channels for the holding of water, are still sufficiently dry to be walked upon with comfort by any lady or gentleman.

—— M. CIL JOLY, of Paris, has issued a pamphlet on the Sewage Question—*La Question des Eaux d'égouts*—in which he adopts for the most part the conclusions which have been arrived at by the Rivers Pollution Commissioners of this country.

—— The explanation of the fall of the leaf in autumn is found in most text-books, and has frequently formed the subject of comment in these pages. But the converse question, WHY THE LEAVES of so-called evergreens DO NOT FALL, is one not so often asked. M. MER, who has lately been investigating the matter, reports in a recent number of the *Bulletin de la Société Botanique de France*, that the reason for their retention may be found in the absence or imperfect development of the dividing layer, as in some bulbous plants, and which is one cause of the fall of deciduous leaves, and in the large number of fibrovascular bundles, which serve to tie the leaf to the branch.

—— MM. DEHÉRAIN and VESQUE have been experimenting on the RESPIRATION OF ROOTS, with the general results that roots absorb oxygen gas and emit carbonic acid gas (true respiration); and that oxygen is necessary to the roots, which must have access to that element or the plant will suffer even if the leaves be exposed to the air. A small quantity of carbonic acid is given off by the roots.

—— A report and balance-sheet of the HAILSTORM RELIEF FUND have been published, from which it appears that the total amount raised for the relief of the sufferers in the neighbourhood of Tottenham was £779 18*s.* 7*d.*, of which £699 15*s.* 8*d* was distributed among forty-one persons in sums varying from £111 4*s.* 10*d.*, the highest, to £1 7*s.* 8*d.*, the lowest. The total amount asked for by those who suffered damage was upwards of £2000, but the assessment committee carefully investigated each case, and acted accordingly.

—— As a mark of respect and friendship for MR. JOHN LEE, who has lately retired from business, several of his friends have invited him to a complimentary dinner at the Horticultural Club, on Thursday, February 15 next.

—— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, February 12, when a paper will be read by Mr. G. J. SYMONS, entitled "Rainfall, and its Relation to Civilised Life." The chair to be taken at 8 o'clock.

—— The January number of the *Nuovo Giornale Botanico Italiano* contains, among other articles, one on a variety of Calystegia sylvatica, with a deeply five-lobed corolla; another on galls produced on the leaves of Vines by a species of Phytoptus; another on a similar subject, but wherein the malady is caused by a fungus, Antracnosi. Signor BECCARI contributes two interesting papers on the development of Gnetum, and on the structure of that very curious plant Cardiopteris, which he refers to the neighbourhood of Convolvulaceæ.

—— What effect have the FROSTS OF WINTER ON EVERGREEN LEAVES? This is the question which M. MER has been striving to answer, and from his paper in the *Bulletin of the Botanical Society of France* we gather that in some cases, as in Ivy, the leaves may exist on the reserve stores accumulated in the stem without themselves assimilating any food from the air. In other cases they form starch in their tissues, and if this be not always readily found the explanation is to be sought in the circumstance that it is transferred to the store cells in the stem as soon as formed. M. MER's paper must be read in detail. We can merely add that he divides the tissues of the leaf into two groups, the office of the one being to assimilate, that of the other to store the food formed by the former.

—— Mr. R. SPINKS, late foreman to Mr. DICK, at Canford Manor, Dorset, has been appointed head gardener to W. F. CHILDE, Esq., Kinlet Hall, Shropshire.

—— A very useful illustration of the ease with which it is possible to decorate the FORECOURT GARDENS OF COTTAGES by means of a few simple, unpretentious flowers, recently came under our notice. The cottage was one of a row, and of the humblest kind, and was tenanted by a labouring man. There was no attempt at arrangement or the production of effect, the whole was merely kept neat, and nothing more. There was, however, in bloom a fine plant of the Christmas Rose, a few bunches of the winter Aconite, several single Primrose of various hues of colour, double white and red Daisies, some common Pansies, bunches of Snowdrops just peeping up, and patches of Myosotis dissitiflora bursting into bloom. In addition were Polyanthus, Arabis, yellow Alyssum, Daffodils, and several other kinds of early spring flowers—enough during their season to make this little garden look very gay and pleasing. Had not this little floral display been somewhat singular, it would scarcely have been so suggestive, but the common culture of early hardy flowers in cottage gardens does not appear to be by any means so frequent as could be desired. Perhaps some of this negligence on the part of the cottager is due to the comparative discouragement given of late years to the cultivation of hardy plants in the gardens of the rich, the more showy but hardly more beautiful summer bedding stuff having considerably elbowed the hardy plants out of favour. Societies established to promote a love for horticulture amongst cottagers might do much practical good by distributing amongst them large quantities of the simpler hardy spring flowers.

—— Mr. W. B. FREEMAN, of the Model Farm, Shillong (Assam), has published a brief manual on Potato cultivation. The pamphlet is intended for translation for the benefit of the natives, and is, therefore, as clear and simple as possible. The Potato disease proper does not appear to be troublesome in the Khasia hills, in spite of the large rainfall to which they are subjected.

—— From a note in the last monthly *Report of the American Department of Agriculture* we gather that in 1876 the RAISIN GROWERS OF CALIFORNIA about trebled their product of the previous year. The receipts at San Francisco by the close of the year would probably reach 60,000 boxes, against 18,000 or 20,000 last year. It is stated that one vineyard dried 240 tons of Grapes, producing 80 tons of raisins. The dry summers of California, and the regular and limited period of her annual rainfall, give special facilities for drying in the sun. Grapes dried in this way produce much finer raisins than those dried by artificial heat. The Grape growers of California also exhibit great ingenuity in shielding their Grapes against occasional and unexpected showers; frames are provided for the spreading of the fruit, and are arranged for convenient handling and turning, so that all sides of the bunches may be consecutively exposed to the heat. On the approach of rain the frames are speedily placed under cover, and when dry weather reappears are again spread out.

—— The WEST OF ENGLAND ROSE SHOW will take place at Hereford on Friday, July 6, not Thursday, as recently announced in our advertising columns.

—— Professor M'NAB has contributed a valuable paper to the Royal Irish Academy on the anatomical characters serving to distinguish the species of ABIES. The paper is the result of the microscopical examination of many thousands of sections of the leaves. For the most part, Dr. M'NAB'S conclusions agree with those of M. BERTRAND, though there are occasional discrepancies. Throughout Dr. M'NAB has profited by the experience and practical knowledge of his father. The characters of the shoots, buds, and foliage are given, together with the anatomical characters presented by the latter. The confusion in the nomenclature of some of these plants is so great, that cultivators would gladly avail themselves of any ready means to distinguish the several forms.

—— Towards the close of last year a DIGGING MACHINE, patented by Mr. KNIGHT two or three years ago, was tried on Mr. CHAMBERS' farm at Langley, Kent. The work was thought by several practical farmers present to be fairly well done, and what disapprobation was expressed referred principally to the amount of tackle required, and to minor details, which in all probability will be altered. Another digging machine was patented last August, and at the annual meeting of the Maidstone Farmers' Club, held on January 25, Mr. W. H. SAMSON, the inventor, who is a resident in Maidstone, exhibited a model of it. According to the *South Eastern Gazette*, his explanation of it was attentively listened to, and several members expressed themselves in favour of its general principles, but for the most part they wished "to see the thing at work" before giving an opinion upon its merits. "Of course," says our contemporary, "whether the machine will bear out the promises of the inventor is a mere matter of conjecture, but after a careful examination of the model we are

inclined to lend to it our favourable opinion. It differs in many respects from that of Mr. Knight. In the first place it is constructed on the simple principle of direct hauling, the carriage wheels are unconnected with the machinery, and the motive-power which works the forks is received direct from the engine, and can be arranged according to the nature of the soil without interfering with the speed at which the machine travels over the ground. The forks are not on cranks, but on connecting rods between two cranks, and the prongs are so placed that they will strike the earth every six inches. Whether the movement obtained from this crank arrangement will bring the bottom soil to the top—which of course the machine must do to be of any use at all—remains to be seen; the way the forks are placed, undermining each spit, seems an excellent idea, and likely to accomplish this. One part of the invention is worth particular mention. By a simple mechanical arrangement the difficult work of turning so large a machine round when it reaches the end of the field is obviated. There are two sets of forks, one at each end of the machine, and by means of a handy lever the driver can raise or lower them at will. Mr. Samson proposes to work his machine by the aid of two six-horse traction engines, placed opposite to each other, and he showed a very ingenious method of combining the engines by which both could be kept working at the same time, instead of alternately, and thus a double power obtained. In reply to one of the members, Mr. Samson said that to dig Hop gardens upon his plan the prime cost would not exceed 10*l.* per acre. Several large Hop growers have expressed favourable opinions of Mr. Samson's invention."

—— Mr. Hillhouse has contributed to the *Transactions* of the Bedfordshire Natural History Society a list, avowedly incomplete, of the plants of the county, accompanied by a sketch of the surface geology and physical geography of the district. No great elevation occurs in the county, though there are ranges of chalk hills and the surface soil is extremely varied. The average rainfall is 22 inches, the county being warmer than those more to the eastward, and considerably drier than those to the west. We quite agree with the author that a river is as a rule not the boundary of any botanical district, the flora being identical on both sides of the stream. The author divides the county for his purposes into a northern oolitic district and a southern cretaceous district, each subdivided according to local geological conditions. As the author is evidently perfectly familiar with the greater part of the county, and with the principles upon which a botanical survey should be conducted, we may suggest how desirable it would be to include the field and garden culture of the county, which to a large extent must be regulated by the same conditions as those which influence the distribution of the local flora.

—— The *Indian Forester* reports that, on the whole, the attempts to cultivate the Eucalyptus in India have been failures. On the Nilghiris success has been obtained, but the trees seem quite unsuited to the tropical plains. We would especially repeat a caution we have frequently had occasion to give, not to put too much confidence in the alleged anti-malarious properties of the emanations from these trees. The nature of the soil is necessarily improved by the mere preparation for planting, and the rapid growth and broad leaf surfaces (both surfaces being active) insure large absorption of moisture from the soil, and proportionate evaporation. To these the good effects narrated, and to which we can give ready credence from having visited several localities where the Eucalyptus has been planted in the South of Europe, are due, but as to any febrifugal virtue in the balsamic exhalations from the leaves *per se*, we should attribute as much importance to them as to the bag of camphor which some people hang round their necks in the vain belief that infection is thereby staved off.

—— The February number of the *Revue de l'Horticulture Belge* has a coloured plate representing different varieties of Hibiscus syriacus, also known in gardens as Althæa frutex. This is a deciduous shrub whose varieties are too much neglected in our gardens, probably because the plant is late in producing leaves in spring. M. Eurvenich, following the practice of Mr. M'Nab, advocates in certain cases the propriety of pruning Conifers. M. de Smet has a paper on the species of Echeveria adapted for edgings, including E. agavoides, amœna, atropurpurea, Bernhardiana, bracteosa, De Smetiana (syn. Peacockii, Baker), which is said to have been introduced with the packing material in which certain Agaves were forwarded from Mexico.



Home Correspondence.

Dracæna indivisa.—This really fine plant has been growing in the pleasure grounds at Woodstock Park for several years at a little over 400 feet above sea level. As there appears some little doubt about its hardiness, and the position it ought to be planted in, I wish to say that some of the finest here are growing on the margin of the ornamental water, and others on the face of dripping rocks, where the water is continually percolating through the roots. One of the finest plants in this group is 12 feet 6 inches in height, the circumference of the stem near the ground line being 2 feet 4 inches, and at 3 feet 17 inches. This plant frequently has 1 foot of water over its roots for a month together, and last summer it flowered beautifully. Near this is another plant 11 feet in height, with seventeen suckers, which will soon be as large as the parent plant. I ought to say that these plants are not coddled in the least, but planted in a loose brashy soil. *G. Dodd, Woodstock, Ireland.*

Eucharis amazonica.—We have here some roots of this Lily that were potted last spring, and well shaken out, owing to being unhealthy, but were not separated. They made a good growth, and flowered well in July, having seven flowers on most of the spikes. In October they commenced flowering again, with chiefly six, and a few seven to a spike; and now (January) the same plants are flowering, with five and six flowers on a spike, and with thirteen and fourteen spikes on plants in 12-inch pots. The flowers are of average size, measuring quite 4½ inches across. The plants have been kept continually plunged in a strong bottom-heat, with a stove temperature, and from their healthy appearance we expect them to flower once more in the twelve months. *John Lambert, Keele Hall Gardens.*

Wellingtonia.—Is it a rare thing for the Wellingtonia gigantea to bear cones so far north as this? —I find one of my small ones, about 3 feet high, has three small cones on it. Also, how long do they take to come to maturity? *George F. McBeth, The Gardens, Banchory House, Banchory Devenick, by Aberdeen.*

Libonia floribunda.—This pretty greenhouse plant is not so extensively grown as it deserves to be, flowering, as it does, during the dullest of the winter months, which, combined with its free and compact habit, should make it a general favourite for conservatory decoration. I have several plants here which were struck from cuttings last spring, from 3 feet 6 inches to 4 feet high from the top of the pot, covered with their cheerful scarlet and yellow flowers, which have been in bloom since November, and are still looking quite fresh. The flowers also stand well when cut, and from their lightness and bright colours are very useful for vases, &c. × Libonia penrhosiana is also very free-flowering, but of a dwarfer and less robust habit than the preceding. They both succeed well in a cool greenhouse when making their growth; but after setting their flower-buds it is advisable to give them an intermediate-house, or a loss of foliage ensues which greatly detracts from their appearance. *John Wilks, Park House, Cheadle.*

Dendrobium speciosum and its Variety Hillii.—I was pleased to see this useful decorative plant brought so prominently before the public in your issue of January 27. I think there can be little doubt that when well managed it is one of the grandest conservatory Orchids we have. The appearance of the plant shown in fig. 18 leads me to suppose that there are varieties of D. Hillii. A plant was sent here from Australia, which grew and flowered well. It made a growth some 18 inches or more high, and produced long drooping spikes, beautifully curved, and about 2 feet in length. No matter whether from the top or side flower-buds, their great length and weight causes them to droop. This plant was sold at Stevens' rooms in July, 1875, and perhaps its present owner would some day furnish you with a spike. It is very superior to the old speciosum, whose spikes are stiff, as shown in your figure of Hillii, and not half the length and grace of the variety I speak of; but it is a plant by no means to be despised, as is the case sometimes. I took a large D. speciosum to the same sale, which the season before bore forty-three spikes, and when in flower measured over 6 feet across. Something less than 25*s.* was offered for it. It may be looked upon as a poor, unsaleable species, owing to a difficulty some find in blooming it. One may not be so successful as the Hon. and Rev. J. T. Boscawen, to bloom it three times, or even twice from the same pseudobulb; he may be content with once, and by giving it a decided course of treatment he will succeed. This can be done by placing it in a winery, say, in January or February, in a temperature of 50°, watering but once or twice till the flower-buds break. As the plant grows freely in an advancing temperature water can be given oftener. When in full bloom take it into a lower temperature, say 48° to 55°, in which will keep in beauty for six weeks. When flowering is over, take it back to the Muscat-house, if you have one, and give it a good growing treatment, being careful not to rot the young growths. When these are fully grown allow it to go to rest with the Vines, and stand about the cool vineries as dry as a chip till again required for flowering. The potting should be about the same as for Cattleyas. This winery treatment seems to suit it exactly, as it grows with the Vines, swells and ripens its thick fleshy stems with the ripening fruit, and ripens them with the ripening wood; and when ripe and dry I have no doubt it would bear a little hoar-frost, but it is not advisable to risk it, as colder than 38° could do no good. Your opinion of the long drooping-spiked Hillii would be read with much interest. *William J. Cross, Melchet Court Gardens.*

Clive House Seedling Grape.—The notice of this seedling by Mr. Bowie at p. 84 requires a few plain words. First, as to the implied charge of claiming to have raised the seedling myself, I have to say that I did not exhibit it as of my own raising. This condition was not required by the committee, nor was it demanded in the interest of horticulture. It is sufficient that the variety be new, distinct, and of superior merit. Second, as to the actual history of the seedling. That given by Mr. Bowie, that it was raised by Mr. William Caseley twenty years ago, is absolutely and demonstrably wrong. The Vine from which my specimen is believed to have been taken was raised by Mr. Bailey, late gardener to the Duke of Northumberland, at Stanwick, upwards of twenty years ago, and brought by him to Alnwick along with several other seedlings. Two of these are now preserved in the Castle gardens, and have all along been known and shown as Bailey's seedlings. I received mine six years ago; it was given, and was labelled, as Lady Downe's. On being fruited the difference was obvious to myself, to Mr. Ingram, the present head gardener at the Castle gardens, and others; and it was supposed to be, and has been freely spoken of as one of Bailey's seedlings ever since. No variety of Mr. Caseley having raised it has been given out till the past summer, when its superiority became manifest. The story of Mr. Caseley having raised it, was then and there flatly contradicted in the presence of a noted Grape grower. So far as I know and can discover, no seedling Vine other than those brought by Mr. Bailey has been raised and fruited at Alnwick Castle since Mr. Bailey came, upwards of twenty years ago. Third, as to my right to the seedling. On discovering its value I saw Mr. Bailey, whom I had not seen since he left Alnwick, and obtained his unqualified sanction to offer it, and do with it what I liked. Fourth, as to its identity with the seedlings now at Alnwick Castle gardens. I do not vouch for such identity. There were several brought by Mr. Bailey. Whether the one from which mine was taken has been preserved, and by what name was raised from one of those destroyed, I am not called on to affirm or deny. This, however, I know, that an attempt was made three or four years ago to obtain a certificate for one of these very seedlings, which signally failed, whereas on December 18 last my Grapes were unanimously obtained a First-class Certificate. Fifth, as to the name. It was necessary to give one before the Certificate could be issued, and in the circumstances above narrated I had no scruple in giving its present name, "Clive House Seedling," as Mr. Bailey, the only other party to be consulted, had given me full liberty to do as I liked. The Vine thus named and registered, must stand on its own merits. After all has been said, it is a foundling, the parentage and connections of which none can vouch for, but its high qualities have secured for it the unanimous approval of the Fruit Committee of the Royal Horticultural Society. *D. P. Bell.*

Royal Horticultural Society. — Mr. Bruce Findlay, whose name as a would-be guinea Fellow of the Society, when free, I was lately much pleased to receive, in his remarks (p. 148) on the Gardeners' Benevolent Institution—with which, let me say in passing, I cordially concur, and wish that our elections were conducted as the Albert Orphan Asylum ones are—is desponding as to the continuance of a guinea society, if dependent on the subscriptions of professional gardeners. In this also I entirely agree with

him. It would be a terrible tax on them. What would the richer classes say if they were asked to subscribe 1 per cent. of their income to promote horticulture? The list of guinea Fellows, now in the printer's hands, contains the names of many of the ablest and best known gardeners in the kingdom, who have thus shown their sympathy with the movement and greatly strengthened the list; but I think it would be Utopian to the last degree to trust to the hardly-earned wages of gardeners to furnish means of support for a great society. Professional gardeners can be excellent and most useful friends in many ways to a society without becoming Fellows, and many of them have considerable influence with their employers. In the report will be seen two instances where employers, in acknowledgment of long valuable services, have given their gardeners names as would-be Fellows. The Rev. E. R. Benyon, of Culford, named Mr. Grieve as a Patron four-guinea Fellow, as well as himself; and Mr. Robert Hanbury, of The Poles, gave Mr. Hill's name as a guinea Fellow. I believe these will not be solitary instances. It has been suggested that country societies should subscribe and nominate some of their body, and that some of them should be gardeners. I hope, somehow, we shall continue to have a fair sprinkling of them, and most of the country nurserymen; but the main support of a strong society must come from owners of gardens. In the test experiment made in this neighbourhood, out of some fifty would-be Fellows nineteen - twentieths were owners of gardens, and there was only one professional gardener, and he in a very good position. At p. 149 Mr. Rush—who I am glad to see will give his name to our list—reminds me that "the horticultural public cannot live long on the mere promise of guinea Fellowships." The only promise I have made is that when 5000 suitable names are forthcoming all the rest will follow. It is for the "horticultural public" now to work, not for me. I will gladly furnish circulars, &c., to assist the canvass, but horticulturists must work for suitable names in their own districts, where they have influence. *George F. Wilson, Heatherbank, Weybridge Heath.*

Temperature of Outside Vine Borders.—Perhaps it may be serviceable in the present discussion about heat for outside Vine borders during the period of forcing for early Grapes, to have the average temperature of the soil at 1 foot below the surface as supplied by Nature to a house started April 1, compared with the underground temperature at the same depth enjoyed by Vines started December 1, supposing in each case that the house had been shut up with sun-heat in the afternoons, and occasionally syringed for a fortnight previous. From the daily record of the underground temperature kept here with tested thermometers for the Scottish Meteorological Society, at depths of 3, 12, and 22 inches, I have taken the mean temperature for each month at 12 inches for the years 1874 and 1875. In order to avoid any local peculiarity, and to widen the average, I have taken the means for each month over the same period as registered at Thirlestane Castle, Berwickshire (obtained from Meteorological Society's *Journal*), and by taking the mean of the Sutherland and Berwickshire averages for each month, I think it will give a fair average for Scotland:—

Natural Mean Temperature at 1 foot Underground.

January	35.1	July	59.4
February	35.2	August	57.8
March	38.7	September	54.2
April	45.2	October	47.2
May	50.9	November	40.8
June	55.8	December	34.6

Natural Mean Temperature at 1 foot Underground for House Started Dec. 1.		Natural Deficiency for House Started Dec. 1.	Natural Mean Temperature at 1 foot Underground for House Started April 1.	
		°		°
First month,	December	34.6	30.5	April .. 43.1
Second ,,	January..	35.1	15.1	May .. 50.2
Third ,,	February	35.2	20.6	June .. 55.8
Fourth ,,	March ..	38.7	20.7	July.. 59.4
Fifth ,,	April ..	45.2	12.9	August .. 57.8
Sixth ,,	May ..	50.2	4.0	September.. 54.2

From these figures it will be seen that Nature supplies a considerable mean monthly increase of temperature in the soil during the first four months of growth in spring—beginning at March with 38°.7; April, 45°.1; May, 50°.2; June, 55°.8; reaching the maximum in July, at 59°.4, after which commences a steady decline. It has been proposed to cover early Vine-borders early in autumn, and to depend upon Fern or thatch and covers to supply the necessary root temperature for forcing during the winter months. I fear there would be considerable risk attending this method, where the roots are all outside, as though no doubt a few degrees more than the natural underground temperature would be secured, yet I doubt if more than the natural increase of temperature in the soil could be looked for; indeed, from December to February there would probably be a steady fall, as the heat retained in the border in autumn would be gradually given out and lost, thus giving a falling instead of a rising underground temperature during the first three months of growth, and reversing Nature's method. Even assuming that these coverings furnished an increase of temperature corresponding to the ordinary underground increase, that would only give a rise of 4°.1 from December to March, the natural temperature at a foot underground being, December, 34°.6; January, 35°.1; February, 35°.2; March, 38°.7. Too much artificial heat is no doubt injurious to early Vine borders. If we go to the other extreme, and give none at all, I believe that will be found equally so. Experience and observation of Nature's teachings would seem to indicate that the road to success lies between the two extremes. *D. Melville, Dunrobin.*

Poinsettias.—In many places the conservatory is attached to the mansion or villa, the stove being some distance away, as is the case with me. The ladies go into the conservatory a hundred times where they would only go into the stove once. Therefore, to enjoy them as much as possible, Poinsettias should be moved to the conservatory as soon as they have tolerably good-sized bracts. On December 18 I took my plants into the conservatory, and to-day, February 5, they are still quite fresh. The temperature ranges between 48° and 55°, but never above the latter. I keep them on as dry a bottom as possible. They require much less water when removed to a colder house. *G. P., Holland House, Weston-super-Mare.*

Three-quarter Span-roof Garden Frame.—Messrs Boulton & Paul, Rose Lane Works, Norwich, have favoured us with the accompanying illustration, fig. 29, of a new frame made by them for growing Cucumbers, Melons, &c., and for storing plants. It is made to give greater height and more convenience



FIG. 29.—CUCUMBER AND MELON FRAME.

than other frames made by the same firm. The front is 11 inches high without the light, 32 inches high at the ridge, and 22 inches high at the back. The front lights can be turned back on to the lights behind, and back lights be turned on those in front, giving access to all the plants inside. They are made of red deal, and glazed with 21-oz. glass. The illustration shows the lights to open with gearing, any of the lights can be lifted up when required without altering the other lights. The back and front gearing work separately.

Large Garden Pots.—Having seen at pp. 80 and 147 notices of the different sizes of flower-pots in use, I thought it might be interesting to some of your readers to know that galvanized iron pans serve the same purpose, where a size of pot larger than is made at the potteries is wanted. Wooden tubs are generally used for plants requiring a shift at this stage, but these are not very durable, though made of the best material, when used for plant growing. We don't know how long galvanised iron pails will last, but should expect them to last much longer than wood. Some may have doubts about using iron for plant growing, iron being considered to be injurious to plant roots; but such does not appear to be the case with galvanised iron, as we have had them in use for the past twelvemonths for different sorts of plants, which are in the best of health. The pans are full of roots, and the roots in contact with the iron are as fresh and healthy as those grown in the common earthenware pot. I may say that they are painted outside the same colour, and made the same shape as the common flower-pot, and at a little distance the one would not be known from the other; also that the first cost of them is little more than the price of the largest-sized pot made in this locality. *P. G., Leyswood, Sussex.*

The Buckley Fund.—In the interest of those for whom the above fund has been subscribed, I, as hon. treasurer, beg to announce, that at a meeting of the committee held on Monday evening the 5th inst. at the "Criterion," Piccadilly, a sub-committee was appointed to take preliminary steps for placing one of the sons of the late Mr. Buckley in a suitable institution with a view to his receiving a sound education, &c. It was further decided to hold another meeting in the same place on the 19th inst., at 7 o'clock P.M., for the purpose of hearing their report and arriving at some decision with respect to the manner in which the balance of the fund shall be applied. Any gentleman wishing to subscribe will please do so at or before that meeting, when it is hoped as many subscribers as possible will make it convenient to attend. *George Deal, 13, Carlyle Square, Chelsea, Feb. 7.*

Bottom-heat Without Cost.—I was tickled with an article at p. 107 on "Bottom-heat Without Cost." I read it carefully, and found that it was Knight's theory revived—namely, that the earth was heated by the air, and not the air by the earth, and, *ergo*, no plant could have any cause to complain that was placed on a stage of wood, since the red brick pot and the soil therein had the same warming apparatus as that which warmed the foliage of the plant. The reasoning was faultless, but, alas! the theory could not be reduced to practice, for the Pine-apples grown upon shelves were shabby and worthless, and the system has been a laughing stock from that day to this by practical men. The Pine-apple has peculiarities that are not always taken into account. The plant is a regular pitcher-plant, carrying in its capacious sockets a large amount of water against a day of need, and its channelled leaves are formed by Nature to keep up the supply by every watering, sprinkling, condensing, &c. By whatever means it quenches its thirst, one thing is certain, that it will endure great bottom-heat and turn the same to good account; the plant is a surface feeder, and never travels far unless it gets planted out on a bed of decayed leaves, and like half the plants known riots in leaf-mould. The difficulty in getting bottom-heat for the Vine is great, on account of the rambling character of the plant, for it will travel in good pasture 30 or 40 feet from the place where it was planted. Its rambling shoots are notorious runners, but not more so than its feeders, but as the one works in the dark, as do the other in the dark, no notions are entertained respecting them. The practised eye, however, will recognise a healthy feeder, and read its history; its size, its colour, its plump appearance, are all marks of excellence regarding the medium in which it has lived. An eminent Grape grower in the North has registered in the mode by which he manufactured the finest samples of Grapes that up to that time had ever been seen, and they certainly got bottom-heat, and perhaps three times as much water as we were wont to give to growing Vines; but let any one examine a Vine branch, and see the sec ion of the one-year's wood, which is open like a sieve, so that when a Vine bleeds from mismanagement it runs like "a sma' still." Much judgment is needed to hold the candle to the Vine, for the wet and warm time is only to be tolerated when the plant is making wood, for when the fruit is ripening it is not to be tolerated to the fruit, both as to size and flavour. I mean to say that the necessary quantity of water could not be given to Vines unless the border were heated, and however useful it may be to cover borders with litter, leaves, boards, &c, to keep out frost and chilling rains, the extraordinary size and quality of Grapes grown at Chatsworth, Dalkeith, and other places where borders of a few inches. Cuttings not only strike best in a good bottom-heat, but much time is gained thereby, showing that a temperature much above what a cold frame yields is the best artificial medium for success in that line. I do not recollect ever seeing the earth forming the floor of a vinery or Peach-house well managed, for when watered at random by the boy in charge it is well wetted on the surface but not so lower down, and when the fruit has hung long on the trees the earth will be dry enough, if it were clay, to burn for bricks: and who is to guarantee its sufficiency of water, for the earth must not be forked beyond a few inches lest the roots should suffer? At Cluny, in Aberdeenshire, the fruit-houses were kept in the neatest order I have ever seen, for the surface soil wore holiday attire, and consisted of finely sifted very black peat or bog earth, and tickled into the corners with a very small birch besom. Now the state of the inside border, thus disguised and painted black, could not be ascertained; and the Peach, being a hardy plant, certainly got bottom-heat as much as it required for nothing. I went to Leek, in Staffordshire, once to see two tanks containing gold fish, and was surprised to find what a temperature the fish could bear, for they thronged the place where the warm water came in from the engine, and bred freely. Again, at Maidstone, where the condensed water from a paper-mill entered the river, the place was thronged with small fish, who evidently

took kindly to water not heated by the sun's rays. Bottom-heat for most exotics, and also for many native plants, is certainly one of the salient points of the best practical horticulture. I have seen Orange trees restored to health and vigour by the application of bottom-heat long after they had ceased to be ornamental, and this alone should stand for something in making up the score of bottom-heat, for the tubs and boxes usually employed in Orange culture make them clumsy to handle, and although they are surrounded on all sides with "bottom-heat without cost," they have not benefited by it; so that I fear if a thermometer were inserted one foot below the surface of the floor of a vinery, or of the surface of a large Orange tub, we should have the clearest evidence that the writer had given us the "cold shoulder" instead of "bottom-heat for nothing." *Alexander Forsyth.*

Inside Vine Borders.—I am pleased to be able to confirm the statement made by Mr. Wildsmith at p. 150. As to the inside borders of the houses at Heckfield Place I may say that I am firmly of opinion that as good Grapes, if not better, can be grown in inside borders as in outside ones. As to the lasting properties of borders put in inside borders I can say that we have here a late house of Black Hamburghs, which was planted about thirty years ago, and in which the rods measure 20 feet. The length of the house is 33 feet, and the inside border 9 feet wide only. I may also state that this house bore a most excellent crop of fruit last year. On an average the bunches weighed from 1 lb. to 2 lb., and were of a beautiful colour. There were about 250 bunches, with large berries and well finished. *J. Clarke, Gr. to Lord Hastings, Melton Constable, Dereham.*

Zephyranthes Atamasco.—The plant grown as the Atamasco Lily in most European gardens is, I think, not the A. Atamasco of Linnæus, but L. candida of Herbert. The true Atamasco is, I believe, very rare at present in Europe. I first saw it in flower at Leyden in April, 1874, and having received some bulbs from Kentucky, through my friend M. Leichtlin, this last autumn, I was pleased to see it out in my own greenhouse on February 4. The flowers, which is well represented in the *Botanical Magazine*, vol. vii., pl. 239, is 3 inches long, pure white when open, with a long tribd stigma and yellow anthers; the leaves are thin, narrow, and channelled, but in a variety from the Southern States, which is said to have a larger flower, they are quite linear. The plant is doubtfully hardy in this country, though Herbert says it will stand out if planted in white sand. Zephyranthes candida (Herb.) is an autumn-flowering plant very inferior in beauty to the Atamasco Lily, but is extremely hardy, and increases freely by offsets, which the other does not seem to do. It has thick, fleshy, evergreen leaves, which endure a severe frost without injury, and a flower about 1½ inch long. It comes from the banks of the Rio de la Plata in South America, where it is very abundant, and is well figured in the *Botanical Register*, vol. ix., pl. 724. The finest of the whole genus is Zephyranthes carinata, which is now pretty common in England, and which does well in a cold frame. Its large pink flowers appear about August. There are also in cultivation Z. sessilis, a Jamaica plant, which I found common in gardens in Ceylon, flowering in April; and Z. tubispatha, a very pretty species, which I first saw at Messrs. Hagge & Schmidt's nurseries in July, 1875. The bulbs seem difficult to manage, owing to their habit of breaking up into many small offsets, which do not flower. Z. rosea is a charming species, with a small pink flower like a miniature Z. carinata. The Z. ochroleuca and sulphurea of gardens is Habranthus Andersoni. I may add that Xiphion Histrio was in flower on Christmas Day, and X. reticulata on February 2 in the open ground, both at least a month before the usual time. Different species of Crocus have been in flower without intermission all through December and January, whilst Tree Pæonies are now in full leaf. Can any one tell me how to distinguish between Lachenalia pendula and L. tricolor, as neither Mr. Baker's descriptions in the *Journal of the Linnean Society*, vol. xiii., nor the numerous figures in the *Botanical Magazine* and *Register*, seem to give any constant characters by which they may be separated. As far as I can see, L. pendula, tricolor, quadricolor, aurea, luteola, and orchioides (Hort.), not L. orchioides of *Botanical Magazine*, 854, are all varieties of the same plant. *H. J. Elwes.*

The Season.—Is not this a most unusual season? On Saturday, the 3d inst., looking round the garden I saw many different flowers in bloom, and hearing the charming notes of our native songsters made my heart rejoice as on an April morning. I have a small bed of Tritoma Uvaria, on which I counted seven spikes of bloom. More young ones are throwing up their tender heads, and looking as cheerful as though it was July. I must admit that our soil, about 3 feet of good loam, is very suitable for them, but the situation is very high, about 500 feet above the level of the sea, and 2 miles from it. On the same day I gathered some beautiful Roses, including Maréchal Niel, and I saw Cowslips, Myosotis, Veronica, Virginian Stock, Brompton Stock, Wallflower, Sweet Rocket, Polyanthus, Violets, Snowdrops, Primroses, Crocuses, Fuchsia, Vinca, Daphne, Ericas, Jasminum, Berberis, and the male Aucuba, all in flower.—*J. P., Ore Place, Hastings.*

The Double Poinsettia.—This, with me, has been very fine, the centre bracts coming up well, and when fully developed formed quite a dome-shaped head, having a very brilliant appearance. Next year, when the plants have gained more strength, I have every reason to believe it will be much finer. It is a decided acquisition. *R. Willmet, Glenart Castle, Arklow, Co. Wicklow.*

West's Patent Trellis.—The new adjustable trellis, of which figures are annexed (figs. 30, 31), is the invention of Mr. J. F. West, of Lympstone Lodge, Regate. It is a contrivance which is especially likely to be useful to amateurs, since it does away with the, to them, often inconvenient use of ladders and steps in the manipulation of their Vines, whether it be the tying-in or adjustment

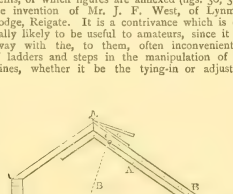


FIG. 30.—WEST'S ADJUSTABLE TRELLIS AS LOWERED.

of the shoots, or the tedious work of thinning the berries. Instead of having to mount up to the roof to perform these operations, those who have this trellis fixed can have the Vines brought down to any convenient height, so that in fact they can be carried out while the operator is standing on the floor. It will be equally available in the case of roof creepers in conservatories, so that if not too costly it may be regarded as a boon to this class of cultivator. Whether or not it will come into general use in the construction of vineries, Cucumber-houses, &c., de-



FIG. 31.—WEST'S ADJUSTABLE TRELLIS.

pends very much on the price at which it can be fixed. The following are some of the explanations given:—

"By the use of this trellis such portions of a Vine or its produce as are inconveniently placed are rendered movable, so as to be brought within easy reach for the various purposes of thinning and cleansing the Vine or plant, gathering the produce, or any other object for which facility of access is desirable, and which by the ordinary method is attended with great difficulty. A great advantage in this arrangement of trellis is, that it can be moved gently by gradation to any suitable position in order to subject any portion of the produce of the plant to the sun's influence. The lowering of the trellis cannot in any way injure the stem of the Vine, if trained as in the drawing, the deflection being very slight. The trellis may be constructed of either iron or wood; when made of the former, which is preferable in many respects, it combines lightness of appearance with strength and durability; it can, moreover, be fitted to any shaped house. Vines covering a lineal space of 60 or more feet may be lowered singly or together by turning one handle. In the drawings, AA (fig. 30) shows the trellis in position and lowered; BB the chains for lowering and raising; and CC the drums and pulleys round which the chains work. DD (fig. 31) shows the form and construction of the trellis."

Vegetable Exhibitions.—Mr. Gilbert's query concerning future "vegetable shows" is exceedingly well-timed, as I hear from Mr. McKinlay that the Potato Show committee is to be convoked on the 14th, and some pressing suggestions in favour of the incorporation of a committee or society under the name of the "National Vegetable Exhibition Society" would probably on that occasion meet with consideration and possible acceptance. Having already had two years' trial, out of which the committee has come with success, it is but fair towards it to assume that it possesses within itself those elements of government and business capable of carrying out to a successful issue an annual exhibition of kitchen garden produce on a truly national scale. To form another committee to inaugurate "vegetable shows" would be to fritter away means and strength. There is too much reason to fear that this is now being done in the formation of Rose, Auricula, and Carnation and Picotee societies, because these are all florists' flowers. All of them specially appeal to the interests of the trade and the sympathies of the gentleman amateur, and the same body might well arrange for and conduct the whole, adding also the prominent florists' flowers of the late summer and autumn to its lists of exhibits. In reality the promoters of these societies should have made a bold and spirited dash, and have formed a "National Society for the Encouragement and Exhibition of Florists' Flowers," and then, instead of a number of small and comparatively insignificant bodies, we should have possessed a national body worthy of the name. Fruitists might well take a similar course, as "national fruit exhibitions" held annually in the metropolis or elsewhere, among the horticultural wants of the age. We have frequent large fruit shows away in the North, but these are not, after all, representative, and are chiefly local in their operation. A national exhibition of fruits might well become one of the greatest horticultural events of the year. Looking at what has been accomplished with Potatos alone at the Alexandra Palace, and with vegetables generally at South Kensington, it is evident that if the two things were allied a grand exhibition would result. If the Potato Show committee has allied to it the harmless spirit of the dove so characteristic of the Potato cultivator the wisdom of the serpent, it will at once determine to widen its borders, and embrace in its future shows all the most desirable forms of kitchen garden produce. About £100 given in prizes for Potatos, and a similar amount for collections, large and small, of seasonable garden vegetables, would be productive of splendid results, and the introduction of exhibits raised from seed, added to Potatos, would be largely instrumental in evoking support and aid from the seed trade in a body, and much pleasanter results might be expected to have been reached than those for the past year or two when vegetable growers have had to look to one or two enterprising firms only for encouragement. That the formation of independent societies will tend to weaken the position of the Royal Horticultural Society there can be little doubt, but when the governing body of that society shows so little sympathy for horticulturists, and so much for the local gentility of South Kensington, it can scarcely complain if horticulturists, finding their wants still unsupplied, should summarily set about satisfying them in their own way. There is not a gardener or cultivator in the kingdom but will prefer, with his annual guinea subscription, the privilege of voting and taking part if desirable in the management of the society to which he contributes, and one and all of these new bodies will give him freely what the Royal Horticultural Society withholds somewhat contemptuously. Beyond these considerations, however, lies the fact that there are few horticulturists that have not their specialities, and for the promotion of which they are willing to make their little sacrifices. The Royal Horticultural Society appeals to no speciality, and its chief strength just now lies in the support it receives from certain of the trade who find its meetings a useful mode of advertising or keeping their productions before the public. To Mr. Gilbert and scores of other gardeners a "Vegetable Exhibition Society" would appeal with special force, and would be certain to receive almost an enthusiastic response. The Potato committee will do well to consider this whilst the course is clear, and exhibitors are anxiously awaiting the event. *X.*

The Course of the Sap.—Mr. Andrew Murray's theory has the merit of simplicity, and, so far as it goes, is true; but it goes a very little way, and leaves everything unexplained. That the sap is supplied by the roots, and flows gently and persistently, except in the coldest months, through the stem to the leaves, where its watery part undergoes evaporation, is well known. That the sap never descends is admitted. It is contended that it is changed in the leaf into the proper juice of the plant, and finds its way downwards and in all directions as required for nourishment and growth. A tight ligature round the stem causes an enlargement above it, as Mr. Murray admits; but his illustration—"a pent-up stream swelling after it has passed an obstruction"—is not happy. A stream pent up by a partial obstruction swells behind the obstacle, and not beyond it; and this frequently happens in the obstructed stems of trees. If there should be any latent buds below they will break and grow, as gardeners know, and accord-

ingly practise when they want bottom-wood. Mr. Murray's paper implies a denial of all downward growth. He ignores Dr. Darwin's experiment, recorded in books, by which he traced the ascent of a coloured infusion, in a species of Euphorbia, to the extremities of the leaf, and the descent of a milky juice in another set of vessels from thence into the petiole, on its way to the stem. But those who have practised ringing, watched the effects, need not look further for evidence of a downward growth. To mention one among many cases. A thriving young Scotch Fir in my shrubbery, about 4 feet high, was completely barked below the branches for about 2 inches by the friction of a ligature. This happened in winter. The following year it grew but little, but threw out an abundant foliage of a lighter colour than before, and the next year, in addition, a numerous crop of small cones. All this time, and during a third season, the whole stem above the denuded part increased in girth, while below it remained as before the accident. Ultimately the wound grew up by an advance of the upper lip, and the tree, but with a spindly shank, resumed its ordinary growth. Such are the ordinary effects of ringing—an enlargement of the upper branch at the expense of the lower stem and the roots; a shorter growth of wood, a disposition to form flower-buds, and, in the case of fruit trees, earlier, larger, and more highly coloured fruit. How may this be explained, except on the theory that an unusual supply of the proper juice is stored in the ringed branch, and that it is full fed, while the stem and roots are deprived of their usual share, and so perhaps checked in their action. Mr. Murray's theory does not guide us to an answer—it seems to be useless. *S. S., Sevenoaks.*

Mildness of the Season.—This place is situated about 500 feet above sea level, which no doubt has much to do with our singular exemption from frost. We have, however, the disadvantage of lying on the north side of an extensive ridge running eastward from Tunbridge Wells, and so steep, indeed, is the incline northwards that the sun does not shine on any part of the ground in the kitchen garden before 9.30 A.M. at this season of the year. Our altitude and position does not altogether account for the condition of things at the present time. In the rockwork round my house scarlet Pelargoniums of sorts are still alive, the old lemon-scented variety appearing to be very comfortable, and putting out new leaves. Petunias and Maurandya Barclayana against a wall continue to grow, and Verbenas are growing almost as well as they did in the summer, but of course not so. I took cuttings from them on Monday last, which evidently will strike freely in heat. Intermediate Stocks planted for seed last spring still continue to flower; and two large Hollies moved last spring have been in flower since November. They are both males, or I might have had the opportunity of watching the results, for although so exceedingly mild, the excessive rainfall has made winged insects scarce. Potatos lieft in the ground at lifting time, 5 feet from the way in the kitchen garden, are 7 inches high, and have lea es quite sound. Farther from the wall their tops were touched, but I see to-day (February 1) that they are making fresh leaves. Notwithstanding the mildness, the want of sun has prevented wall trees from making that progress which they often do during sharp frost when there is sunshine with it. They look much more promising, however, than they did at this time last year. *D. Buchanan, Sherwood Park, Tunbridge Wells.*

High-class Potatos.—Charles Mackay in one of his fine songs makes a clown to exclaim :—

> "The king can drink the best of wine,
> So can I, so can I ;
> And has enough when he would dine,
> So have I, so have I.
> And cannot order rain or shine,
> Nor can I, nor can I :
> Then where's the difference let me see
> Betwixt my lord the king and me."

I often have this stanza brought to mind when I sit down to partake of a dish of Potatos as good and as delicious as can be had in all the wide world, and know that even the Queen, with all her garden and power, cannot have at her table a more acceptable dish of Potatos than I can. Those who cultivate only coarse growing kinds, and are thoughtful how speedily to fill the bushel as a matter of preference to quality, must remain ignorant of the delicacy found in a well cooked dish of high-class Potatos. It is a noble peculiarity of this esculent, that if intrinsically good it needs only the addition of a pinch of salt to render it perfect. All other condiments or additions serve only to spoil, and if he has but the best sorts [and somebody to cook them], the humblest cottager may have his Potatos served up in all respects equal to those sent to the table of a noble. A friend to whom I sent some of the Rector of Woodstock, said, "they are so delicious that I keep them expressly for my Sunday dinner," probably intending to pay tribute to the quality of the Potato, and to the high appreciation of his palate. Similarly, when I can sit down with more than usual leisure to partake of the mid-day meal, I have a dish of either Lapstone, the Rector, President, Scotch Blue, Onwards, Bountiful, King of Potatos, or some similar garden variety, in none of which are found the popular Artichoke texture and earthy flavour so prominent in the coarse American kinds. On the 4th of this month I partook of a dish of President that had been lifted with others from the field only the day previous, having been almost flooded during the greater portion of the winter. They had lain in the ground five months after ripening, and yet were as white, mealy, and delicious as it was possible for a Potato to be. The prevailing rage for "bulk" is driving these more refined garden kinds out of the field, and yet there are none more fit for eating. A small Potato, the size of a hen's egg, if of the best quality, is worth one twice the size for eating, if the latter has only size to recommend it; for, after all, though the market grower is only concerned to fill the bushel, the private gardener has his employers' table to cater for, and no gentleman will be content to dine off Artichoke Potatos when he knows he can have those of the highest quality. Those who cultivate the little Golden Queen Apple or White Pear Pea tell us that they prefer flavour to mere size, and their taste is to be commended. On the same principle Potatos less in size, but of more delicate flavour, than big coarse ones, should be grown by all who prefer quality to mere size and bulk. *A. D.*

Cauliflowers.—It is much to be feared that most plants of these raised from autumn-sown seed will play tricks this year and "bolt," for, to use a familiar agricultural term often applied to Wheat when too forward, they already look "weather-proud." This weather-proud appearance results from an unusually mild winter, accompanied by one of the most excessive rainfalls on record, and the two combined have tended to force the growth so much that Cauliflower plants are now as forward as they ought to be in April. Whether under glass or entirely in the open air, the case is just the same, and it will therefore be unwise to trust entirely to either, for the instances are that those who do so will find themselves without a supply just at a time when they are the most needed. In view of this it is well, I think, to sound a warning note, that timely preparations may be made to avert a scarcity of a vegetable held in such universal estimation. The Cauliflower is a gross feeder, it is. The best plan to adopt, is to sow seed at once, in light rich soil in pans or boxes, and place the same in heat, so as to get it up as quickly as possible, after which it should be nursed on close up to the glass, where it can get both warmth and air, to keep the plants from drawing. As soon as large enough to handle they should be pricked out at about 3 inches apart, on a gently fermenting hotbed, where they may be allowed to remain till they are of proper size, and the weather is sufficiently favourable for planting them out. Treated in this way they will be found to turn in almost as early as those sown in August, which in even ordinary seasons are very disappointing from the premature way they turn-in, while those raised now never fail to give satisfaction, and produce full-sized heads if properly cared for as to soil and situation. The great point with spring-sown Cauliflowers is not to coddle them unnecessarily, but to keep them up close to the glass, where they can have plenty of light and air to induce a strong, sturdy habit, in which state they are much preferable to such as have been wintered though. As to sorts, there is none better for spring work than the old Early London—a variety that is in much esteem with market gardeners, who, as a rule, are pretty good judges of what is best to grow, and if with this popular variety some Walcheren are sown at the same time, and treated in a similar manner, they will come in well to succeed them. As to autumn-sown plants, where they are not in too forward a condition to destroy all hope, the only thing that can be done for them now is to expose them to all the air possible by keeping the lights or handglasses off both day and night while we get a continuance of the present mild weather; and should sharp frost occur, even then they should be tilted, as Cauliflowers will stand a good deal if they are thoroughly dry, although it should be borne in mind that they are just now more tender than usual from the free soft growth they have made. *T. S.*

The Weather of 1876 in West Herts.—The rainfall of the first four months in this year, calculating the whole to the end of April, was very heavy, amounting to 10½ inches, and on comparison with the same months of 1875 the fall of that year to the end of April amounts to a little over 6½ inches. It will be seen that last year the rainfall thus far was very copious; but it is of the next three months that I would speak more particularly. The amount registered for the whole month of May was a little over half an inch. The same amount would fall quite freely in two showery days, but in this month it took eight damp days to obtain so much, the showers being very slight, except on the 22d, when 0.29 inch was registered. The month of June was a little better—1.26 inch, or about equal to four showery days, though in this month it took eleven slight showery days, the heaviest fall happening on the 15th, when 0.54 inch was registered. The month of July was no better, 1.27 inch being registered; the same as June, equal to four or five, at most, showery days, the showers being heavier in this month, the whole amount falling in seven days—the heaviest fall happening on the 31st, when 0.62 inch was registered. Thus it will be seen that in the ninety-two days comprising these three months, for sixty-six days no rain whatever fell; for fourteen days the rainfall individually did not exceed the three-hundredth part of an inch for each day, and for twelve days out of the ninety-two the showers were moderate. August was favourable, 2.34 inches being registered in ten wet days, the heaviest fall on the 4th, when 0.55 inch was registered. September was exceptionally wet, near 5½ inches being booked in fifteen days, the heaviest fall on the 6th, when 1.43 inch fell in the twelve hours. October was much drier, 1.41 inch being booked in nine days; the heaviest on the 11th, when 5.3 was registered. November was very wet and stormy, 3.67 inches falling in sixteen days, the heaviest on the 28th, when 0.90 inch was registered. But we must hold our breath for a moment, and bestow the palm upon December—5.83 inches. Very nearly 6 inches of rain fell in twenty days, the heaviest on the 23d, when 0.78 inch was registered, or nearly equal to nine months with the rainfall of May. The whole amount for the twelve months of 1876 was a little over 32 inches; in the twelve wettest days over 8½ inches fell, and for 154 days in the year rain fell more or less. This is a very old garden, and the soil being very porous, a long continuance of drought is very disastrous indeed; but in sympathy with others who suffered quite as much elsewhere in other districts, I will remind them that, although such tropical drought was endured throughout the months of May, June, and July, the average rainfall was attained before the close of the year, and the incessant downpour of the last five or six weeks makes one wish that a larger quantity had been bestowed upon us in the months above-mentioned. The bloom on all wall fruit trees, and on Peaches and Nectarines in unheated structures, is very forward; if severe weather should succeed this mild we think the consequences will be very serious. *J. Thompson, Gorhambury Gardens.*

Dwarf Lobelias.—I think every one who has had any experience with Lobelia Lustrous will endorse your correspondent's statement at p. 151. Last season I had the following varieties placed side by side, to enable me to compare the various merits of each:—Bluestone, Ebor, pumila magnifica, Lustrous, pumila grandiflora, Brilliant, Mazarine Gem, Cobalt Blue, flore-pleno, and Wellamii. I found the following the best of the Lobelia compacta class:—Ebor: this is deservedly known, except in Yorkshire, but for effect it certainly eclipses all else. The colour is so dark and intense that it may justly be called purple, and if planted side by side with pumila grandiflora the contrast is most pleasing, and very effective. Pumila magnifica: also very good. Lustrous is exceedingly pretty, and for edging stands next. Bluestone, self colour, is the nearest approach to the first-mentioned, and, like that variety, has no white eye to mar the effect. Pumila grandiflora is too well known to require comment. *H. Cannell, jun., Swanley.*

The Late Storm.—One of the most destructive storms that have occurred for many years past in this neighbourhood (Bury St. Edmund's) was experienced on the 30th ult. At a few minutes past 10 A.M. the wind blew a perfect hurricane for about ten minutes, accompanied with heavy rain. The direction of the wind was due west. From half-past 10 o'clock the sun shone out brightly until about 1 P.M., when another storm came on, the wind blowing with equally as much force as it did earlier, but the gale was of shorter duration. With this storm, hail, rain, and snow came down in a complete sheet for a few minutes, accompanied by one heavy clap of thunder. The destruction which these storms caused at Ampton Hall, the seat of B. B. H. Rodwell, Esq., M.P., is almost indescribable, and the fine stately Cedars of Lebanon for which Ampton is noted suffered severely. Some of these Cedars are apparently the growth of centuries, and one of the largest was uprooted near to the Hall, and lies prostrate on the lawn with tons of earth torn up with the roots. This tree measures about 90 feet in height, and 15 feet in girth at the thickest part of the bole, while seven other large Cedars shared the same fate, and several are much shattered by the branches falling in all directions. The trunks have the appearance of having been struck by lightning, and they are literally splintered from top to bottom. Two very

large Planes, and one of the most prized trees on the estate, the Catalpa syringæfolia, shared the same fate, lying prostrate on the lawn. In the extensive pleasure-grounds huge limbs of hard-wooded trees bestrew the grass and walks, leaving undoubted proofs of the violence of the storm in all directions. Adjoining the end of the pleasure-grounds is a grove, consisting chiefly of Beech trees, from which it derives its name (Beech Grove), which presents a spectacle seldom or never witnessed in this locality: scores of trees, mostly Beech, but here and there a Silver Fir or a Cedar of Lebanon, have been swept down. Several Scotch Firs and Austrian Pines, apparently having too firm a hold of the ground, were snapped asunder as if sawn off, and hurled yards away from the stump. In the belts and coverts on the boundaries of this and adjoining estates the trees were swept down by hundreds, and houses were partially destroyed, in some instances by chimneys falling in, and tiles and slates were blown about in all directions. Altogether this was one of the most disastrous and distressing storms experienced of late years in this locality. *Spectator.*

The Villa Garden.

WHEN will the fine weather come?—weather so brisk and drying as that the "rain which raineth every day," or almost every day, may subside below the surface, and enable the gardener to get on to the soil, and resume his long suspended operations? We are among those found regretting that they dug any portion of their spare soil in autumn; but then who could have foreseen the persistent rainfall that has happened, and which will make the winter through which we are passing famous in the annals of time? Soil of anything like a retentive character that was dug in autumn is now of a very sticky character, and moves far worse than that which has been left untouched. And yet if we had experienced instead of the rain a period of sharp frost and drying winds, the soil moved with the spade in autumn would have been benefited by it. We must, like sensible persons, take things as they are, and make the best of them.

KITCHEN GARDEN CROPS.—Early Peas sown in November are now coming through the soil; and, the rain notwithstanding, the bright sunshiny periods that do manifest themselves to our great gratification show us the rows of Peas making a surprising progress. If the soil is too wet to hoe it by the sides of the rows, a gentle stirring process among the Peas will greatly assist them. The genial quickening influences of the warm sun and the balmy air favourably incites the crop to active growth when they can penetrate the soil. The birds are finding these Peas out, and their depredations must be checked. A young cat hungering after its first taste of bird-flesh is an excellent protector as long as the fit of enthusiasm lasts. Slugs are troublesome also, but a little dry lime or soot sprinkled along the sides of the rows generally answers the purpose of an effectual barrier. This sprinkling needs pretty constant repetition for a time.

Slugs are very troublesome just now to the winter Lettuces. They are putting forth a delicious young growth, and slugs are as much gourmands in their way as the representatives of the higher orders in the animal kingdom. Here also a sprinkling of lime is of great service, and also stirrings of the surface soil. If frost and snow should come, a few branches of Spruce Fir strewed about among the young Lettuces will prove a great protection. One scarcely dreams of such wintry influences coming among us with a sudden rush, but we must not presume on the tractable character of the season.

The Early Longpod Beans, planted at the same time as the Peas, are moving on with great rapidity; when sown on a slightly sloping south border, with a wall, hedgerow, or belt of trees at the back, they are in a very favourable position. In a neighbour's garden we saw a few days ago, a piece of Seville Longpod Beans fully 9 inches above the soil, and growing very strongly. They are now earthed up to within 3 or 4 inches of the tops, and the soil between the roots has been well stirred. Nothing in the way of a kitchen-garden crop can look more promising, and if only the spring will be merciful a good crop may be anticipated. Potato planting will shortly claim attention, that is, as soon as the soil is at all workable. Seed Potatos are giving some trouble this season, especially the early sorts, for they, owing to the mild, moist weather are growing very fast. The best thing to be done is to get the seed spread out as thinly as possible in a cool airy place, so that they can sprout into growth. It is a good plan to have the seed in shallow boxes, so that they can be carried to the ground where they are to be planted without the necessity for meddling with or moving them. We have recommended in previous papers the ridging up for the winter of ground intended for early Potatos. Supposing this was done last autumn, and the weather becomes dry enough to move the soil, planting can be proceeded with, and when the planting commences the rubbish-heap that we have so frequently recommended comes into play. A rubbish-heap to be in the highest degree serviceable should be occasionally fired, or at least all the coarser woody portions of it should be burned. This gives a valuable lot of ashes, and these ashes, when mingled with leaves, refuse soil from the potting-bench, clippings of turf edges and flower beds, the sweepings from walks, &c., forms an excellent material to put in with the seed Potatos. The valleys between the ridges should be first forked up lightly and the soil beaten to pieces as much as possible, then some of the material just referred to spread in the trench, the seed placed on it, some more added (in quantity sufficient to cover the tubers), and then some of the soil from the ridges crumbled in over them. By-and-bye, when the plants grow, and earthing-up becomes necessary, the soil of the ridges can be used for the purpose, and, finally, the soil on which they rested forked over, so as to supply material for the final earthing-up.

Remembering that Onions form a leading crop in the kitchen-garden, it is time attention was turned to sowing some seed. As a general rule, Onions are not sown early enough, and the consequence is they get arrested in their growth by dry weather in spring, and seldom make up for the check after. We can here learn a lesson from the Banbury Onion-growers —the men who grow such splendid Onions for exhibiting in August; their time for sowing is the first and second weeks in February. They manure their ground well in October and November, and then throw it up rough for the winter. In January, as soon as dry weather permits of its being done, they fork it over, break it well to pieces, and then, taking advantage of a drying day, tread it down firmly. A few days after, and when the weather is fine, drills are drawn a foot apart, and the seed thinly sown in them, some wood ashes covered over it, and then the soil is raked on to the seed, and beaten down with the back of a rake.

It may be asked, Whence the necessity for digging the ground so deeply for the Onion, seeing that it roots so sparingly? But the fact is the Onion roots much more deeply into the soil than is generally imagined, and the richer the soil is in vegetable food the quicker is the growth. The great thing with Onions is to get the roots well down into the soil before dry weather sets in, and then the bulbs swell out finely. The Banbury growers water freely in dry weather; they also (after they have thinned out the bulbs to the proper distance) keep the soil well stirred about the plants, and top-dress with wood-ashes and manure; and later on, when the bulbs are swelling, dress with bonedust and guano. All these attentions are not necessary in the case of a general crop of Onions for culinary use, but they serve to show how the crop may be augmented. The earlier Onions are ripened off, the more matured do they become for keeping, supposing it be a variety which keeps well.

Notices of Books.

Potato Pests; *being an Illustrated Account of the Colorado Potato Beetle and the other Insect Foes of the Potato in North America, with Suggestions for their Repression, and Methods for their Destruction.* By Charles V. Riley, State Entomologist of Missouri. New York: Orange Judd Company; London: Trubner & Co.

Mr. Riley is well known for his able reports as State Entomologist of Missouri, and for the care and skill with which he has conducted observations into the life economy of various insect pests, from which North America has of late years suffered, or by which she has been threatened. Among those which he has so studied with much credit to himself and advantage to the public, the Colorado beetle of course occupies a prominent place; and now that that pest has spread over three-fourths of the cultivated area of the United States east of the Rocky Mountains, it is unnecessary to say that an authoritative work regarding it, giving full information as to its habits and life, with directions as to the best means of encountering it and destroying it, must be most useful.

To us and our readers it is not, indeed, new. Most of the information contained in it has already appeared in Mr. Riley's annual reports, which have been noticed by us as they appeared, but State reports, extending over a series of years, and treating of a multitude of subjects, are not the kind of work that will be sought for by the general public wanting only information on one particular subject. Mr. Riley and his publishers, in producing a small book work confined to this subject have, therefore, supplied an important want peculiarly felt at the present juncture. The work is in duodecimo form, and is liberally illustrated by woodcuts from Mr. Riley's own pencil, for to his other accomplishments he adds that of being an admirable artist.

The subject, not being a new one to our readers, we shall not trouble them with any extracts relating to the appearance or economy of the beetle. The part that will have most interest for them will be Mr. Riley's opinion as to the chances that we have of escaping an invasion from it in this country. On that point he says:—

"In 1874 the Governments of Belgium, France, Switzerland, and Germany prohibited the importation of American Potatos, and Italy, the Netherlands, and Great Britain, which had been urgently solicited to follow their example, began seriously inquiring into the necessities of the case.

"The British Government was naturally slow to take such stringent steps, which would more deeply affect it than the other nations mentioned, since Great Britain does the larger trade in American Potatos. In reply to Mr. Herbert, M.P. for Kerry, who asked the Chief Secretary for Ireland whether Her Majesty's Government had taken any steps to prevent the introduction of the insect, Sir M. H. Beach sought to abate fear, rather underrated the danger, and wisely concluded that any interference with the trade should first have the most careful consideration. Those who had watched the insect's gradual spread during the past seventeen or eighteen years, from its native Rocky Mountain home to the Atlantic, and had seen how the lakes, instead of hindering its march into Canada, really accelerated that march by affording carriage on vessels, rafts, and other floating objects, could have no doubt that there was cause for the alarm felt by our Transatlantic friends.

"Yet the opinion had been repeatedly expressed by the writer—and very generally coincided in by all who had any familiarity with the insect's economy—that when it made its advent into Europe it would most likely be carried in the perfect beetle state on some vessel plying between the two continents. For while the beetle, especially in the non-growing season, will live for months without food, the larva would perish in a few days without fresh Potato tops, and would, I believe, starve to death in the midst of a barrel of Potatos, even if it could get there without being crushed; for while it so voraciously devours the leaves it will not touch the tubers. The eggs, which are quite soft and easily crushed, could, of course, only be carried over on the haulm or on the living plant; and while there is a bare possibility of the insect's transmission in this way, there is little probability of it, since the plants are not objects of commercial exchange, and the haulm, on account of its liability to rot, is not, so far as I can learn, used to any extent in packing. Besides, Potatos are most exported during that part of the year when there are neither eggs, larvæ, nor Potato vines in existence, in the United States."

"While some Europeans have thus been unduly alarmed, and inclined to take proscriptive measures to prevent the insect's introduction, others have ridiculed the idea that the insect could get to Europe, one of them declaring that there is no more danger of the insect's chance transportation than of that of our rattlesnake. Considering that half the weeds of American agriculture, and a large proportion of her worst insect pests, including two beetles, viz., the Asparagus beetle (Crioceris asparagi), and the Elm leaf beetle (Galeruca calmariensis), in the very same family as our Doryphora, have been imported among us from Europe, there would seem poor foundation for such argument. Indeed, the reported occurrence last summer of a living Doryphora in the Bremen docks, in a cargo just come from New York, is the best evidence; it effectually sets at rest the arguments alluded to, and bears out the views I have on several occasions expressed as to the possibility of the beetles being carried over in vessels."

"It is argued by others that on the continent of Europe our Doryphora would not thrive if introduced, but from a sufficiently long residence in England, France, and Germany I am decidedly of the opinion that they delude

themselves who suppose that Doryphora could not thrive in the greater part of Europe, and that to abandon all precautionary measures against its introduction on such grounds would be the height of folly. An insect which has spread from the high table-lands of the Rocky Mountains across the Mississippi valley to the Atlantic, and that flourishes alike in the States of Minnesota, Wisconsin, Upper Canada and Maine, and in Maryland, Virginia, and Texas—in fact, wherever the Potato succeeds—will not likely be discomfited in the Potato-growing districts of Europe."

We must refrain from entering into the contrary arguments of those who maintain that its invasion is a purely imaginary danger; but we may say that our own opinion coincides with that of Mr. Riley. We have no expectation that we shall be able to keep the beetle from coming into Britain. It will come, we do not doubt, again and again. Nor do we think that if it were allowed to settle it would have any difficulty in establishing itself permanently. The wideness of its range in America shows that it possesses a degree of adaptability to various conditions that must dispel any hope of that kind. But we have no fear on that account that the Potato crop will be destroyed, or that we shall have to pay 8*s.* a bushel for them, like the inhabitants of St. Louis in 1873. We cannot keep it from coming over, but it will be our own fault if we allow it to gain a footing. It will be an easy job to stamp out the first broods. It is a very different thing clearing them off a single Potato field or two compared with resisting a solid invading army of them extending over 15° of latitude, as in America. Of course, if we act like ostriches, and think that by shutting our eyes to the danger we shall escape it, then we should soon find how helpless we are in contending against it; but we are not ostriches, and whatever the *laisses faire* gentlemen may say we do not intend to be, nor do we think that there is any danger of, our being caught napping.

We have not left ourselves space to say anything about the proper precautionary and remedial measures, but as in no view could these be required before the month of June, we have plenty of time to return to the subject. *A. M.*

Among publications on our table we may mention a new edition of *Stormonth's Etymological and Pronouncing Dictionary* of the English language (Blackwood & Sons), which in small compass contains a very large amount of information relating to the significance and varied adaptation of words. The grouping of compound words appears to us very serviceable. Many of the more modern scientific terms are included, so that the volume is likely to be very useful for those who require a compact and useful dictionary.

—— The last number of the *Bulletin d'Arboriculture* contains a coloured plate of the striped variety of the Duchesse d'Angoulême Pear. The following varieties are mentioned as having striped forms:—Alexandre Lambre, Bergamotte Crassane, De Hollande, d'Été, Beurré blanc, Beurré d'Amanlis, Beurré Gris, Beurré d'Hardenpont, Beurré Rance, Bézi de Chaumontel, Williams' Bon Chrétien, Bon Chrétien d'Hiver, Citron des Carmes, Doyenné du Comice, Duchesse d'Angoulême, Longue verte, Louise Bonne d'Avranches, Messire Jean, Passe Colmar, Rousselet de Reims, St. Germain.

PUBLICATIONS RECEIVED.—Synopsis Cecidomyidarum, by J. E. von Bergenstamm and Paul Low, a very complete synoptical *resumé* of the literature, the classification, and the plants affected by the gall midges.

Natural History.

THE FIRST BUTTERFLY was captured here on the 6th. Having had sufficient conversation with him, I send him on, that you may for yourself judge how wonderful are the products of our delectable mountains. He is a fine specimen of the small Tortoiseshell, Vanessa urticæ, of which thousands are annually produced here, on a fringe of Nettles I allow to root on the margin of a grass field. The small copper, common blue, large and small meadow-brown, orange-tipped, and brimstone are also common, the last-named being usually the first butterfly of the season. In 1874 the brimstone was captured here on March 23, and in 1875 on April 17. The rare Death's-head, Acherontia atropos, bred so freely here last summer that we found about thirty of the handsome caterpillars well fed and ready to hybernate when the Potatos were lifted. *Shirley Hibberd, Stoke Newington, Feb. 7.*

THE GOATSUCKER.—Professor Rymer Jones, in his *Animal Creation*, gives the following description of this bird:—"Their eyes are large, their beak, furnished with strong moustaches, and more deeply cleft than in swallows, is capable of receiving the largest insects, which it retains by means of a viscid saliva. The nostrils are in the form of small tubes near its base. Their wings are long, their legs short and feathered, and the thumb can be directed forwards. These birds live solitary, and only fly during the twilight or on fine nights. They pursue moths and other nocturnal insects, and lay a small number of eggs. When they fly the rushing of the air into their wide mouths produces a peculiar humming noise. They have been accused of sucking goats, whence their name; but this is an unfounded calumny that, perhaps, had its origin from the circumstance of their frequenting fields where goats and sheep are herded, in pursuit of the insects that are attracted by their presence." *R.*

Law Notes.

IMPORTANT TO IMPORTERS OF FRUIT FROM BELGIUM.—*Scorrier* v. *The Great Eastern Railway Company.*—At the Westminster County Court on Tuesday last, before Mr. Judge Bayley, the plaintiff, proprietor of the Coburg Hotel, Charles Street, Grosvenor Square, sued the defendants to recover the sum of 30*s.* for loss of fruit in transit from Belgium by the company's line.

The plaintiff said that on November 11, 1876, he ordered from a grower at Lessing in Belgium 6 cwt. of Apples at the rate of 30*s.* per cwt., but on the delivery of the hamper at his residence in London it was weighed, and found that 1 cwt. of the fruit had been abstracted. He had made several applications to the company, who denied their liability, hence the present action.

In reply to the learned Judge, the plaintiff said the goods were in the first place delivered at the station of the Belgian State Railway Company, at Lessing in that country, upon which his Honour remarked that he was of opinion he had sued the wrong company.

In this view of the case the Company's solicitor coincided, remarking that in doing so he could prove, if necessary, that the contract was originally made with the Belgian State Company, they having the usual running powers over the Great Eastern line; still that did not render the Great Eastern Company liable for any contract entered into with the Belgian State Company, and that if the goods had been either stolen or lost the Belgian Company were alone liable, and that the plaintiff's remedy was against them, and not against the defendants.

Judgment was accordingly entered for the defendants, who did not apply for costs.

RAILWAY LIABILITY AGAIN.—*Ireton* v. *The Great Northern Railway Company.*—At the Westminster County Court, on January 16, this case was heard before Mr. Judge Bayley, in which Mr. H. T. Roberts appeared as solicitor for the plaintiff, and Mr. Harmsworth as standing Counsel for the Company.

Mr. Roberts, in opening his client's case, said he was a fruiterer carrying on business in Covent Garden and at Leeds, and urged that the goods in question were not delivered within reasonable time, as the Leeds market opens at 6 and closes at 11. The goods —several baskets of Strawberries and Grapes—were sent on July 3, and not arriving in time the Strawberries, which were worth 8*s.* per basket, had to be sold for 4*s.* per basket; and the Grapes, originally worth 2*s.* 6*d.* per pound, were sold, in consequence of loss of market, at 1*s.* 6*d.* per pound, and that the loss the plaintiff had sustained was £6 5*s.*

Arthur John Ireton, salesman in Covent Garden, stated that on July 3 he consigned fifteen dozen baskets of Strawberries and 65¼ lb. of Grapes to Leeds, where he had an establishment. They were delivered to the defendant's carman and marked "Fruit: perishable," with orders to forward them at once, without delay, and received the signature of Sinnet, the defendants' carman, for their receipt on account of John Ashley, the goods traffic manager, of King's Cross. The plaintiff said he had applied to the Company for indemnification, but they declined to come to any compromise, and would not even answer his letters.—In cross-examination he stated that he was also a wholesale salesman at Leeds, and knew the Leeds market well, and all business there was over by about 8 o'clock in the morning. Mr. Bailey, to whom the goods were consigned, was his commission salesman there. The loss on the goods was £6 5*s.*, as customers would not wait, and the goods did not arrive till 11 o'clock in the forenoon.—Re-examined: There was no doubt as to when the goods were delivered to Sinnet, the carman.

William Bayley said he came from the Leeds market; he received the consignment in question, but not till after the market had closed, which it usually does at 11 o'clock. The Strawberries deteriorated from 8*s.* to 4*s.* a dozen baskets, and the Grapes from 2*s.* to 1*s.* 6*d.* per pound, as he had to sell them to retail dealers, they being of no good to his usual customers.—Cross-examined: There is a second market, but not of a wholesale nature. It is not always the custom to send perishable goods by passenger train, but such a course is sometimes adopted. The Grapes were to be sent to Harrowgate, and were too late to be of any avail.

This being the plaintiff's case, Mr. Harmsworth urged that there was a discrepancy in the dates, as there was no evidence that the goods were delivered on July 3, as the 11th was on the particulars. The learned Judge said that appeared to be so, and offered to adjourn the case, but Mr. Harmsworth elected to go on with it.

Sinnet, the defendant's carman, was called, and deposed to receiving the goods between 4 and 6 o'clock on July 2, which ought to have been at the Great Northern Station at King's Cross about 7 P.M.

After this evidence, Mr. Harmsworth addressed the Court at considerable length, and called several witnesses on behalf of the Company, whose evidence went to prove that the Company were not liable; but the learned Judge, after reviewing the whole facts of the case, ruled in favour of plaintiff for the amount claimed, with costs.



STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, FEB. 7, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to 32° Fahr.	Departure from Average of 15 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure from Average of 15 years.	Mean of Highest and Lowest.	Dew Point.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Degree of Humidity. Sat. = 100.	WIND. Average Direction	RAINFALL.
Feb.	In.	In.	°	°	°	°	°	°	°			In.
1	29.85	+0.09	50.7	38.2	12.5	44.9	+6.3	42.9	93		W. S.W.	0.06
2	29.88	+0.12	52.6	42.5	10.1	46.7	+8.0	43.1	88		S.W	0.02
3	29.99	+0.22	51.4	35.0	16.4	42.7	+3.9	34.5	73		S.W.; W.S.W.	0.08
4	30.05	+0.28	45.9	35.4	10.5	40.8	+1.9	34.4	78		S.W.; W.N.W.	0.00
5	30.13	+0.36	50.7	31.9	18.8	41.2	+2.2	37.8	88		S.W.	0.02
6	30.06	+0.30	54.6	44.1	10.3	48.9	+9.8	46.6	91		S.S.W.	0.12
7	30.00	+0.23	50.1	46.1	4.0	52.5	+13.4	45.6	79		S.W.	0.04
Mean	29.99	+0.23	52.3	39.1	13.2	45.4	+6.5	41.7	84		S.W.	sum 0.22

Feb. 1.—Dull, very cloudy. Rain fell in morning, and at 10 P.M. Mild.
— 2.—A dull cloudy day. Mild. Rain in morning and evening. Cloudless at night.
— 3.—A fine bright day. Rain fell in early morning, and again at 9 P.M.
— 4.—A fine bright day. Cloudless at night.
— 5.—Fine but cloudy. Dull, with thin rain at times.
— 6.—A fine cloudy day. Occasional thin rain till evening. Mild.
— 7.—Fine, but cloudy and dull at times. Smart shower of rain at 8 P.M. Temperature unusually high for the season.

LONDON: *Barometer.*—During the week ending Saturday, February 3, in the suburbs of London the reading of the barometer at the level of the sea decreased from 30.24 inches at the beginning of the

week to 29.95 inches by noon on January 28, increased to 30 17 inches by the morning of the 29th, decreased to 29.38 inches by the morning of the 30th, increased to 30.10 inches by noon on the 31st, decreased to 29.97 inches by the evening of the same day, increased to 30.10 inches by the morning of February 2, decreased to 30.02 inches by the afternoon of the same day, increased to 30.27 inches by the morning of the 3d, and was 30.10 inches at the end of the week. The mean reading for the week at sea level was 29 99 inches, being 0.27 inch below that of the preceding week, and 0.03 inch above the average.

Temperature.—The highest temperatures of the air varied from 52½° on February 2 to 45½° on January 31; the mean value for the week was 50½°. The lowest temperatures of the air ranged from 31½° on January 31 to 42½° on February 2; the mean for the week was 36¼°. The mean daily range of temperature for the week was 14°, the greatest range in the day was 16½ on January 29 and February 3, and the least 10° on February 2.

The mean daily temperatures of the air were as follows:—Jan. 28, 43°.3; 29th, 41°.1; 30th, 43°.8; 31st, 38°.5; Feb. 1, 44°.9; 2d, 46°.7; 3d, 42°.7; and 3°.9. The mean temperature of the air for the week was 43°, being 4°.5 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 102° on Feb. 3, and mild and wet, and the sky cloudy. A violent gale of wind prevailed on January 30, and lightning was seen on January 28.

Rain fell on every day in the week, the amount measured was 0.49 inch.

ENGLAND: *Temperature.*—In England, the highest temperatures of the air observed by day were 55½° at Bradford, and 55° both at Leeds and Sunderland; at Brighton 50½° was the highest temperature; the mean value from all stations was 53½°. The lowest temperatures of the air observed by night was 30° both at Wolverhampton and Sunderland; at Truro 38° was the lowest temperature; the general mean from all stations was 33½°. The range of temperature was the greatest at Sunderland, 25°, and the least at Portsmouth and Truro, both about 16°; the mean range of temperature from all stations was 20°.

The mean of the seven high day temperatures was the highest at Truro, 52½°, and the lowest at Hull, 46½°; the mean value from all stations was 49½. The mean of the seven low night temperatures was the lowest, 34°, at Wolverhampton, and the highest, 41½, at Truro; the mean from all stations was 37½°. The mean daily range of temperature was the greatest at Wolverhampton, 14½°, and the least at Bradford, 9½°; the mean daily range of temperature from all stations was 12°.

The mean temperature of the air for the week from all stations was 43°, being 1½° above the value for the corresponding week in 1876. The highest happened at Truro, 47°, and the lowest at Hull, 40½°.

Rain fell on every day in the week at most stations, the falls varied from 2½ inches nearly at Manchester and Eccles, and 2 inches at Sheffield, to about half an inch at Whitehead, Brighton, Cambridge, Norwich, and Sunderland; the average fall over the country was 1¼ inch nearly.

The weather during the week was frequently fine, and the sky cloudy. Lightning was seen at Blackheath, Bristol, and Cambridge, on January 28; and snow fell at Wolverhampton, Sheffield, and Manchester on the same day, viz., January 28. A strong gale prevailed all over the country on January 30.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 57° at Paisley to 48½° at Aberdeen; the average value from all stations was 51½°. The lowest temperatures of the air ranged from 30° at Perth to 33° at Greenock; the mean value from all stations was 31½°. The mean range of temperature in the week from all stations was 21°. The mean temperature of the air for the week from all stations was 39½°, being 2° below the value for the corresponding week in 1876. The highest was 42° at Paisley, and the lowest 38½° at both Dundee and Aberdeen.

Rain was measured at Paisley to the amount of 3 inches nearly; at Greenock ¾ inches fell, and at Dundee and Aberdeen 1¼ inch was measured. The average fall over the country was 2½ inches.

DUBLIN.—The highest temperature of the air was 56½°, the lowest 32½°, the range 24½°, the mean 43½°, and the fall of rain 1.12 inch.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—BACON.

167. THE REMOVAL OF FRUIT TREES ON GLEBE LAND.—Will some of your readers be so kind as to inform me whether fruit trees growing on glebe land can be removed by a tenant who is a market gardener? I am told that they cannot, as there is an exception to the ordinary rule of law in favour of ecclesiastical land. Is this so or not? *T. R.*

168. THE BOUQUET PEA.—Does any one of your readers grow the above? It is described as "an ornamental member of the Pea family. The flowers red and white, exceedingly pretty, the spike of flowers forming quite a bouquet. It grows from 2 to 3 feet in height." I am desirous of getting a few seeds of it. *R. D.*

169. TRUE OLD BEECHWOOD MELON.—Has any grower of Melons a few seeds of this fine old Melon to spare? They can be sent to the care of the Editors. *Constant Reader.*

170. TREES FOR CHALK SOIL ON SEA COAST.—*F. H.* wishes to know what quick-growing trees and shrubs will be most suitable for planting in a chalk soil, in an exposed situation, on the South coast. He is desirous to commence planting at once. [Sycamore, Elder, Austrian Pine, Tamarisk, Atriplex halimus, Lycium barbarum, Gorse, and Sea Buckthorn. Where there is a little shelter, Escallonia macrantha, Euonymus japonica, and Pittosporum Tobira do well. EDS.]

Answers to Correspondents.

BOOKS: *J. A. G.* Mr. Bentham's *Illustrated Handbook of the British Flora*, published by Lovell Reeve & Co. Please be more explicit as to what sort of a microscope you require.—*Ignoramus.* 1. *Our Farm Crops*, by Professor John Wilson; published by Blackie & Co., Glasgow. 2. Yes; apply to the secretary of the society. The price of the last part is 2*s.*—*A Constant Reader.* Mr. Ward's little book on *Fern Cases* is, we believe, out of print, but you may be able to get it from Mr. Van Voorst, Paternoster Row, E.C.—*T.* You will gain much information on the subjects referred to in both your queries from the new edition of Thompson's *Gardeners' Assistant* and the two volumes of McIntosh's *Practical Gardener.*

CARPET BEDDING: *H. Shirley.* We will endeavour shortly to comply with your request.

COMPOSTS FOR PLANTS: *J. Cleave.* Pimeleas will succeed in either peat or loam, except *P. hispida* and *P. Neippergiana*, which do the best in peat; we should recommend the use of one or the other not mixed. Chorozemas, Aphelexis, Boronias, and most others of a kindred character will enjoy the best of good peat and sand. Charcoal will do little good or harm; it is not necessary if good peat such as obtained in the south of the kingdom is used. Leaf-mould should never be mixed with the soil for such plants; they grow rapidly in it, but it has no lasting properties. Do not use manure in any shape to Azaleas from the time their growth is completed in the autumn till after they have done flowering, as little or no root extension is going on during that time. As soon as the blooming is over give Standen's manure, at the rate of two large tablespoonfuls to a plant in a 16 or 18-inch pot, with less proportion to those that are smaller. Lay it on the surface, allowing it to wash down with the water given to the plants. Three applications of this sort during the growing season will be found to have a marvellous effect upon Azaleas. It is not usual to give much in the shape of manurial stimulants to plants of a nature such as the others named, unless there is some special object in pushing them on while in a young state, or in the case of old plants where the soil has become exhausted and it is not desirable to give them more root-room, in which case Standen's manure, used in about half the quantity recommended for the Azaleas, given after flowering during their season of growth, will be found much more efficacious than any liquid stimulant that can be applied.

DOUBLE PRIMULAS: *R. Gilbert.* Very symmetrical, closely built, full double flowers, of an excellent strain. The whites are of better quality than the rosy pink variety; both are highly meritorious and exceedingly ornamental.

FUNGUS: *Cor.* The fungus found on a Mushroom bed in dense curled masses is Agaricus dealbatus, one of the edible class, usually found in Fir plantations, but occasionally (as in this instance) on Mushroom beds.

INARCHING VINES: *A Constant Reader.* Chasselas Musqué is not the stock that, for choice, we should select to graft each month upon; but if "A Constant Reader" has a healthy Vine of this variety it is worth while trying his Buckland Sweetwater upon it, as, from many experiments in Vine grafting which we have made, we find the most strongest varieties frequently do well on a stock naturally more delicate. For instance, we have inarched Buckland Sweetwater on White Frontignan, and Black Hamburgh on the Grizzly Frontignan, and, contrary to our expectations, found both to do well.

INSECTS: *R. S.* The black points on your Vine bark are vegetable excrescences; the minute red objects are mites (red-spiders) of small size. Fumigate and paint the stems of the Vine with Gishurst Compound, or with a wash of lime, sulphur, soot, and soft soap. *I. O. W.*

MEALY-BUG ON PANCRATIUM BULBS: *H. J. E.* asks, "Which is the best way to destroy mealy-bug in the necks and between the coats of Pancratiums and other stove bulbs. I find that I cannot get at them without cutting into the bulbs, and they injure the foliage very much, especially when it is just starting into growth?" Try syringing them frequently when dormant with hot water—as hot as will not injure the bulbs; or apply one or two dressings of dilute spirit of wine by means of the spray-producer.

NAMES OF PLANTS: *C. R.* 1, Echeveria retusa; 2, Cupressus Whiteyanus = sempervirens var. indica of Parlatore; 3, Abies nigra.—*J. R. Haig.* Juncus supinus. We never heard of it being troublesome. Rake the plant out. The Orchid is probably Dendrobium nobile, or it may be D. lituiflorum; but a single smashed flower, without any description of the plant, is not sufficient to enable us to speak with certainty.—*H. S.* 1, Platyloma rotundifolium; 2, Pteris cretica albo-lineata; 3, Cyrtomium caryotideum; 4, Lastrea Sieboldii; 5, Blechnum brasiliense; 6, Pteris longifolia; 7, Asplenium marinum.—*St. Fix Barres.* Platyloma rotundifolium.—*W. H. C.* 1, Aspidistra lurida variegata; 2, Pilea serpyllifolia; 3, Lopezia coronata; 4, probably Coleonema album.

SEEDS: *F. Beety.* The seeds in packet No. 1 are those of some variety of Beet; those in No. 2 are probably Sorrel.

STOVE CLIMBER: *A Constant Reader.* The low winter temperature you name is more that of an intermediate-house than a stove, and interferes seriously with the selection of plants for both summer and winter. For summer Bougainvillea glabra, either planted out or grown in a large pot, stands unrivalled for its beauty, profusion, continuity, and suitability for cutting of its flowers; and Allamanda Chelsoni. For winter blooming try Euphorbia jacquiniæflora: it is not strictly a climber, but it can easily be trained as such either to a rafter or on the roof; and at the warmest end Ipomœa Horsfallæ: but your low temperature is even worse for flowering plants at this season than the summer selection.

TUBEROSES: *Improver.* See our number for March 25, 1876, p. 404.

WATER: *Dunse.* It can at least do the water no harm to filter it through the wood-ashes, which would have the effect of softening it.

ERRATUM.—At page 140, the references C and D, in the illustration of Siapelia patentitrostris, should be transposed.

CATALOGUES RECEIVED: — Messrs. Fröebel & Co. (Neumunster, Zurich, Bavaria), General Seed and Plant Catalogue for 1877.—B. Pounsett (High Street, Wallingford, Berks), Select Catalogue of Vegetable, Flower, and Agricultural Seeds.—Trees and Shrubs, Plants, &c.—E. B. Spence (8, Victoria Road, West End, Darlington), General Seed Catalogue.—Messrs. Laird & Sinclair (Nurserymen, Dundee), Catalogue of Vegetable, Flower, Agricultural Seeds, &c.—Gladioli, and of Roses.—Hermann Gusmus (Planina, Austria), Catalogue of Alpine and Bulbous Plants).—August Noa (Erfurt, Prussia), Catalogue of Flowers, Grasses, Mosses, Dried Bouquets, Wreaths, &c.—Thomas Perkins (42, Drapery, Northampton), Descriptive Catalogue of Flower, Vegetable, and Farm Seeds.—Messrs. W. Smith & Sons (35, Market Street, Aberdeen), General Flower Seeds, &c.—Gladioli, and Flowers, Implements, &c.

*** Numerous communications are unavoidably postponed.

COMMUNICATIONS RECEIVED.—N. E. B.—G. M.—B. & P.—R. W.—G. A. D.—R. C.—Aqua-Calida.—W. C.—A. M.—J. B.—A. S. (next week).—R. G.—J. A. P.—Irene.—J. H.—W. G. S.—H. S.—J. W. A.—E. F.—A Subscriber.—B. S.—J. N. V.—R. W.—T. C. & Co.—C. M.—Constant Reader (next week).—L. G.—B. S. W.—W. T.—J. L. T.

Markets.

COVENT GARDEN, February 8.

Business has been more brisk during the last few days, and anything good has readily changed hands. The supply is moderate, with a slight advance. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.

	s. d.	s. d.
Azaleas, per dozen	24 0	60 0
Begonias, per doz.	6 0	12 0
Bouvardias, do.	18 0	24 0
Cineraria, per doz.	9 0	18 0
Coleus, per dozen	3 0	9 0
Cyclamen, per doz.	18 0	30 0
Cyperus, do.	6 0	12 0
Dracæna terminalis	30 0	60 0
— viridis, per doz.	18 0	24 0
Epiphyllum, per doz.	18 0	42 0
Ferns, in var., p. doz.	6 0	30 0
Ficus elastica	2 6	10 6
Heaths, variety, doz.	9 0	24 0
Helotrope, per doz.	6 0	12 0

CUT FLOWERS.

	s. d.	s. d.
Azaleas, 12 sprays	1 0	4 0
Bouvardias, per bun.	1 0	4 0
Camellias, 12 blooms	2 0	12 0
Carnations, per dozen	1 6	4 0
Cyclamen, per doz.	9 0	15 0
Epiphyllum, 12 blms.	1 0	3 0
Eucharis, per doz.	6 0	12 0
Euphorbias, 12 sprays	2 0	4 0
Gardenia, per doz.	9 0	18 0
Helotropes, 12 spr.	0 6	1 0
Hyacth., Rom., 12 sp.	2 0	6 0
Lily of Valley, 12 spr.	1 0	2 0
Mignonette, 12 bun.	6 0	12 0
Narcissus, 12 sprays	3 0	6 0
Pelargoniums, 12 spr.	2 0	4 0
— zonal, 12 sprays	1 0	4 0
Primroses, 12 sprays	2 0	12 0
Primula, obl., p. bun.	1 0	2 0
Roses, indoor, p. doz.	3 0	12 0
— Chinensis, bun.	0 6	1 6
Stephanotis, 12 spr.	9 0	15 0
Tropeolum, 12 bun.	2 0	6 0
Violets, 12 bun.	1 6	4 0

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ¾-sieve	3 0– 8 0	Oranges, per 100	8 0–12 0
Cobs, per lb.	1 0– 1 6	Peaches, per doz.	0 0– 0 0
Grapes, per lb.	4 0–10 0	Pears, per doz.	2 0–12 0
Lemons, per doz.	1 0– 4 0	Pine-apples, per lb...	1 6– 4 0
Melons, each	1 6– 3 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, per bush.	4 0– ..	Leeks, per bunch	0 2– 0 4
— Eng. Globe, doz.	4 0– 6 0	Lettuces, per score	1 6– 2 0
Asparagus, Fr., bun.	20 0– ..	— French, per doz.	1 0– 2 0
— English, p. bun.	8 0–10 0	Mint, green, bunch	1 0– ..
— Sprue, per bun.	1 6– ..	Mushrooms, per pott.	0 6– 1 6
Beans, French (new).		Onions, per bush.	3 0– 8 0
per 100	4 0– ..	— young, per bun.	0 2– 0 3
Beet, per doz.	1 0– 2 0	Parsley, per bunch	0 4– ..
Brussels Sprts. bush.	7 0– ..	Peas, green, per lb.	2 0– ..
Cabbages, per doz.	1 0– 2 0	Potatos, new, per lb.	0 2– 0 4
Carrots, per bunch	0 6– ..	Radishes, per bunch	0 1– 0 3
Cauliflowers, per doz.	2 0– 4 0	Spanish, doz.	1 0– ..
Celery, per bundle	1 6– 2 0	— New Jersey, doz.	2 0– ..
Chilis, per 100	1 0– ..	Rhubarb, per bundle	1 0– ..
Cucumbers, each	0 3– 1 0	Salsafy, per bunch	0 4– ..
Endive, per doz.	1 0– 2 0	Seakale, per punnet	1 6– 2 6
— Batavian, p. doz.	2 0– 3 0	Shallots, per lb.	0 6– ..
Garlic, per lb.	0 6– ..	Spinach, per bushel	1 0– ..
Herbs, per bunch	0 2– 0 4	Tomatas, per doz.	2 0– 3 0
Horse Radish, p. bun.	4 0– ..	Turnips, per bundle	0 4– 0 6
Potatos.—Kent Regents, £5 to £6; Essex Regents, £4 10s. to £5: Kidneys, £8 per ton.			

SEEDS.

LONDON: *Feb. 7.*—Messrs. John Shaw & Sons, of Mark Lane, write that the seed markets have this week exhibited no special feature of interest, and in no single article has there been any important change. Fewer Clover offers have during the last few days been cabled from the United States: indeed the current New York rates leave no margin for importers here. It is now perfectly certain that the rains which were so general on the American continent during the Clover harvest most prejudicially affected the produce, both as regards quality and quantity. Moreover, the fact should not be forgotten that the Americans have to meet a heavy home demand; the Southern States, in especial, being large buyers from the West. It is stated, indeed, that the domestic consumption exceeds the total quantity exported. A few parcels of fine Canadian seed have now arrived on the London market, which on account of their brightness and cleanliness realise long prices. Letters just to hand from the Dominion state that the bulk of the Canadian crop is now marketed; the tempting terms offered, and the recent good shelling weather afforded, having induced growers to clear out. There is a moderate business passing in Rye-grass; the natural weight per bushel is this year fully 2 lb. more than last; the latter remark can also be applied to Italian. In Alsike and White Clover not many parcels are for the moment changing hands. For spring Tares the trade is also inactive. Mustard seed and Rape seed, being both scarce, are held for more money. Canary seed keeps steady at the low level now reached. Other articles, in the dearth of transactions, afford no subject for remark.

CORN.

At Mark Lane on Monday trade was very dull for Wheat, and quotations were fully 1*s.* per quarter lower than on Monday se'nnight. There was scarcely any sale for thoroughly inferior produce. For Barley prices were not in all cases maintained. Malt was comparatively steady, with a fair inquiry for the superior qualities. Oats were 6*d.* per quarter cheaper, while the market for Maize was decidedly weak. Beans and Peas were occasionally offered on lower terms, and for all descriptions of flour quotations tended downwards.—Trade on Wednesday was very quiet, and quotations as a rule drooped. The condition of the supplies was still very indifferent, but the demand even for the better samples was slow, and where sales were forced a reduction below the rates of Monday had to be submitted to.—Average prices for the week ending Feb. 3:—Wheat, 52*s.* 7*d.*; Barley, 40*s.* 7*d.*; Oats, 25*s.* 8*d.* For the corresponding week last year:—Wheat, 43*s.* 7*d.*; Barley, 34*s.* 1*d.*; Oats, 24*s.* 5*d.*

POTATOS.

The reports from the Borough and Spitalfields markets state that Regents were dull at a reduction, but otherwise the trade maintained a moderately firm appearance. Kent Regents, 110*s.* to 130*s.* per ton: Essex do., 95*s.* to 110*s.*; rocks, 75*s.* to 95*s.*; flukes, 140*s.* to 170*s.*; Victorias, 120*s.* to 145*s.*—The imports into London last week comprised 24,631 bags from Antwerp, 21,804 Hamburg, 1652 Ghent, 1662 Crookhaven, 1362 Bremen, 1020 Rotterdam, 590 Brussels, 234 Harlingen, 66 Dunkirk, 58 Boulogne, and 300 sacks from Bordeaux.

COALS.

There was a large supply of house coals at market on Monday, and prices fell 1*s.* The top price was 17*s.* per ton. Wednesday's market was dull, without change in quotations, which were:—Bebside West Hartley, 16*s.* 8*d.*; Hasting's Hartley, 16*s.* 3*d.*; Walls End—Hetton, 17*s.*; Hetton Lyons, 15*s.*; Hawthorns, 15*s.*; Lambton, 16*s.* 6*d.*; Original Hartlepool, 17*s.*; Newbottle, 14*s.*; Seaton, 14*s.* 6*d.*; South Hetton, 17*s.*; Hartlepool, 16*s.*; Kelloe, 15*s.* 9*d.*; East Hartlepool, 16*s.* 9*d.*; South Hartlepool, 15*s.* 9*d.*; Tees, 16*s.* 9*d.*

Special Offer.—150,000 Vesuvius.

WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, 10*s.* per 100: or from store-pots, 8*s.* per 100, 75*s.* per 1000, package included. Terms Cash.
Cemetery Nursery, Gravesend, S.E.

PANSY BLUE KING.—The finest hardy Blue Plant in cultivation; strong flowering plants, 10*s.* per 100: small rooted, free by post, 12 6*d.* per dozen.
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

PALMS for TABLE DECORATION.—Twelve distinct choice sorts, ready to pot on into 5-inch pots, 21*s.* Established in that size about a feet high, fit for immediate decoration, 42*s.* and 63*s.*, according to sorts. A large and valuable collection of exhibition specimens, from 21*s.* each. Package gratis. Cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

JOHN L. COUPLAND, FLORIST, Hessle, Hull, has to offer the following:—
DOUBLE PELARGONIUMS—Beauty of Oxton, Queen Victoria, Prince of Wales, Captain Raikes, cucullatum florepleno, Konig Albert—Ivyleaf.
FRINGED PELARGONIUMS—Marie Lemoine, La Patrie, Prince of Penzenguins, Donna Sol, Rebecca, Digby Grand.
EARLY FLOWERING PELARGONIUMS — Prince Charlie, Alma, Kingston Beauty, Madam Gewitzski, James Odier, Brefitt's Scarlet.
The set of 18, in 5-inch pots, for 21*s.*; in 3-inch pots, 18*s.*; or any 9 of the above, 13*s.* 6*d.*, package included, on receipt of Post-office Order. A quantity of Captain Raikes to offer to the Trade.

Special Offer of
FOREST and ORNAMENTAL TREES, &c.
PINUS AUSTRIACA, well furnished, 3 to 4 feet, 15*s.* per 100; 4 to 6 feet, 20*s.* per 100.
ASH, 2 to 3½ feet, 20*s.* per 100: 3-yr. seedlings, 3*s.* 6*d.* per 1000.
Mountain, 6 to 9 feet, 40*s.* per 100.
CHESTNUTS, Horse, very fine, for Avenue and Park planting, 6 to 8 feet, 12*s.* per dozen; 30*s.* per 100.
OAK, Turkey, 5 to 6 and 8 feet, 80*s.* to 100*s.* per 1000.
YEW, English, extra fine, 2 to 3 and 4 feet, 80*s.* to 190*s.* per 100.
BOX, Green, bushy, 2 to 3 feet, 20*s.* per 100.
BERBERIS AQUIFOLIA, 4½ per 100, 30*s.* per 1000.
CHERRIES, Standards, 6 to 7 feet stems, extra fine heads, 70*s.* per 100.
Messrs. HALL AND CO., having large quantities of the above, are enabled to offer them at the very low prices stated; the whole are clean and well grown, and are confidently recommended to intending planters.
Cheap and genuine SEEDS. CATALOGUES now ready, post free.
Nurseries—Bedford and Kettering Roads; Seed Warehouse—4, Mercer's Row, Northampton.

Fibrous Peat for Orchids, &c.
BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 5*s.* 6*d.* per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, &c., for Plant Beds, 17*s.* per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5*s.* 6*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per sack.
WALKER AND CO., Farnborough Station, Hants.

MANURE, first-class, made from Blood, Bone, &c., of animals, 11*s.* per cwt., £9 per ton.
FINEST KENT PEATS, per sack, ton, or truck.
LOAM, first-class, per bushel, sack, or ton.
SILVER SAND, fine or coarse, per bushel, cwt., or ton.
FRESH SPHAGNUM, 8*s.* 6*d.* per sack.
Before purchasing elsewhere write for Sample and Price.
RUSSELL'S MANURES, RAFFIA FIBRE, &c.
M. H. BENTOTE, Nunhead, near Junction, S.E.

COCOA-NUT FIBRE REFUSE,
FOR POTTING and PROPAGATING.
Cheapest and best advertised. Before purchasing elsewhere write for Sample and Price, &c.

M. H. BENTOTE,
FIBRE MAKER, LAUSANNE ROAD, NUNHEAD, S.E.

COCOA-NUT FIBRE REFUSE, newly made.—Reduced price, 20 bushels, 6*s.* 8*d.*; 100, 20*s.*; or Truck-load, 40*s.* Delivered free to any rail in London.
J. STEVENS AND CO., Fibre Works, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand testimonials. Four-bushel bag, 2*s.*, bag included; truck-load, loose, free to any Rail, 25*s.*
POTTER OYLER, Spitalfields Market, N.E.

ODAMS' MANURES,
FOR ALL CROPS.
Manufactured by the NITRO-PHOSPHATE and ODAMS' CHEMICAL MANURE COMPANY (LIMITED), consisting of Tenant-Farmers occupying upwards of 150,000 acres of Land.
Chairman—ROBERT LEEDS, Keswick Old Hall, Norwich.
Managing Director—JOHN ODAMS, Trowbridge.
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WESTERN COUNTIES BRANCH—Queen Street, Exeter.
Particulars will be forwarded on application to the Secretary, Or may be had of the Local Agents.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1850, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, at the rate of 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in Boxes, 1*s.*, 2*s.*, and 10*s.* 6*d.* Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6*s.*; per pint, 3*s.* 6*d.* Supplied to Seedsmen and Chemists.
Prepared by JOHN KILINER, Wortley, near Sheffield.

BEST & CHEAPEST INSECTICIDES
Duty Free, under permission of the Hon. Board of Customs.

THE "LONDON" TOBACCO POWDER,
"Horticultural" Tobacco Juice, also
TOBACCO PAPER, CLOTH and CORD.

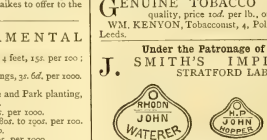
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BONDED TOBACCO STORES, SHAD THAMES, LONDON, S.E.
All Proprietary Insecticides and Manures kept in stock.

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TOBACCO CLOTH and PAPER.—The cheapest and best article for Smoking Greenhouses and Destroying Fly. Price 1*s.* 2*d.* per lb.; over 10 lb., 1*s.* Tobacco Paper, 1*s.* per lb., 54 4*d.* per cwt. P.O.O. payable at 163, Blackfriar Road, S.E.
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The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.
The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
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WOOD TRAINING STICKS and TALLIES, commended by Royal Horticultural Society. BAMBOO CANES, RAFFIA for tying, VIRGIN CORK, ARCHANGEL and other MATS, PACKING MATS, &c. Wholesale prices on application to
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Indestructible Terra-Cotta Plant Markers.
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MAW AND CO., Benthall Works, Broseley.

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These Labels, made of a New and Unique Indissoluble Card, are strongly recommended for all Horticultural purposes. They are indestructible by water, are as easy to write upon with ordinary ink or lead pencil as common paper, such writing when dried being indelible even if soaked in boiling water.
They may be obtained in two colours—a beautiful non-arsenical green for decorative and exhibition purposes, &c., and a quiet brown for nurseries and ordinary use; and may be made to any special shape to order.
These Labels are now offered to the Trade at prices lower than any satisfactory Label hitherto produced.

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THE PATENT WATERPROOF PAPER COMPANY,
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E. T. ARCHER'S "FRIGI DOMO."—Patronised by Her Majesty the Queen, for Windsor Castle and Frogmore Gardens, the late Sir J. Paxton, and the late Professor Lindley, &c.
MADE of PREPARED HAIR and WOOL.
A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for Pits and Forcing Frames.
PROTECTION from COLD WINDS and MORNING FROSTS.
"FRIGI DOMO" NETTING, 2 yards wide, 1*s.* 4*d.* and 1*s.* 6*d.* per yard.
"FRIGI DOMO" CANVAS.

2 yards wide	..	..	1*s.* 10*d.* per yard run.
3 yards wide	..	..	2*s.* 9*d.* per yard.
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ELISHA T. ARCHER, only Maker of "FRIGI DOMO," Brockley Road, Forest Hill, London, S.E.; and of all Florists and Seedsmen. All goods carriage paid to London.
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RUSSIA MATS, for Covering from Frost, from 30*s.* to 70*s.* per 100; packing from 20*s.* GUNNY BAGS, from 9*d.* each, delivered free to any Station in London.
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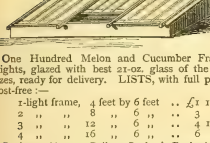


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GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
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Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES: also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.
Illustrated Price Lists free by post. The Trade supplied.

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SILVER SAND, fine or coarse grain as desired. Prices by Post per ton or truck-load, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.
FLINTS and BRICK BURRS for Rockeries or Ferneries.
KENT PEATS or LOAM supplied at lowest rates in quantities.
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N.B.—Orders promptly executed by Rail or to Wharves.
A liberal Discount to the Trade.

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One Hundred Melon and Cucumber Frames and Lights, glazed with best 21-oz. glass of the following sizes, ready for delivery. LISTS, with full particulars, post-free :—

1-light frame,	4 feet by 6 feet	..	£1	17	6
2 ,, ,,	6 ,, ,,	..	3	5	0
3 ,, ,,	12 ,, ,,	..	4	17	6
4 ,, ,,	16 ,, ,,	..	6	7	6

Carriage paid to any Railway Station in England and Wales, also to Dublin, Edinburgh, and Glasgow, on Orders amounting to 40s. and upwards.
PATENT PLANT PRESERVER LISTS post-free.
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Horticultural Buildings of any description and dimension.
Designs prepared. Estimates free of charge.
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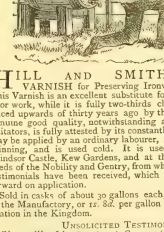
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GARDEN BOXES and LIGHTS.	Each.
Portable Box with One Light, 6 feet by 4 feet, glazed good 16-oz. sheet glass, painted four coats, and packed ready for use	£1 15 0
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LIGHTS ONLY.	
3 feet by 4 feet Light, not painted nor glazed	3 6
Ditto glazed, good 16-oz. sheet glass, and painted 4 coats	10 0
6 feet by 4 feet, not painted nor glazed	6 0
Ditto glazed and painted four coats	16 6

Metallic Hothouse Builder to Her Majesty.

HENRY HOPE (late Clark & Hope, formerly Clark),
HOTHOUSE BUILDER and HOT-WATER APPARATUS ENGINEER.
55, Lionel Street, Birmingham. Established A.D. 1816.
BOOKS of DESIGNS, 5s. each.
☞ The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.

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HILL AND SMITH'S BLACK VARNISH for Preserving Ironwork, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and, its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by any ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.
Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom.
UNSOLICITED TESTIMONIAL.
Glougwilly, Llanphumpant, Carmarthen, Nov. 27, 1873.—"Mr. Lloyd Lloyd encloses cheque for £3 5*s.*, amount due to Messrs. Hill & Smith, and he considers the Black Varnish one of the most useful things he ever possessed."
Apply to HILL and SMITH, Brierly Hill Ironworks, near Dudley; and 128, Queen Victoria Street, London, E.C., from whom only it can be obtained.
CAUTION.—It having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, they would especially draw attention to the fact that every cask of their Varnish is legibly marked with their name and address, without which none is genuine.

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TABLE CUTLERY. The Blades are all of the finest Steel.	Table.		Dessert.		Carvers, per pair.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
3½-inch ivory handles ....per doz.	14	0	11	0	6	0
3¾ ,, ,, ... ,,	18	0	14	0	7	0
3⅞ ,, ,, to balance ,,	20	0	15	0	7	0
3¾ ,, ,, ,,	26	0	20	0	8	0
4 ,, ,, ,, ,,	30	0	22	0	9	0
4 ,, fine ,, ,,	33	0	24	0	9	6
4 ,, ,, extra large ,,	36	0	28	0	10	6
4 ,, ,, ,, ,,	42	0	33	0	13	6
4 ,, silver ferrules.. ,,	42	0	35	0	13	0
4 ,, silvered blades ,,	48	0	35	0	—	
Do. electro-silvered handles ,,	23	0	19	0	7	6

WILLIAM S. BURTON, GENERAL FURNISHING IRONMONGER, by appointment to H.R.H. the Prince of Wales, sends a Catalogue gratis and post-paid. It contains upwards of 850 Illustrations of his unrivalled Stock, with Lists of Prices and Plans of the Thirty Large Show-rooms, at 39, Oxford Street, W.: 1, 1A, 2, 3, and 4, Newman Street; 4, 5, and 6, Perry's Place; and 1, Newman Yard. Manufactories, 84, Newman Street, and Newman Mews, London, W.

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R. HOLLIDAY, PRACTICAL WIREWORKER, No. 2A, Portobello Terrace, Notting Hill Gate, London, W., begs to call the attention of all Gardeners who are about to have their Garden Walls Wired to his system of Wiring Walls, as being superior to all others for neatness, strength, and durability.
FOR NEATNESS—Because all the Wires are kept perfectly tight, without the use of the Raddiron.
FOR STRENGTH—Because very much stronger Wire can be used, therefore not liable to be drawn out of the horizontal line the branches of trees.
FOR DURABILITY—Because, being able to use the strong Wire, it is not so likely to be eaten through with the galvanism as the thin Wire, as used in the French system.
The above engraving is an Example of our system of Wiring Garden Walls. We have recently completed the Wiring of the New Garden Walls for the Marquis of Salisbury, Hatfield House. The Walls are 12 feet high and 753 yards long, wired on both sides: making a total length of 1506 yards—our system being chosen in preference to any other.
Illustrated Catalogues of Garden and Conservatory Wirework, Rabbit-proof Hurdle Fencing, &c., may be had on application as above.

SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW AND CO., 29, Oxford Street, Manchester.

The Sole International Prize Medals for GALVANIZED WIRE NETTING

Have been awarded to Messrs. J. B. BROWN AND CO., at the VIENNA EXHIBITION, 1873, and at the PHILADELPHIA CENTENNIAL and INTERNATIONAL EXHIBITION, 1876.



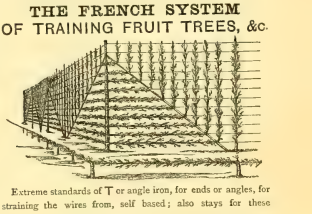
Prices per Lineal Yard, 24 inches high :—

Size of Mesh.	Mostly used for	Gauge, or Light.		Gauge, or Medium.		Gauge, or Strong.	
2 in.	Dogs or Poultry .	19	3¾*d.*	18	4½*d.*	17	5¾*d.*
1⅞ in.	SmallRabbits,&c.	19	4¼*d.*	18	5¼*d.*	17	6¼*d.*
1½ in.	Smallest Rabbits.	19	5¼*d.*	18	6¼*d.*	17	8*d.*

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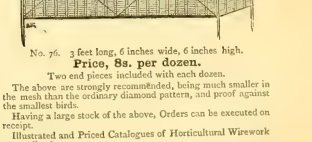
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4½ ft. high..	4*s.* 6*d.*	6*s.* 6*d.*	7 ft. high	7*s.* 0*d.*	10*s.* 0*d.*
5 ft. high....	5 0	7 6	8 ft. high	8 0	11 0
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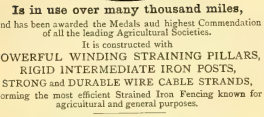
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20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
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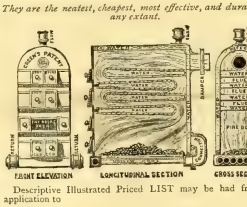
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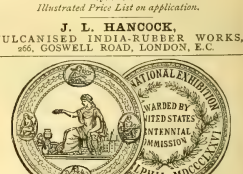


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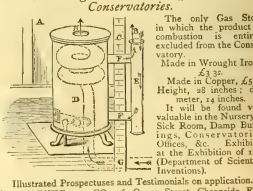
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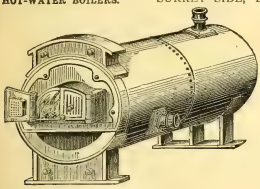


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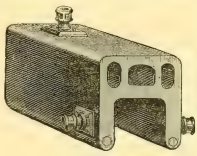


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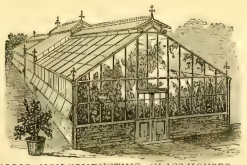
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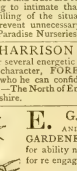
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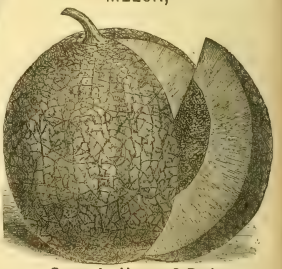
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THE GARDENERS' CHRONICLE

VOLUME for JULY to DECEMBER, 1876.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL BOTANIC SOCIETY GARDENS, Regent's Park, N.W.

EXHIBITIONS of SPRING FLOWERS, WEDNESDAYS, March 21, April 18. SUMMER EXHIBITIONS, WEDNESDAYS, May 16, June 13.

Schedules of Prizes are ready, and can be had by post.

ROYAL MANCHESTER BOTANICAL and HORTICULTURAL SOCIETY.

FLORAL and HORTICULTURAL MEETING, at the Town Hall, Manchester, on TUESDAY, March 20. AURICULA SHOW, FRIDAY, April 27. THE GRAND NATIONAL HORTICULTURAL EXHIBITION OF 1877, MAY 18 to 25. For Schedules apply to the undersigned.

Botanic Gardens, Manchester. BRUCE FINDLAY.

CRYSTAL PALACE.—ARTIFICIAL FLOWER and FRUIT SHOW, March 3 to 17, 1877. Intending Exhibitors may obtain Schedules on application to GENERAL MANAGER, Crystal Palace.

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Roses, Roses, Roses.

ROSES, Dwarf.—25,000 good strong plants, and true to name, 35s. per 100, 6r. per dozen, per my selection, package included. Terms Cash.

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SALE THIS DAY, at HALF-PAST TWELVE O'CLOCK.

Consignment from Ghent—Bulbs. &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, February 17, at half-past 12 o'Clock precisely, 300 CAMELLIAS, 200 INDIAN AZALEAS, all with buds; 100 Hybrid RHODODENDRONS, choice sorts: 200 TRITOMA UVARIA GRANDIFLORA, a splendid perennial for grouping on lawns; 200 LILIUM LANCIFOLIUM ALBUM, 25 PHŒNIX RECLINATA, 200 ARECA MONOSTACHYA, 50 CHAMÆROPS EXCELSA, and 50 LATANIA BORBONICA, from Ghent: also GLADIOLI, LILIUMS, &c., for present planting, MOWING MACHINES, &c.

On view the morning of Sale, and Catalogues had.

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of the late F. G. WILKINS, Esq., of Leyton.

MR. J. C. STEVENS has received instructions to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 1, at half-past 12 o'clock precisely, the valuable COLLECTION of ORCHIDS formed by the late F. G. Wilkins, Esq., of The Poplars, Leyton, comprising, amongst other fine things, two magnificent plants of Dendrobium Phalænops 5, several extra fine plants of Odontoglossum vexillarium, a beautiful assortment of O. crispum Alexandræ, pescatorei, &c., many with flower-spikes; Oncidium macranthum, O. amphiatum majus (unusually fine); Lycaste Skinneri, in variety; a beautiful thousand of Indica Rutsiri, Lælia elegans Turneri, Aerides Fieldingii, Saccolabiums, Cattleyas, Dendrobium Wardianum, albo sanguineum extra, crassinode, and other good sorts; Cologyne cristata, Angræcum sesquepedale, Cypripediums, &c.

May be viewed the morning of Sale, and Catalogues had.

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SPECIMEN STOVE and GREENHOUSE PLANTS of the late F. G. WILKINS, Esq., of Leyton.

MR. J. C. STEVENS has received instructions to offer for SALE by AUCTION, on the Premises, EARLY in MARCH, the magnificent STOVE and GREENHOUSE PLANTS formed by the late F. G. Wilkins, Esq., of The Poplars, Leyton, comprising Heaths, Aphelexis, Epacrises, Hedaromums, Ixoras, Rondeletias, Clerodendrons, Crotons, Anthuriums, Azaleas, Palms, Ferns, trained Pelargoniums, &c.

This Collection is, without doubt, one of the finest in the kingdom, and has been grown and exhibited most successfully by Mr. Ward for the last ten years.

City Auction Rooms, 38 & 39, Gracechurch Street, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Rooms as above, on TUESDAY, February 20, at half-past 12 o'clock precisely, a choice collection of English grown double CAMELLIAS, 2 to 3½ feet, beautifully set with bloom-buds and in perfect health; choice AZALEA INDICA, selected GREENHOUSE PLANTS, a splendid assortment of 500 Standard and Dwarf ROSES of the best varieties, useful FRUIT TREES, hardy AMERICAN PLANTS, CONIFERÆ SHRUBS, together with some fine Bulbs of LILIUM AURATUM and LONGIFOLIUM, GLADIOLUS, RANUNCULUS, ANEMONES, also FUCHSIAS, DAHLIAS, &c.

On view the morning of Sale. Catalogues may be had at the Rooms; and of the Auctioneers, &c., 98, Gracechurch Street, E.C., and Leytonstone, E.

Tooting, S.W.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. R. Parker, to SELL by AUCTION, on the Premises, The Exotic Nursery, Tooting, S.W., on THURSDAY, February 22, at 12 o'Clock precisely; a splendid assortment of thriving young NURSERY STOCK, comprising beautiful thousands of Indica Evergreen and Coniferæ shrubs in specimen borders, admirably adapted for effective planting: a splendid assortment of Ornamental and Forest Trees, fine Fruit Trees, Box edging, Bamboos, Vines, Roses, Clematis, Virginian Creepers, Lily of the Valley, &c.

May be viewed prior to the Sale, and Catalogues may be had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Final Sale this Season of Lilium auratum.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Auction Mart, Tokenhouse Yard, E.C., on MONDAY, February 26, at 12 o'Clock precisely, a large quantity of LILIUM AURATUM, AZALEAS, GLADIOLUS, Hardy LILIES, IRIS, FERNS in choice variety, AMARYLLIS, &c., together with a consignment of New Zealand TREE FERNS, &c.

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IMPORTANT SALE of well-grown NURSERY STOCK, consisting of a fine assortment of handsome Hardy Evergreen Shrubs, also 1000 Variegated Hollies, handsome bushy plants, 2 to 6 feet; several remarkably fine specimen Hybrid Rhododendrons, 800 Bushy Arbutus, 2 to 3 feet; clean-grown Fruit Trees, together with a choice assortment of Standard and Dwarf Roses, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, on the Premises, the Barnet Nurseries, Barnet, Herts, on TUESDAY, February 27, at 12 o'Clock precisely, by order of Messrs. Cutbush & Son.

May be viewed two days prior to the Sale. Catalogues obtained on the Premises, at the Highgate Nurseries, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Clearance Sale, Lee, Kent, S.E.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Mallet to SELL by AUCTION, on the Premises, the Burnt Ash Lane Nurseries, Lee, adjoining the station, on WEDNESDAY, February 28, at 12 o'Clock precisely, a portion of the land being required for other purposes, the valuable NURSERY STOCK comprising 1000 Pyramid and Standard Fruit Trees, 600 Standard Roses, 3500 Evergreen and Coniferæ Shrubs, 800 fine hybrid Rhododendrons, 1300 Ornamental Flowering and Forest Trees, 1200 choice Ericas, Camellias, and other Greenhouse Plants.

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Near Chislehurst, Kent.

MR. WM. HODSOLL will SELL by AUCTION, at the "Black Boy" Inn, St. Mary's Cray, on THURSDAY, February 22, at 3 for 4 o'Clock P.M., the excellent PEAT on about 5 acres of land, in Lots of One Quarter of an Acre each, to be dug and cleared by the purchasers.

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TO LET, on Lease or Agreement, HOUSE, SHOP, and GROUND, well stocked with Small Plants; has been in the line 40 years, and fortune made. Rent, £65: Premium for Stock and Fixtures, £75.

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WANTED, a PARTNERSHIP, or SHARE in the BUSINESS of a FLORIST, by a young Man of experience in the Cultivation of Florists' Flowers for Market or other purpose. A person of similar experience to the Advertiser required. Address, by letter,

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Notice to Creditors, &c.

Re MR. JOHN HARRISON, Deceased.

NOTICE IS HEREBY GIVEN, that any persons having CLAIMS AGAINST the ESTATE of the late MR. JOHN HARRISON, of the North of England Rose Nursery, Darlington, are requested to SEND at once a FULL STATEMENT THEREOF to the undersigned; and all persons INDEBTED to the said MR. JOHN HARRISON BY the AMOUNTS DUE, to me, without delay, no other person being authorised to receive the same.

The Business will be carried on as usual at the Nurseries at Catterick and Scorton.

WILLIAM HARRISON.

February 13, 1877.

HARRIET SCOTT, WOOD-BROKER, Broker, Canvasser, and DEALER in all kinds of Garden Materials, begs to notify that Mr. W. Uwins, her late Manager, is now NO LONGER IN HER EMPLOY, and requests that all ORDERS, PAYMENTS, and ACCOUNTS PAID TO HER SON, who will call in a few days.

Woodside, S.E.—February 1, 1877.

Standard Azaleas, Camellias, and Portugal Laurels.

F. AND A. SMITH offer the above, which are now in fine order, and prices moderate.

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STEPHANOTIS, one large; and ALOES, six large green American, and two variegated. Prices on application.

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English Yews.

YEWS, English.—Good, strong, well-grown plants, 2½ to 4½ feet high, 75s. to 100s. per 100, package included. Terms Cash.

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POTATOS, Rivers' Royal Ashleaf.—To be Sold, 90 tons, field grown and perfectly dry. Apply to Mr. THOS. BULMAN, Farm Bailiff, West Auckland, Bishop Auckland.

Early Rose Potatos.

POTATO, Early Rose, the best in cultivation, good sound seed, and warranted true, in cwt. bags, 12s.; bag gratis, on receipt of P.O.O.

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WHITE MULBERRIES for SILKWORMS, 2-yr., dwarf, very fine, 1 to 3 feet, 5s. to 12s. 6d. per 100. Price to Trade, or for larger quantities, on application.

EWING AND COMPANY, Eaton, Norwich.

YEWS, 2000 for Sale.—3 to 3½ feet, 70s. per 100; 3½ to 4½ feet, 100s. per 100. All well-rooted and furnished. Good time for Planting now. Well adapted for hedges or ornamental trees. Cannot see better grown, and for quality, anywhere.

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FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

Cucumber Plants, clean, strong and healthy.

F. W. COOPER can supply the above: Rollisson's Telegraph, Munro's Duke of Edinburgh, Blue Gown, and Tender and True; also seed of all the varieties grown under his own supervision and guaranteed true. The Trade supplied. Florist, Huntingdon.

Now Ready.

CHARLES TURNER'S Descriptive CATALOGUE of SEEDS. Post-free on application.

The Finest Dwarf Marrow Pea is

TURNER'S DR. MACLEAN. See CATALOGUE, now ready.

New Early Prolific Pea,

ALLAN'S CHAMPION. Full description in CATALOGUE, now ready.

Schoolmaster.

FINEST ROUND POTATO. Description, with testimonials, in CATALOGUE, now ready.

CHARLES TURNER, The Royal Nurseries, Slough.

CALCEOLARIA, Golden Gem, strong healthy plants, 5s. per 100, 40s. per 1000.

GERANIUM, Vesuvius, strong, autumn-struck, from 10s. to 8s. per 100. Cash with order, package free.

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For Cover.

PONTICUM RHODODENDRONS, 2½ to 3 feet, fine, £8 per 1000.

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LARCH, 60,000, 1½ to 3 feet; ASH, 2 to 4 feet; BEECH, Austrian, fine, 4 to 5 feet; the new HYDRANGEA, Thomas Hogg, 5s. each; CALCEOLARIA, Yellow Gem, 5s. per 100, Sultan, 7s. per 100, strong autumn-struck plants.

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R. AND D. NEAL, having a very large Stock of Dwarf-trained MORELLO CHERRIES, can offer them very cheap in quantities. Price per dozen or hundred on application.

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CABBAGE PLANTS, East Ham, Enfield Market, Little Pixie. Strong plants of the above, free to rail, 5s. per 1000, package included.

Strong transplanted English OAK, 4 to 5 feet, 40s. per 1000.

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Trade.

ASPARAGUS.—Three million Grayson's Giant, 1-yr., 10s. per 1000: 2-yr., 15s. per 1000: 3-yr., 20s. per 1000. Three million Connover's, 1-yr., 15s. per 1000: 2-yr., 20s. per 1000.

SEAKALE, planting, 30s. per 1000. For cash.

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Hardy Florists' Flowers.

THOMAS S. WARE'S NEW SPRING CATALOGUE of the above, including Pansies, Violas (Bedding), Delphiniums, Daisies, Pinks, Picotees, Phlox, Pyrethrums, and others, for immediate Planting, may be had free on application.

Hale Farm Nurseries, Tottenham, London.

To the Trade.

HUGH LOW AND CO. can still offer good Dwarf-trained Moorpark APRICOTS, Dwarf-trained PEACHES and NECTARINES, Dwarf-trained PLUMS (principally Victoria and Coe's Golden Drop), Dwarf Maiden May Duke and Morello CHERRIES. Prices on application.

Clapton Nursery, London, E.

GERANIUM WONDERFUL (G. SMITH).—Wonderful, a semi-double, intense orange-scarlet, is decidedly the best bedder, finest growing, and most profuse flowering GERANIUM ever yet sent out, either as a bedder, pot plant, or for winter flowering. Being semi-double it never sheds, and so requires no pegging. 12. 6d. each, 12s. per dozen, 90s. per 100, and 800s. per 1000.

RAPER AND CO., Fern Nursery, Leamington.

Special Offer of

ELMS (Splendid), for Avenue or Hedgerows. Fine Huntingdon, from 20 to 25 feet high, 6 to 7 inches in circumference at 1 foot from ground, lift with splendid roots, and warranted safe in removal, £5 per 100, £40 per 1000.

CATALOGUES of cheap and genuine SEEDS now ready. Post-free on application.

BALL AND COMPANY, 4, Mercers' Row, Northampton. Nurseries: Bedford Road and Kettering Road.

LARGE ESPALIER APPLES.—Very fine large Trees, full of fruit-buds, measuring 6 to 10 feet wide and 4 to 6 feet high. Names and price on application to FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

To the Trade.

PRIMROSES, double lilac, 12s. 6d. per 100, 100s. per 1000. About 15,000 to 20,000 to dispose of, good plants.

RODGER MCCLELLAND AND CO., 64, Hill Street, Newry.

To Purchasers of Large Quantities, Market GARDENERS and OTHERS.

SUTTON AND SONS can offer—

SUTTON'S IMPROVED EARLY CHAMPION, the best and most productive Early Pea in cultivation.

Sutton's Ringleader — Sutton's Racehorse

Daniel O'Rourke — and other leading kinds.

Lowest price per Bushel or Quarter on application.

SUTTON AND SONS, Seed Growers, Reading.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS, also Plants of all the varieties, with Double PRIMROSES of different colours: AURICULAS, both Single and Double: with every sort of Early Spring Flowers. LIST on application.
Mr. WEBB, Calcot, Reading.

SEEDS—SEEDS—ALL KINDS.—Before ordering your Seeds, send for Illustrated CATALOGUE, which contains full Directions, How, when and What to Sow.
FENGILLEY AND POOL (successors to the Heatherside Nurseries Company), 59, Queen Victoria Street, London, E.C.

Pelargoniums, Pelargoniums.

JAMES HOLDER AND SON have a fine healthy Stock of the above to offer, at the following low prices for Cash, viz., 35s. per 100, distinct sorts, hamper and package included; also extra strong plants, in 32-pots, 18s. per dozen, in 48-pots, 9s. per dozen, 60z. per 100, basket and packing extra. Crown Nursery, Reading.

Notice.

EDMUND PHILIP DIXON'S CATALOGUE of NEW and CHOICE SEEDS is now ready, and will be forwarded gratis and post-free on application.
EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

The Best Late Broccoli.

BROCCOLI, Christie's Self-protecting Late White.—Pronounced by all who have seen it as the finest self-protecting Broccoli in cultivation. Price per packet, 2s. 6d. A limited quantity to offer to the Trade, price on application.
EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

EWING AND COMPANY'S LIST OF NEW ROSES for 1877 is now ready, and will be forwarded on application. Additional Houses have this season been built specially to extend the Propagation and Growth of NEW and TEA ROSES. The plants are making vigorous, strong growth, and will be unusually large and fine.
Their GENERAL LISTS of Roses, Fruit Trees, Ornamental Trees for Avenues, Coniferæ, Evergreens, Clematis, &c. (104 pages), with full descriptions, gratis.
The Royal Norfolk Nurseries, Eaton, near Norwich.

STEPHANOTIS FLORIBUNDA.—Strong specimen plants of a very free-flowering variety, 10s. 6d. each: smaller, but fine bushy specimens, which will produce abundance of flower early, the buds just appearing on some, 5s. 6d. each, 63s. per dozen; in 48-pots (flowered last summer), 30s. per dozen. This offer is for six weeks only, to make room, the plants being much above the money.
JOHN H. LEY, Royal Nursery, Croydon.

To the Trade.

MESSRS. LEVASSEUR AND SON, Nurserymen, Ussy, Calvados, France, have an immense Stock of Seedling FOREST TREES, Hardy, Coniferous, and SHRUBS, for transplanting and transplanted. Priced CATALOGUES may be had of
Messrs. R. SILBERKRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

Verbenas, Verbenas, Verbenas.

WILLIAM BADMAN offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, at 12s. per 100; or turned out of pots, 10s. per 100. Good rooted Cuttings, 6s. per 100, 50s. per 1000, package included. Terms Cash.
Cemetery Nursery, Gravesend, S.E.

Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS (by THOMAS RIVERS) is now ready; also CATALOGUE of Select ROSES. Post-free on application.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Roses, Fruit Trees, Evergreens, &c.

WILLIAM FLETCHER'S CATALOGUE is now ready, and may be had post-free on application. The Nursery Stock generally is very fine, healthy, and well-rooted. Early orders are respectfully solicited.
Ottershaw Nurseries, Chertsey, Surrey.

TWELVE BEAUTIFUL ORCHIDS, 42s., established plants of fine sorts, as Cattleya citrina, Lælia autumnalis, Lælia albida, Odontoglossum, Dendrobium, and upwards of fifty other sorts. They have all made fine growth this season.
JOHN H. LEY, Royal Nursery, Croydon.

To the Trade.

OSBORN AND SONS can still supply dwarf maiden PEACHES, NECTARINES, and APRICOTS of the leading kinds, and a few standards. Also Dwarf and Standard APPLES, PEARS, PLUMS, and CHERRIES.
Fulham Nurseries, London, S.W.

AUSTIN AND MCASLAN, GLASGOW.
Established 1777.
GARDEN and IMPLEMENT (64 pages) CATALOGUE
Free on application.

VERBENAS, VERBENAS, VERBENAS.—Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6s. per 100, 50s. per 1000. 1200 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, for 8s. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

LADY HENNIKER APPLE GRAFTS, 12s. 6d., 12 for 2s., 50 for 8s., 100 for 15s. A splendid Kitchen or Dessert Apple, weighs 18 oz., bears freely in one-year's wood. Pyramids 3s. 6d.; Standards 5s. each.
EWING AND COMPANY, Eaton, Norwich.

Genuine Garden Seeds.

WM. CUTBUSH AND SON have for many years held some of the finest Stocks of SEEDS in the Trade, and they believe that no house can possibly supply better quality. CATALOGUES post-free on application.
HIGHGATE, LONDON, N.; and BARNET, HERTS.

To the Trade.

STANDARD and DWARF ROSES of the leading sorts—splendid Plants, no better in the Trade, well-ripened wood—about 15,000 Standards and 5000 Dwarfs, guaranteed true to name. For lowest prices apply to
GRANT AND CO., Park Nursery, Portadown, Ireland.

EUONYMUS EUROPÆUS.—Strong 2-yr. seedling plants, £1 per 100, £9 per 1000. Offers for Cash.
A. RATHHE AND SON, The Nurseries, Praust, near Danzig, Germany.

NEW DRACÆNAS.—Twelve of the finest in cultivation for 21s., well established young plants, growing freely. If potted on now will do for exhibition in the autumn—D. Baptisti, D. Youngii, D. Imperialis, &c., included. Packages gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

To the Trade.

H. AND F. SHARPE'S Special Priced LIST of HOME-GROWN GARDEN and AGRICULTURAL SEEDS of 1876 growth, is now ready, and may be had on application.
Seed Growing Establishment, Wisbech.

Centaurea candidissima or ragusina.

WOOD AND INGRAM offer fine summer-sown plants of the above, thoroughly established in thumb-pots, 12s. per 100. Package 1s. per 100, or 12 6d. for 50, not less than which will be sold at the price.
The Nurseries, Huntingdon.

Large Evergreen Trees for Screens.

WILLIAM PAUL AND SONS offer Norway SPRUCE and CEDRUS DEODARA, 10 to 15 feet high, well-rooted—the former at 5s. each, the latter 10s. 6d.
The Nurseries, Bristol.

Lobelias and Centaureas.

LOBELIA PUMILA MAGNIFICA, from Cuttings, 4s. per 100, free by post: 500 for 18s. CENTAUREA RAGUSINA, C. RAGUSINA ELEGANTISSIMA, and C. GYMNOCARPA, fine summer-sown plants, established in pots, 3s. to 4s. per dozen, 20s. to 25s. per 100.
Mr. MARRIOTT, Mellish Road, Walsall.

PALMS for TABLE DECORATION.—Twelve distinct choice sorts, ready to put on into 5-inch pots, 21s. Established in that size about 2 feet high, fit for immediate decoration, 42s. and 63s., according to sorts. A large and valuable collection of exhibition specimens, from 21s. each. Packages gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

Special Offer—150,000 Vesuvius.

WILLIAM BADMAN offers strong rooted struck VESUVIUS, from single pots, 10s. per 100: or from store-pots, 8s. per 100, 75s. per 1000, package included. Terms Cash.
Cemetery Nursery, Gravesend, S.E.

LARGE TREE BOX and EVERGREEN HOLLY.—Handsome, bushy, and well-rooted, will transplant with good balls of earth, 5, 6, 7, and 8 feet high. Tree Box lives where Trees hitherto grown for Evergreen tree. An inspection invited. Price on application to
T. JACKSON AND SON, Nurseries, Kingston, Surrey.

CHOICE TUBERS and ROOTS.—Twelve glorious BEGONIAS, including Frobelii, roseflora, intermedia, Sedeni, vivicans, &c., for 21s., very fine bulbs. Twelve CALADIUMS, splendid tubers, fit for exhibition, ready to start, 42s. Large collections of these latter at 60s. per dozen, consisting of bulbs averaging 10 inches in circumference.
JOHN H. LEY, Royal Nursery, Croydon.

Asparagus, Asparagus, Asparagus.

ROBERT AND GEORGE NEAL have the above to offer in fine quantities, 1-yr., 2-yr., and 3-yr. old:—
1-yr. old, 20s. per 1000.
2-yr. old, 25s. per 1000.
3-yr. old, 30s. per 1000.
Price to the Trade on application.
The Nurseries, Wandsworth Common, S.W.

Planting Season.

E. BURGESS begs to offer the following:—Strong Standard and Pyramid PEARS, ROSES, Evergreen and Deciduous Flowering SHRUBS, English OAK, ELMS, and LIMES, up to 10 feet, and Spruce FIRS. Prices on application.
The Nurseries, London Road, Cheltenham.

CATALOGUES.—His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly forward him Catalogues. They should be forwarded (by post) to
S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

Presented (by post) on application,

NEW CATALOGUE for 1877. For remarks and List of Plants offered, with prices, see last week's large Advertisements of Plants. Give name, well hardened off, low in price. See New Catalogue.
WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

Well furnished Spruce Firs.

E. LACK, The Nurseries, Wellingborough, Northamptonshire, offers the above, in sizes, from 1½ foot to 4 feet. Also PINUS AUSTRIACA, from 4 feet to 5 feet; IVWS, English, from 2 feet to 4 feet—all well-grown and well-rooted plants—at low prices per 100, which will be sent on application.

P.S.—A very fine stock of Standard LIMES.

MESSRS. JNO. STANDISH AND CO.'S CATALOGUE for Autumn, 1876, and Spring, 1877, is now ready, and may be had, post-free, on application.

It contains the following:—

Plants of Recent Introduction.	Conifere.
Stove and Greenhouse Plants.	Hardy Climbers, Clematis, &c.
Plants for Winter Forcing.	Rhododendrons, Azaleas, Kalmias, &c.
Azalea indica and Camellias.	Roses, Standards and Dwarfs, also in pots.
Tree Carnations and Ericas.	Fruit Trees.
Hardy Trees and Shrubs.	Grape Vines.
Transplanted Forest Trees.	Dutch Bulbs, Flower Roots, &c.
	Royal Nurseries, Ascot, Berks.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden.—"Ges's superior Bedfordshire-grown Plants and Seeds have attained much celebrity."—*Vide Bedford Mercury*, July 29, 1876. "The seals of the district offer facilities enjoyed as few places for bringing away plants, &c., and with the skill and perseverance of Mr. F. Ges they are turned to good account."—*Vide Agricultural Gazette*, July 31, 1876. See other opinions of the Press, also a Treatise on the Cabbage. CATALOGUES, lowest prices, &c., on application to FREDERICK GES, Seed and Plant Grower, &c., Biggleswade, Beds.

Special Offer for Cash.

PEACHES and NECTARINES, Maiden, 25s. per 100; ROSES, Dwarf, fine clean stuff, including Francois Michelon, Celine Forestier, Madame Alice Dureau, Madame Verdier, Paul Verdier, and a few others, 15s. per 100; AUCUBA JAPONICA and LAURUSTINUS, good, from Cutting Beds, 3s. 6d. per 100.
J. AND G. LOWE, Uxbridge.

New Roses for 1877.

A DESCRIPTIVE LIST of all the best New Roses of the Season is now ready.
Extra fine plants ready in March.
CRANSTON AND COMPANY, King's Acre Nurseries, near Hereford.

ALTERNANTHERAS, by the 100 or 1000, from Stores, including the following varieties:—amœna, amœna spectabile, amabilis, latifolia, magnifica, paronychioides, spathulata, tricolor, versicolor, &c., per 100, 2s.; per 1000, 15s. For Cash with Order, package included. Special arrangements for large quantities. Stock plants of all the above that would produce an abundance of Cuttings. All other plants suitable for CARPET BEDDING, as used on the West Brighton Est. and other Public Gardens, at the above Price.
WILLIAM MILES, West Brighton Nurseries, near Clifton-ville Station, Sussex.

Rhododendrons.

J. MATTHEWS AND SON, Milton Nurseries, Stoke-on-Trent, Staffordshire, have to offer the following:—
RHODODENDRONS, 100,000, fine bushy plants, thinly grown and specially cheap, at 25s. per 100
„ SPLENDIDUM, 10,000, white, 1 to 1½ foot, 37s. 6d. per 100.
„ CAUCASICUM PICTUM, 10,000, light scarlet, 1 to 1½ foot, 50s. per 100.
„ JACKSONII, scarlet, 1 foot, 40s. per 100; 1 to 1½ foot, bushy, 60s. per 100.
„ HYBRIDS, from all the choicest named varieties, 1 foot, bushy, 20s. per 100; 1 to 1½ foot, 30s. per 100; 1½ to 2 feet, 40s. per 100.
„ PONTICUM, 10 to 12 inches, 50s. per 1000; 12 to 15 inches, 60s. per 1000; 15 to 18 inches, 80s. per 100; 18 to 21 inches, 40s. per 100; 2 to 3 feet, 50s. per 100; 3 to 3½ feet, bushy, 80s. per 100.
YEWS, 3 feet, fine clean, well-grown plants, 6 to 9 inches, 40s. per 1000; 8 to 12 inches, 50s. per 1000; 1 to 1½ foot, 30s. per 100.
CUPRESSUS LAWSONIANA, fine Ornamental tree for Lawns or Wood Planting as shelter for Game, also for Garden Fencing, 2 to 3 feet, 30s. per 100; 3 to 4 feet, 50s. per 100.
ASH, Mountain, 2½ to 3½ feet, 25s. per 1000.
BOX, Tree, 1 to 1½ foot, 12s. 6d. per 100; 1½ to 2 feet, 20s. per 100; 2 to 3 feet, 40s. per 100.
CURRANTS, quantity of extra strong Black Grape, 10s. per 100.
CATALOGUES of all other Nursery Stock free on application.

Large Flowering Petunias.

HENDER AND SON'S Strain is the Finest in the World.
We beg to offer seed of the above strain, which is brought to its present perfection by over twenty years' hybridisation and selection. Each year we have selected the best varieties for seed out of a large number of seedlings, for many years past numbering 10,000 per year.
Mr. BURLEY, Hereford Road Nursery, Bayswater, writing in *Gardeners' Magazine*, says:—"This firm has done more to improve this plant than any one else: flowers over an inch 4½ inches across, colours beautifully blended together, habits as short-jointed as Heaths, and as showy as scarlet Geraniums.
"Your strain of Petunias is splendid."—J. BAINES, *Gardener to* Lord Robartes, *Lanhydrock*.
"I have great pleasure in bearing testimony to the superiority of your Petunias."—W. SNOW, *Gardener to* Earl of Morley, *Saltram*.
"The Petunias raised from your seed gave us the greatest satisfaction, and admired by every one. They were the best we ever saw."—BRYANT & HOSKEN, *Nurserymen, Bristol*.
"From the Petunia seed you supplied me I got the finest flowers I ever had from the seed-pan, grew them on, and with six obtained the 1st prize against eight competitors at the Royal Western Horticultural Society's Exhibition in Bristol, which I consider highly."—J. RELLAND, *Gardener to* W. Radcliffe, Esq., *Plymouth*.
Single, 2s. per packet, 200 Seeds; Double, 5s. per packet 200 Seeds. All packets sealed "HENDER AND SON."
We can supply a dozen Plants, named, which would include the finest we ever raised, for 13s., post-free, in May.
Our AMARANTHUS, Hender's, 6d. per packet, and Princess of Wales, 1s. per packet, are the finest in cultivation for decoration.
HENDER AND SONS, Nurserymen, Plymouth.

SURPLUS NURSERY STOCK.
TAMARIX, two sorts, 2 to 3 feet, 12s. 6d. per 100
SPIRÆA FORTUNEI, 2 feet, 15s. per 100
FUCHSIA GRACILIS, 20s. per 100
YEW, English (fine), 1½ to 2½ feet, 25s. per 100
DEUTZIA SCABRA, 2 to 3 feet, 20s. per 100; 12 to 18 inches, 50s. per 100
BERBERIS DARWINII, 1½ to 2 feet, 16s. per 100; 2 to 3 feet, 30s. per 100
COTONEASTER MICROPHYLLA, 2 to 3 feet, 16s. per 100
BUDDLEA GLOBOSA, 2 to 3 feet, 16s. per 100
DRACÆNA INDIVISA, about 1½ feet, 12s. per dozen
75s. per 100; stronger, 35s. per dozen
CISTUS, strong, many sorts, 4s. per dozen
CLIANTHUS PUNICEUS, strong, 9s. to 12s. per dozen
CEANOTHUS, many sorts, 6s. to 12s. per dozen
HUDDLEBECKIA COMPLEXA, for cutting, 6s. to 12s. per dozen
POPLAR, Lombardy, 3 to 4 feet, 35s. per 1000
„ Canadian, 4 to 5 feet, 30s. per 1000; 5 to 6 feet, 50s. per 1000
„ diacrophylla, 5 to 6 feet, 30s. per 1000; 6 to 10 feet, 10s. per 100
PRIVET, Evergreen, 2 to 3 feet, 30s. per 1000
SYCAMORE, 1 to 2 feet, 20s. per 1000
RODGER MCCLELLAN AND CO., 64, Hill Street, Newry.

Camellias in Bloom.

WM. PAUL AND SON (Successors to the late A. PAUL & SON, established 1806), Paul's Nurseries, Waltham Cross, N., respectfully invite inspection of their Collection of Camellias, now finely in bloom.

Visitors by Railway can enter Nurseries from the platform, "Waltham" Station, Great Eastern Railway.

CRANSTON AND COMPANY have to offer :—
PEARS, Pyramid, on Quince, extra strong bearing trees, 3 to 4, 4 to 5, and 5 to 6 feet, all the leading kinds.
PEARS, Dwarf-trained, for Espaliers and Walls, well furnished, all the best late kinds.
PEACHES, NECTARINES, and PLUMS, Dwarf-trained.
PEARS, Standard, beautiful trees, double worked.
CHERRIES, Standard, 5 to 6 feet stems.
APPLES, Standard, for the Garden and Orchard.
" Cider, Standard, twenty to thirty of the best Herefordshire kinds.
Descriptive LISTS, with Prices, on application.
King's Acre Nurseries, near Hereford.

RALPH ROBSON, NURSERYMAN, Hexham, has to offer the following :—
LARCH, Native, 1-yr. seedling, fine,
" 2-yr., 2-yr., 15 to 18 inches, fine.
ASH, 2-yr., 2 to 3 feet, fine.
POPLAR, Black Italian, 2 to 3 feet, fine.
GOOSEBERRY BUSHES, Lancashire varieties.
FRUIT TREES, standard and dwarf-trained, of all kinds.
All the above are fine clean stuff, and well grown. Prices on application.

American Plants Without Peat.

WILLIAM MAULE AND SONS beg to offer the choicest hardy English and Continental RHODODENDRONS, with BLUE, and other AZALEAS, at 30s. per dozen, or £10 per 100.

The plants are grown in stiff loamy soil, on an exposed and elevated situation, and will thrive in almost any soil, free from iron, lime, or chalk.

Handsome Standard RHODODENDRONS, with fine heads, well set with bloom, 10s. 6d., 21s., and 42s. each.

Large bushes of PONTICUM, CATAWBIENSE, and other common varieties, at 50s., 75s., and 100s. per 100.

The Nurseries. Bristol.

A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands, has to offer the following :—
YUCCA ANGUSTIFOLIA, strong plants, 4 foot high, £2 per dozen, £12 10s. per 100. In my nursery this beautiful new Yucca withstood, without the slightest protection, the severe winter of 1875.
APPLES, strong 2-yr. Palmettes and Pyramids, 42s. per 100, £18 10s. per 1000.
HARDY CACTUS at the lowest prices.

GREEN TREE BOX.—The hardiest evergreen, exclusive of the Coniferæ, thrives in almost any soil, especially on chalk. The wood is very valuable, and, on account of its being applied in increasing quantities to new uses, is rapidly rising in price. A few acres of Box trees planted now would in a comparatively few years be worth an almost fabulous amount of money. Very bushy and extra well rooted plants can be supplied.

1½ to 2 feet, 4s. per dozen, 25s. per 100, £10 per 1000.
2 to 2½ feet, 6s. per dozen, 35s. per 100, £15 per 1000.
2½ to 3 feet, 9s. per dozen, 60s. per 100, £25 per 1000.
CATALOGUES of ROSES, FRUIT TREES, and General NURSERY STOCK, free.
EWING AND COMPANY, Eaton, Norwich.

To the Trade.—Seed Potatos.

H. AND F. SHARPE will be pleased to send their SPECIAL CATALOGUE of SEED POTATOS to those of the Trade who have not yet received one. It comprises all the principal English and American varieties worthy of cultivation; they are all grown from the finest selected stocks, and the prices will be found very moderate. Seed Growing Establishment, Wisbech.

SPECIMEN AZALEAS (Winter flowers).—An abundance of splendid flowers can be had in a week or two, or at once, by purchasing a few Specimen Azaleas, now opening freely. The plants are from 2 to 3 feet over, perfect shape, some hundreds of flowers and buds, which will last for months at this time of the year. All new and valuable sorts, 21s., 42s., and 42s. each, according to size and sorts. Eighteen plants only are for Sale. They are all worth double the money. Packages gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

Shallot Seed.

DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild; with ordinary treatment bulbs have been grown 10 and even 12 inches in circumference. Say for the best method of growing the Shallot. Treatment same as Onions. Price 1s. per packet. May be had of all Seedsmen in sealed packets, and Wholesale of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C., or
B. R. DAVIS, Nursery and Seed Warehouse, Yeovil.

Superb Ridge Cucumber.

CUCUMBER, Foster's XL Superb Ridge.—This variety is a remarkably fine, handsome, long, dark green Cucumber, and one that can be recommended with the greatest confidence. It is very prolific, and keeps its colour to the last; all who have seen it growing are satisfied that it cannot be surpassed, and those who have tried its flavour are convinced of its excellent quality; length, 12 to 18 inches. Price 6d. and 1s. per packet; price to the Trade on application.
EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

Half a Ton, Guaranteed True Native,
SCOTCH FIR SEED.

W. WISEMAN AND SON have to offer the above, prepared by themselves, on very moderate terms. Also :—
500,000 SCOTCH FIR, 2-yr. seedlings, very fine stuff.
200,000 " 1-yr., 1-yr. "
150,000 LARCH, 2-yr. seedlings "
300,000 " 1-yr., 1-yr. "
As the ground is wanted all will be disposed of cheap. Samples and prices on application.
Grove Terrace and Friars' Haugh Nurseries, Elgin, N.B.

GODETIA, LADY ALBEMARLE.



First-class Certificate Royal Horticultural Society, August 2, 1876.

A magnificent new variety, growing 1 foot high. Flowers 3½ to 4 inches across, and of the most intense glowing carmine-crimson colour, which being produced in wonderful profusion give the plants the most charming appearance. This is the finest annual ever sent out, and being extremely hardy and easy of cultivation, should be in every garden.

Seed, with full cultural directions, per packet, 1s. 6d., post-free.

"We have scarcely any plant of such a lovely shade of colour."—*The Villa Gardener, September, 1876.*

"An extremely beautiful variety, bearing flowers quite 4 inches in diameter, of a glowing crimson colour."—*Gardeners' Magazine, August 5, 1876.*

"A remarkable and splendid variety, far superior to any other of the family."—*Journal of Horticulture, Aug. 3, 1876.*

May be had of all Seedsmen, and Wholesale and Retail of

THE ROYAL NORFOLK SEED ESTABLISHMENT, Norwich.



E. G. HENDERSON & SON

Offer the following in Seed, of quality the best that can be had, at per packet :—

CALCEOLARIA—the variety of colours, size, and shape of the flowers is the result of many years' continual improvement : 2s. 6d. and 5s.
CINERARIA—the shape and brilliancy of colour in these flowers is of great importance : 2s. 6d. and 5s.
" double-flowered, 2s. 6d. and 5s.
PRIMULA SINENSIS, crimson, scarlet, and white (better cannot be had), separate or mixed, 2s. 6d. and 5s.
" double-flowered, true from seed, 5s. and 10s. 6d.
CARMEN PERICUM GRANDIFLORUM—brilliant colours, with large-size petals and perfumed flowers, is the quality here offered : 1s. and 2s. 6d.
BEGONIA, tuberous-rooted (our collection is unequalled), 1s. and 2s. 6d.
" tuberous-rooted, double-flowered, mixed colours, 2s. 6d.
BALSAM—we trust to none but our own saving—mixed, 1s. ; nine colours, 2s. 6d.
PINK, from named collection, 1s. and 2s. 6d.
CARNATION, mixed, 2s. 6d. See Catalogue for separate sections.
MIMULUS, superb strain, same as exhibited every year at the Royal Horticultural Society, 1s. 6d.
LOBELIA, Brilliant Improved, White Brilliant, Mazarine Gem, speciosa, dwarf bedding, Crystal Palace Gem, specious, dwarf bedding, pumila grandiflora, Lustre Improved, Defiance—the best red, Blue Stone, and Magnifica, 1s. each.
PANSY, English, show flowers, 1s. 6d.
" French, blotched, 1s. 6d.
PETUNIAS, very beautiful, saved in pots, in separate sections at their Wellington Road Nursery, 1s.
" double-flowered, 1s. and 2s. 6d.
SWEET WILLIAM, extra fine, 1s.
" from named flowers, 1s. and 2s. 6d.
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" Brilliantissima, and others. See Catalogue.
AURICULA, extra choice alpine varieties, 2s. 6d.
SOLANUM, Improved Hybrid, as grown for the London Market, 1s.
" HENDERSONI, conical-shaped berries, 1s.
GLOXINIA, drooping and erect, 1s. 6d. each ; mixed, 2s. 6d.
HOLLYHOCK, from named collection, 1s. and 2s. 6d.
PRIMROSE, POLYANTHUS, and OXLIP, best quality, mixed, 2s. 6d.
WALLFLOWER, double German, mixed colours, 6d. and 1s.

NOVELTIES IN FLOWER SEEDS.

ALONSOA ALBIFLORA.—New distinct species from Mexico, introduced by Mr. Roezl, and distributed collector, flowering freely, from 12 inches up to 2 feet in height, producing long terminal spikes of pure white flowers ; the yellow eye is recommended for pot-culture, as in the conservatory it will produce a succession of its flowers throughout the autumn and winter when most acceptable for bouquets and table-decoration. It will be found a desirable and useful substitute for Lily of the Valley, as used in our bouquets with so charming an effect when arranged so as to overtop the other flowers by 1 or 2 inches. 1s.
BROWALLIA ROEZLI, 1s. COBCEA HIRSUTA, 2s. 6d.
HUMEA ELEGANS ALBA, 1s. AGERATUM SNOWFLAKE, 1s.
MIMULUS BRILLIANTISSIMA, scarlet self, 1s.
MENTZELIA ORNATA, fine plant (see description in Flower Garden), 1s.
TORENIA FOURNIERI, new annual form of this beautiful combination of colouring, 1s.
ERYNGIUM LEAVENWORTHII, ornamental plant, 1s.
PYRETHRUM AUREUM LACINIATUM, fringed-leaved Golden Feather, 1s.
ASTER, Feltleigh, most beautiful and brilliant new quilled variety, 1s.
SAXIFRAGA NEPALENSIS, fine ornamental species for pot culture, 1s.
PAPAVER UMBROSA, showy flowers, 1s.
LIATRIS PYCNOSTACHYA, 1s.
CANTERBURY BELLS, double frilled flowers, beautiful variety of colours, 1s.
CUPHEA ROEZLI, 1s. BAMBUSA GRACILIS, 1s.

PINE-APPLE NURSERY, MAIDA VALE, LONDON, W.

Seed Potatos.

CHARLES TURNER can supply healthy sets of the following :—

Early White Perfection,	Schoolmaster,
Early White Don,	Snowflake,
Early Handsworth,	Princess of Lorne,
Early Reliance,	Fortyfold,
Early Vermont,	Myatt's and Rivers' Ashleaf.

Priced CATALOGUE on application.
The Royal Nurseries, Slough.

POTATOS for Planting.—Snowflake, per bushel of 56 lb., 12s., per sack of 16 stone, 42s. ; Paterson's Victoria, per bushel, 6s., per sack, 21s. Special prices by the ton. Both samples grown on the best Lincolnshire soils, and are second to none. New 4 lb. Sacks, 1s. 3d. each. Remittances to accompany all orders. Retail price LIST, containing about thirty of the most useful sorts, free on application. Wholesale List on receipt of Trade Card.
CHRISTMAS QUINCEY, Potato Grower and Merchant, Peterborough.

CHARLES LEE AND SON (Successors to Messrs. John & Charles Lee), of the Royal Vineyard Nursery, Hammersmith, W., beg to announce that, in consequence of the Retirement of Mr. John Lee from the business, they have TAKEN OVER the ENTIRE NURSERY and SEED TRADE so successfully carried on for many years by the late Firm, and they trust the same liberal patronage so long given to Messrs. John & Charles Lee will be continued to the New Firm.
Charles Lee & Son pledge themselves to devote all their energy to raising First-class Stock in every department, which the large resources at their command will enable them to supply with considerable advantage to the Public both as regards quality and price. With a view to a more extensive production of Stove and Greenhouse Plants of the best quality they intend to almost entirely rebuild their extensive ranges of Glass on a new site, a portion of the old Nursery being taken up for building purposes. All orders to be addressed to
CHARLES LEE AND SON, Royal Vineyard Nursery, Hammersmith, W., where the general business of the Nursery and Seed Trade will be carried on ; or to
Mr. DIXON, Feltham Nursery ; Mr. CANNON, Ealing Nursery ; Mr. WEBB, Arboretum, and Mr. MARSLEN, Wood Lane, Isleworth.

SPRING FLOWERING PLANTS :—
PRIMROSE, double yellow, 3s. per dozen, 20s. per 100.
" double lilac, 2s. 6d. per dozen, 15s. per 100.
" double pure crimson, 6s. per dozen, 45s. per 100.
" double crimson, true, 18s. per dozen.
" single lilac, 2s. 6d. per dozen, 15s. per 100.
CARDAMINE PRATENSIS fl.-pl., 3s. per doz., 20s. per 100.
SISYRINCHIUM GRANDIFLORUM, in pots, 3s. 6d. per dozen.
PANSY, Blue King, strong, 2s. per dozen, 12s. per 100.
VIOLA, Blue Bell, strong, 2s. per dozen, 12s. per 100.
" lutea Cross, strong, 4s. per dozen, 25s. per 100.
POLYANTHUS, sorts, strong, 2s. per dozen, 12s. per 100.
DAISIES, white and red, 3s. 6d. per 100.
WALLFLOWER, double German, 6s. per 100.
" single dwarf yellow, 6s. per 100.
ALYSSUM SAXATILE COMPACTA, 8s. per 100.
RODGER MCCLELLAND AND CO., 64, Hill Street, Newry.

To Planters of Forest Trees and Others.

THE HEATHERSIDE NURSERIES COMPANY (LIMITED) have decided on clearing the following Surplus Stock, and will accept half the current prices :—

100,000 PINES, Weymouth, 3 to 7 feet.
100,000 FIR, Scotch, 9 to 15 inches.
200,000 QUICK, 2-yr. bedded, 1 to 1½ foot.
10,000 OAKS, Scarlet, 5 to 8 feet.
50,000 PINES, Austrian, 3 to 5 feet.
50,000 PINUS RIGIDA, 3 to 6 feet.
10,000 LARCH, Scotch, 5 to 8 feet.
10,000 CHESTNUTS, Horse, 5 to 9 feet.
And many thousand others.

For prices and particulars apply to
THOMAS THORNTON, Manager, Heatherside Nurseries, Bagshot, Surrey.

VINES.—Strong, well ripened Canes of the following—(Fruiting Canes of those marked F):—

Alicante,	F. Mill Hill Hamburgh,
F. Barbarossa,	F. Mrs. Pearson, 21s. and 42s. each.
F. Black Prince, Black Prince, Buckland Sweetwater,	Mrs. Pince's Muscat, Muscat of Alexandria,
F. Buckland's Black Prince,	F. Muscat of Hamburgh, Reeves' Muscadine,
F. Calabrian Raisin, Chasselas Musqué, Canon Hall Muscat, De Coster,	F. Royal Muscadine, Royal Vineyard, Syrian,
Duchess of Buccleuch,	Trentham Park Muscat,
F. Duke of Buccleuch, 7s. 6d. to 15s., Dutch Sweetwater, Esperione, Golden Hamburgh, Golden Champion, Gros Colman, Gros Doré,	F. Trebbiano, Trentham Black, F. Venn's Black Muscat, 7s. 6d. to 15s. each, F. Waltham Cross Seedling, 7s. 6d. to 15s. each, F. White Frontignan, F. White Nice,
F. Lady Downe's,	F. White Tokay,
F. Madresfield Court,	F. West's St. Peter's.

Fruiters, 10s. 6d. ; medium, 7s. 6d. ; Planters, 5s., except those priced.

CHARLES LEE AND SON, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, S.W.—Jan. 1877.

JOHN L. COUPLAND, FLORIST, Hessle, Hull, has to offer the following :—
DOUBLE PELARGONIUMS—Beauty of Oxton, Queen Victoria, Prince of Novelties, Captain Raikes, cucullatum florepleno, Konig Albert—1s.each.
FRINGED PELARGONIUMS — Marie Lemoine, La Patrie, Prince of Pelargoniums, Donna Sol, Rebecca, Digby Grand.
EARLY FLOWERING PELARGONIUMS — Prince Charlie, Alma, Kingston Beauty, Madam Gewitzski, James Odier, Breffit's Scarlet.
The set of 18, in 3-inch pots, for 21s. ; in 3-inch pots, 28s. ; or any 9 of the above, 12s. 6d., package included, on receipt of Post-office Order. A quantity of Captain Raikes to offer to the Trade.



Vines.

E. G. HENDERSON AND SON offer splendid Fruiting Canes of all leading kinds. Planting Canes, 3*s.* 6*d.*, 5*s.*, and 7*s.* 6*d.* each; Golden Queen, Venn's Black Muscat, and Waltham Cross, 42*s.* and 60*s.* per dozen. Trade supplied.

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GROS GUILLAUME GRAPE

(Roberts' Variety).

The largest Black Grape in Cultivation.

Eyes or Scions from fine, strong, well-ripened wood, 10*s.* 6*d.* each
Ditto ditto ditto second size .. .. 7*s.* 6*d.* ,,

For particulars of this remarkable New Grape see *Gardeners' Chronicle* of January 27, pages 109 and 117, or apply to

Messrs. W. TAIT & CO.,
SEED AND NURSERY ESTABLISHMENT,
45, CAPEL STREET, DUBLIN.



New and Choice Seeds for 1877.

J. SCOTT'S Priced Descriptive ILLUSTRATED CATALOGUE of 52 pages will be forwarded to all applicants. It contains much useful and reliable information to Amateurs.

JOHN SCOTT,
The Royal Seed Stores, Yeovil.



The above Catalogue is now ready, gratis and post-free to all applicants.

B. S. W. begs to intimate that in the event of any of his Customers not receiving this Catalogue, if they will communicate with him a copy will be sent.

The best New Potato
Hooper's Covent Garden Perfection

Mr. SHIRLEY HIBBERD describes it, after two years' trial, as "*the very model* of a gentleman's Potato."
Price 2l. 6d. per lb., 7 lb. 15s.

HOOPER AND CO., Covent Garden, London, W.C.

VINES, VINES, VINES.

F. & A. SMITH,
THE NURSERIES, WEST DULWICH, S.E.,
Offer from a large Stock strong well-grown fruiting and planting Canes, at few prices.
List on application.

AVENUE TREES.

Chestnut, 2 kinds, 8 to 12 feet.	Poplars, 3 kinds, 8 to 12 feet.
Elms, 6 kinds, 8 to 12 feet.	Sycamores, 3 kinds, 8 to 12 ft.
Oaks, 3 kinds, 8 to 12 feet.	Sorbus, 3 kinds, 8 to 12 feet.
Laburnum, 2 kinds, 8 to 12 ft.	Limes, 8 to 12 feet.
Hornbeam, 8 to 12 feet.	

All the above are very fine and very cheap.
CHARLES NOBLE, BAGSHOT.

W. F. BOFF offers magnificent Bulbs of LILIUM AURATUM, 12*s.* per dozen; easy growing, free-blooming ORCHIDS, 21*s.*, 30*s.*, and 42*s.* per dozen; TUBEROSES, 2*s.* per dozen, 12*s.* per 100; LILY OF THE VALLEY, imported clumps, 9*s.* per dozen. CALCEOLARIAS, yellow, rooted cuttings, 5*s.* per 100
203, Upper Street, Islington, N.

Splendid New Melon, 1877.

CHARLES LEE AND SON (Successors to Messrs J. & C. Lee) have the pleasure to announce that they have purchased the entire Stock of MANN'S HYBRID GREEN-FLESH MELON, which they now offer for the first time. It has already earned a high reputation in London and the provinces for its many excellent qualities, among which may be mentioned a remarkably high and exquisite flavour at all seasons of the year—perfection of shape and size for dessert—a thin rind and melting flesh, with an overflow of perfumed juice. It is also a heavy cropper, and forces well.

Dr. HOGG has spoken of this excellent Melon in the highest terms, and after tasting it pronounced it a fruit of the highest merit.

Mr. CULVERWELL, of Thorpe Perrow, fellow judge with Mr. FOWLER, of Harewood House, at the Leeds Horticultural Show, writes: "they awarded a First-class Certificate to "Mann's Hybrid Green-flesh Melon." speaks of it as "an exceedingly fine Melon, especially at that early season—the early part of June."

Mr. INGRAM, of Belvoir Castle, writes, in the third week of October, "that in spite of the disadvantage of a long term of gloomy weather, at that season of the year, 'Mann's Hybrid Green-flesh Melon' was sweet, tender in flesh, very juicy, and distinct in character."

Messrs. Charles Lee & Son are now prepared to offer this very useful and delicious new Melon in sealed packets, at 3*s.* 6*d.* per packet.

CHARLES LEE AND SON, Hammersmith, W.

From Paris.—Roses, Peonies, Camellias.

LÉVÊQUE AND SON, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand ROSE TREES, Standards, Half-standards, Dwarfs, and on own root—New and Old sorts.

LÉVÊQUE AND SON respectfully solicit Gentlemen and Nurserymen visiting Paris to inspect their Stock, the largest in Paris.

SPLENDID PYRAMID CAMELLIAS, price 12*s.* to 50*s.* each; small, 2*s.* 6*d.* to 10*s.*

CATALOGUES and LISTS on application.

From Paris.—Large Bulbs of Gladioli, Seedlings AND NAMED SORTS.

LÉVÊQUE AND SON, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand strong, healthy Flowering BULBS of GLADIOLI. The Seedling Bulbs are particularly recommended—their Flowers equal to the named sorts (Seeds have been taken from the best sorts of the collection). GLADIOLI, Seedlings, 8*s.* per 100, 45*s* per 1000, 4*os* per 10,000; mixed white, red, pink. Separate colours, 12*s.* to 20*s.* per 100; yellow, 24*s.* per 200. Named sorts per 100, 12 sorts, 10*s.*; 50 sorts, 20*s.*; 100 sorts (the best), from 25*s.* to 50*s.* less or more, according to the novelty. All good flowering bulbs. English Cheques on London, or Post-office Orders on Paris, accepted in payment.

GLOXINIA CRASSIFOLIA GRANDIFLORA.—Magnificent strain, quite distinct: sown now will flower in autumn. Erecta and horizontalis, separate or mixed, 1*s.* and 2*s.* 6*d.* per packet.

PETUNIA, double large-flowered.—Yields a large percentage of double flowers, 1*s.* 6*d.* per packet.

STEPHANOTIS FLORIBUNDA.—Remarkably free-flowering variety from the Mauritius, 1*s.* 6*d.* per packet.

CATALOGUES free on application.

JAMES TYNAN, Seed Warehouse, 68, Great George Street, Liverpool.

New Catalogue of Hardy Herbaceous and ORNAMENTAL BEDDING PLANTS, &c.

ROBERT PARKER begs to announce that his New CATALOGUE is now published, and will be forwarded to applicants. It contains Select Descriptive and Price Lists of Alpine and Herbaceous Plants, Aquatic and Marsh Plants, Asters (herbaceous), Chrysanthemums (early blooming bedding varieties), Delphiniums, Fruit Trees, Helianthemums, Iris germanica, miscellaneous Bedding and Decorative Plants, Pæonia tenuifolia, Phlox (herbaceous), Potentillas, Pyrethrums (double flowered), Sweet Violets, &c.

Exotic Nursery, Tooting, Surrey, S.W.

SPECIAL OFFER OF FOREST TREES, &c.

ALDER, 1 to 1½ foot, 14*s.* per 1000; 15 to 20 inches, 16*s.* ASH, 1 to 1½ foot, 14*s.*; Mountain, 1½ to 2 feet, 16*s.*; 2 to 3 feet, 20*s.*; 3 to 4 feet, 25*s.*; 4 to 5 feet, 30*s.*; 6 to 7 feet, 12*s.* per 100; 9 to 12 feet, 24*s.* BEECH, 1 to 1½ foot, 16*s.*; 1½ to 2 feet, 18*s.*; 2 to 3 feet, 25*s.*; 3 to 4 feet, 40*s.*; 4 to 5 feet, 60*s.*; 5 to 6 feet, 100*s.* per 100. BIRCH, 1 to 1½ foot, 12*s.*; 1½ to 2 feet, 20*s.*; 2 to 3 feet, 30*s.* per 100; 6 to 8 feet, 12*s.* per 100. CHESTNUT, Horse, 2 to 3 feet, 5*s.* per 100; 3 to 4 feet, 10*s.*; 4 to 5 feet, 15*s.*; 5 to 6 feet, 12*s.*; 6 to 8 feet, 16*s.* ELM, 3 to 4 feet, 24*s.* per 1000; 4 to 5 feet, 35*s.*; 5 to 6 feet, 8*s.* per 100; 6 to 8 feet, 12*s.*; 8 to 10 feet, 15*s.* FIR, Balm of Gilead, 1 to 1½ foot, 20*s.* per 1000; 1½ to 2 feet, 25*s.*; 2 to 3 feet, 35*s.*; 3 to 4 feet, 12*s.* per 100; 4 to 5 feet, 15*s.*; Spruce, 1½ to 2 feet, 25*s.* per 1000; 2 to 3 feet, 40*s.*; 3 to 4 feet, 50*s.*; 4 to 6 feet, 15*s.* per 100; 6 to 9 feet, 25*s.* SPRUCE, American, 2 to 3 feet, 6*s.* per 100; 3 to 4 feet, 8*s.*; 4 to 6 feet, 10*s.*; 6 to 8 feet, 15*s.*; 9 to 12 feet, 20*s.* per 100; 4 to 5 feet, 25*s.*; 6 to 9 feet, 35*s.* HORNBEAM, 3 to 4 feet, 40*s.* per 1000; 4 to 5 feet, 50*s.*; 6 to 8 feet, 10*s.* per 100; 8 to 10, 15*s.* LARCH, 1 to 1½ foot, 16*s.* per 1000. LIMES, 1½ to 2 feet, 14*s.* per 1000; 2 to 3 feet, 55*s.*; 3 to 4 feet, 10*s.* per 100; 4 to 5 feet, 12*s.*; 5 to 6 feet, 20*s.* MAPLE, Norway, 5 to 6 feet, 60*s.* per 1000. PINUS AUSTRIACA, 1½ to 2 feet, 25*s.*; 2 to 3 feet, 30*s.*; 3 to 4 feet, 40*s.*; 4 to 5 feet, 7*s.* per 100; 5 to 6 feet, 10*s.*; 6 to 8 feet, 15*s.* LARICIO, 3 to 4 feet, 8*s.*; 4 to 5 feet, 10*s.*; 5 to 6 feet, 12*s.* WEYMOUTH, 5 to 6 feet, 12*s.*; 6 to 8 feet, 20*s.* POPLAR, Black Italian, 1½ to 2 feet, 15*s.* per 1000; 2 to 3 feet, 20*s.*; 3 to 4 feet 28*s.* ONTARIO, 2 to 3 feet, 25*s.*; 1½ to 3½ feet, 40*s.*; 4 to 5 feet, 50*s.*; 5 to 6 feet, 7*s.* per 100; 6 to 8 feet, 12*s.*; 8 to 10 feet, 15*s.* WILLOW, Bedford, 6 to 8 feet, 8*s.* per 100; 8 to 10 feet, 12*s.* RHODODENDRONS, 1 to 1½ foot, 16*s.* per 1000; 1½ to 2 feet, 18*s.*; 2 to 2½ feet, 18*s.*; 3 to 5 feet, for Game Cover, 10*s.* A large Stock of best named sorts.

CATALOGUES sent free on application to
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(Successors to the late A. Paul & Son, Established 1806.)

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TREE, PLANT, BULB, AND SEED MERCHANTS,

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Inspection of Stock invited.
Priced Descriptive Catalogues free by post.

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PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 8 inches at 4 feet from the ground.

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POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 6 inches at 4 feet from the ground.

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Has to offer many thousands of the above. They may be seen growing at Knap Hill. They are straight, handsome, and well rooted, and altogether the finest Trees of the kind to be found in any nursery in Europe.

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KING'S ACRE, near HEREFORD.

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ROSES, FRUIT TREES, CONIFERS.

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Best quality. Carriage free
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Complete Liberal Collections of

CHOICE VEGETABLE SEEDS, 15s., 21s., 42s., 63s., and 105s. each, carriage paid. As my new and choice seeds are now in large demand, please order early. SPECIALITIES:—
CAULIFLOWER, Veitch's Autumn Giant, true, 1s. 6d. per packet.
LETTUCE, Alexandra Cos, true, 1s. per packet.
ONION, Cantello's Prize, true, 1s. per packet.
BROCCOLI, Leamington, finest late, 1s. 6d. per packet.
CABBAGE, Alpha, fine, large, and early, 1s. per packet.
CATALOGUE of New and Choice Seeds on application.
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These Nurseries comprise about 50 Acres of well-grown and a most useful assortment of STANDARD, ORNAMENTAL, FOREST, FRUIT, and ROSES, and SHRUBS, all of which are in a most healthy and fit condition for removal. A personal inspection invited. CATALOGUES free on application.
The Nurseries are within a few minutes' walk of the Clapham Junction and Wandsworth Common Railway Stations.

POTATOS.—Snowflake, warranted true and sound, 15s. per cwt.; Early Ashleaf, 10s. per cwt. Sacks included and carriage paid to any railway station in England. List free on application.
SILVER SAND of the best quality, delivered free on the Great Western Railway, South-Eastern Railway, or London and South-Western Railway, Reading, in lots of four tons and upwards, at 14s. per ton; less quantities, 20s. per ton. Also best PEAT, at reasonable prices.
D. BRINKWORTH AND SON, Potato Growers, Reading, Berks.

To the Trade.

JAMES YOUNG, Brechin, N.B., offers the following:—
400,000 LARCH, seedlings, 2-yr.
200,000 FIR, Scotch, seedlings, 2-yr.
3,000 ASH, Mountain, transplanted, 4 to 5 feet.
20,000 BEECH, transplanted, 3 to 4 feet.
20,000 ,, transplanted, 2½ to 3½ feet.
500 HOLLY, Green, transplanted, 2 to 3½ feet.
500 CHESTNUT, Horse, transplanted, 4 to 5½ feet.
1,000 LIME, transplanted, 3 to 4 feet.
1,000 ,, transplanted, 5½ to 6½ feet.
600 PINUS CEMBRA, transplanted, 3 to 4 feet.
15,000 SPRUCE, transplanted, 1½ to 2 feet.
Special offers on application.

CHARLES NOBLE, Bagshot, can offer the following:—
ROSES, Dwarf, 4s. per dozen, 25s. per 100, 210s. per 1000.
PEACHES and NECTARINES, dwarf-trained, 21s. per dozen, 150s. per 100.
RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1½ to 2 feet, 21s. per dozen, 150s. per 100.
" " " for immediate effect, 2½ to 4 feet, and same through, 42s. per dozen, 300s. per 100.
" Seedlings, 1½ to 3½ feet, 24s. per dozen, 200s. per 100.
" PONTICUM, 1½ to 2 feet, bushy, 6s. per dozen, 35s. per 100.
KALMIA LATIFOLIA, 2 to 2½ foot, buds, for potting, 75s. and 100s. per 100.
ANDROMEDA FLORIBUNDA, buds, for potting, 75s. and 100s. per 100.
ERICA CARNEA, very fine, 21s. per 100.

IMPORTANT NOTICE TO INTENDING EXHIBITORS.
GLEICHENIA MENDELLI, 3 feet by 4 feet, in active growth; the same, 2 feet by 2 feet, and several smaller, in excellent health. G. SPELUNCÆ, 3 feet by 2 feet; G. FURCATRIS, 1½ foot by 2 feet. ERICAS, hard-wooded leading varieties, well set with bloom and in the best of health, 2½ feet by 2½ feet, 1½ foot by 2 feet; 1½ foot by 1½ foot all well trained and fit for immediate exhibition. Several Stove specimens of ALLAMANDAS, BOUGAINVILLEAS, CLERODENDRONS, on trellises, 3 feet by 3½ feet and 2½ feet by 2½ feet, starting into growth: also CROTON PICTUM and C. VARIEGATA, in fine colour, 4 feet by 3 feet—a fine pair. Several fine plants of COCOS WEDDELIANA, 3½ feet, 10 leaves each. Specimens of APHELEXIS, DRACOPHYLLUM, HEDAROMA, and PHŒNOCOMA. Also a great quantity of STOVE and GREENHOUSE PLANTS of intermediate sizes, to offer at greatly reduced rates: a good opportunity to those about furnishing new houses. 2000 CAMELLIAS, from 1 to 3 feet, well-grown healthy plants.
List of names and Prices on application. An inspection respectfully solicited.
HENRY WALTON, Edge End Nursery, Brierfield, near Burnley.

Special Offer.

GEORGE FARNSWORTH has to offer large quantities of the following:—
ASH, Mountain, 2½ to 3½ feet, 16s. per 1000; 4 to 5 feet, 20s. per 1000.
BERBERIS AQUIFOLIA, bushy, 1 to 2 feet, 40s. per 1000; 2 to 3 feet, 8s. per 100.
CHESTNUT, Horse, 7 to 9 feet, 20s. per 100.
LIMES, 2-yr. layers, 1-yr. transplanted, 3 to 5 feet, 9s. per 100; 6 to 8 feet, 25s. per 100.
LAUREL, Common, 2 to 3½ feet, 30s. per 1000.
POPLARS, Balsam, 5 to 7 feet, 8s. per 100.
" Black Italian, 2½ to 3½ feet, 17s. 6d. per 1000; 4 to 5 feet, 30s. per 1000; 5 to 6 feet, 6s. per 100.
RHODODENDRONS, Hybrid and Ponitica, mixed, 3-yr. seedling, fine, 5s. per 100; do. and 2-yr. bedded, 18s. per 100; extra transplanted, 1 to 1½ foot, 11os. per 1000; 1½ to 2 feet, 20s. per 100, 150s. per 1000.
SYCAMORE, 2 to 3 feet, 20s. per 1000; 3½ to 5 feet, 30s. per 1000.
Also other Nursery Stock as per LIST.
The Nurseries, Matlock.

LEAMINGTON BROCCOLI
Has proved to be the finest late Broccoli grown.
Received First-class Certificate and Two First Prizes from Royal Horticultural Society.
In Sealed Packets only, 1s. each, free by post 13 stamps.
FREDERICK PERKINS,
Nurseryman,
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SEEDS OF SUPERIOR QUALITY.

WM. PAUL & SON
(Successor to the late A. Paul & Son—Established 1806),
PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, N.,
BEG TO ANNOUNCE THAT THEIR
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OF
SELECT VEGETABLE AND FLOWER SEEDS, &c.,
Is now ready, and will be forwarded, post-free, on application.

Many sorts are home-grown, and all are selected with the utmost care from the most celebrated stocks at home and abroad, in order to secure for their Customers the best quality that can be obtained.

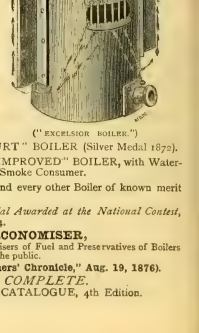
IMPORTANT—Observe the Christian Name,
WM. PAUL & SON, WALTHAM CROSS, N.

MESSENGER & COMPANY,
CONTRACTORS, MIDLAND HORTICULTURAL BUILDING
AND HOT-WATER ENGINEERING WORKS, LOUGHBOROUGH,
Beg to inform their numerous Patrons and the Public generally, that having erected new, more extensive, and commodious works, fitted with the best steam-power machinery, for the construction of Horticultural Buildings in Wood or Iron, plain or ornamental, large or small, they are in a position, from their great facilities and experience, to carry out with despatch, in the best manner, at very moderate cost, the Orders with which they are entrusted. Only thoroughly well-seasoned timber used. Glasshouses erected on Messenger's Patent Principle are, owing to mechanical arrangements, very strong, *most durable*, light, *elegant; perfect efficiency* for purpose intended is *guaranteed;* are economical in cost and maintenance. Messenger's Patent Boilers, Flexible-jointed Hot-water Pipes and Valves, are now in use in many thousands of instances, with the greatest success. Particulars on application. Plans and Estimates forwarded. Ladies and Gentlemen waited upon. The Plans of Landscape Gardeners, Architects, and others carried out.

Richly Illustrated CATALOGUE post-free for 33 stamps.
Illustrated CIRCULAR of Messenger's Improved Patent Tubular Saddle Boiler free.

THE THAMES BANK
IRON COMPANY,
Old Barge Wharf, Upper Ground Street, London.
HOT-WATER BOILERS. SURREY SIDE, BLACKFRIARS BRIDGE. PIPES, CONNECTIONS.


("TRENTHAM IMPROVED" BOILER.)



("EXCELSIOR BOILER.")

NEW PATENT "CLIMAX" BOILER (1874). See p. 666, 1874, *Gardeners' Chronicle.*
"GOLD MEDAL" BOILER (Birmingham, 1872).
PATENT "EXCELSIOR" BOILER (1871).
☞ *The largest and most complete Stock in the Trade; upwards of Twenty Thousand Pounds' worth to choose from.*

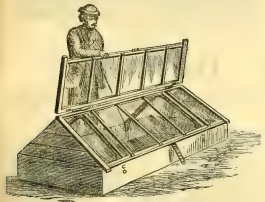
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"TUBULAR," and every other Boiler of known merit or excellence.
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Which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boilers Fire-Bars, and Furnace Fronts ever yet introduced to the public.
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PRICE LIST on application; or, Six Stamps for DESCRIPTIVE CATALOGUE, 4th Edition.

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HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MAKERS.

No. 60.—PATENT PORTABLE UNIVERSAL PLANT PRESERVER.



These excellent span-roof frames are made with wood sides, to which are bolted iron girders to carry the lights. These lights will turn completely over and lie on the other side while attending to the plants inside. They are very portable; a man can easily remove the small size, two men can carry any size up to 12 feet by 4 feet. The use to which they may be applied is unlimited, as almost any class of plants can be grown in them.

Carriage paid to any Railway Station in England, also to Dublin, Edinburgh, and Glasgow.

Painted 4 times, and glazed with 21-oz. glass.

Length.	Width.	Height of sides.	Height to ridge.	£ s. d.	Ends per pair.
6 feet	2 feet	9 inches	1 ft. 3 in.	1 5 0	5/- extra
12 ,,	,,	,,	,,	2 10 0	5/- ,,
6 ,,	3 feet	,,	1 ft. 9 in.	1 15 0	7/- ,,
12 ,,	,,	,,	,,	3 5 0	7/- ,,
6 ,,	4 feet	,,	2 ft. 0 in.	2 6 0	8/6 ,,
12 ,,	,,	,,	,,	4 4 0	8/6 ,,
12 ,,	5 feet	11 inches	2 ft. 6 in.	5 10 0	10/6 ,,
12 ,,	6 ,,	,,	3 ft. 0 in.	7 0 0	12/0 ,,



Winter Gardens, Conservatories, Greenhouses, Orchard-houses; Vineries, Plant-houses, Forcing-houses, Ferneries, Peach-houses, Cucumber and Melon-houses, Patent Plant Protectors, Forcing Pits and Frames, Melon Frames, &c., constructed of the best materials in Wood and Iron combined, on thoroughly practical and scientific principles, efficiency being our first consideration, while due regard is paid to design and ornament.

Gentlemen waited upon and advised as to the best method of arranging Horticultural Buildings of every description.

Designs prepared, Plans and Estimates furnished, **Architects' Designs** carried out, **Hot-water Apparatus** of all descriptions on the best system erected and guaranteed to work in the most satisfactory manner. Estimates on application.

Boilers.—A great variety of the best Hot-water Boilers and Stop-valves kept in stock. Illustrated Price Lists free on application.

A new **Catalogue** of Horticultural Buildings post-free for 24 penny stamps, the cost of which will be deducted from the amount of first order. Ready March 1, 1877.

Amateurs' Greenhouses as **Tenants' Fixtures**, Price Lists free on application. Plant Protectors, Ground Vineries, Melon Frames, &c., Price Lists free on application.

Melon Frames and **Forcing Frames**.—The largest stock in the Kingdom. Price Lists free on application.

No. 62.—PLANT CASES.

These neat and ornamental frames will be found useful to place on a Lawn or Terrace, or may be used for a Fern Case indoors. The larger sizes make excellent Vineries; in No. 6 size 12 to 18 lb. of Grapes may be grown. Made of the best material, painted four coats, glazed with best 21-oz. sheet glass. Any size can be put together in a few minutes, and is then ready for use. All sizes are 2 feet high at the sides.

For larger sizes see Special List.



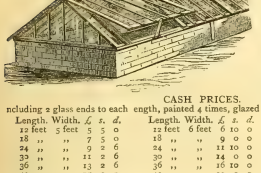
CASH PRICES.

	Length.	Width.	£ s. d.
No. 1	.. 5 feet	.. 2 feet 6 inches	.. 3 5 0
No. 2	.. 5 feet	.. 3 feet ..	.. 3 10 0
No. 3	.. 6 feet	.. 3 feet ..	.. 3 17 6
No. 4	.. 6 feet	.. 4 feet ..	.. 4 5 0
No. 5	.. 9 feet	.. 4 feet ..	.. 6 5 0
No. 6	.. 9 feet	.. 5 feet ..	.. 7 0 0

Nos. 1 and 2 made with bottoms and zinc trays for planting Ferns; extra for No. 1 size, 12s. 6d., No. 2 size, 15s.

Any size of No. 62 carriage paid to any Railway Station in England, also to Dublin, Edinburgh, and Glasgow.

No. 64.—PATENT PLANT PRESERVERS, ARRANGED TO BUILD ON BRICK WALLS.



This is the Practical Gardener's and Nurseryman's favourite frame, now largely used for storing the great quantities of bedding plants in winter, and in summer for growing Melons, &c. This is made for building on brickwork, as shown by section of No. 64.

Section No. 64 shows the frame built on brickwork, with a pit sunk low enough for making a dung bed for growing Cucumbers, Melons, &c. This form can be made up to any length required.

Carriage paid to any Railway Station in England, also to Dublin, Edinburgh, and Glasgow.

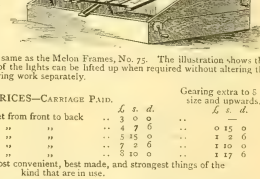
CASH PRICES.

ncluding 2 glass ends to each length, painted 4 times, glazed with 21-oz. glass. Carriage paid.

Length.	Width.	£ s. d.	Length.	Width.	£ s. d.	Length.	Width.	£ s. d.
12 feet	5 feet	5 5 0	12 feet	6 feet	6 10 0	12 feet	7 feet	8 0 0
18 ,,	,,	7 5 0	18 ,,	,,	9 0 0	18 ,,	,,	11 0 0
24 ,,	,,	9 2 6	24 ,,	,,	11 10 0	24 ,,	,,	14 0 0
30 ,,	,,	11 2 6	30 ,,	,,	14 0 0	30 ,,	,,	17 0 0
36 ,,	,,	13 2 6	36 ,,	,,	16 10 0	36 ,,	,,	20 0 0
42 ,,	,,	15 0 0	42 ,,	,,	19 0 0	42 ,,	,,	23 0 0

No. 74.—NEW THREE-QUARTER SPAN-ROOF GARDEN FRAME.

Our illustration shows a New Frame for growing Cucumbers, Melons, &c., and for storing plants. It is made to give greater height and more convenience than the Melon frame, No. 75. The front is 11 in. high, without the light, 32 in. high at the ridge, and 22 in. high at the back. The front lights can be turned back on the lights behind, and back lights turned on to the front lights, giving access to all the plants inside. They are made of the best red deal, sides and ends 1¼ in. thick, 2 in. lights; all are painted four times, and glazed with 21-oz. sheet glass, nailed and puttied in, same as the Melon Frames, No. 75. The illustration shows the lights to open with gearing; any of the lights can be lifted up when required without altering the other lights. Back and front gearing work separately.



CASH PRICES—CARRIAGE PAID.

		£ s. d.	Gearing extra to 8 ft. size and upwards. £ s. d.
No. 1 size,	4 feet long, 6 feet from front to back ..	3 0 0 ..	..
No. 2 ,,	8 ,, 6 ,, ,, ..	4 7 6 ..	0 15 0
No. 3 ,,	12 ,, 6 ,, ,, ..	5 15 0 ..	1 2 6
No. 4 ,,	16 ,, 6 ,, ,, ..	7 2 6 ..	1 10 0
No. 5 ,,	20 ,, 6 ,, ,, ..	8 10 0 ..	1 17 6

These frames are the most convenient, best made, and strongest things of the kind that are in use.

"Gentlemen,—The frames arrived safely, and give satisfaction. I would not have thought they could have been packed to have come in such good order, the paint on the lights was not even scratched.

"I remain, gentlemen, your humble servant,

"Hunting Cottage, Oakmere, Northwich, January 7, 1877. "ALBERT LAING.

Carriage paid to any Railway Station in England, also to Dublin, Edinburgh, and Glasgow.

Packing Cases are charged, and half of the cost allowed if they are returned in good order, carriage paid, to our Works, within a month of delivery of the frame.

New Illustrated CATALOGUE of Conservatories, Greenhouses, Peach Houses, Forcing Houses, &c., post-free, on receipt of 24 penny stamps, the cost of which will be deducted from the amount of first order.

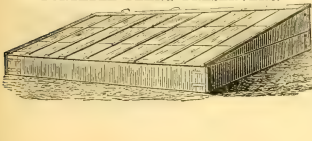
PARHAM'S PATENT SYSTEM of GLAZING (without Putty) on CHANNELLED WROUGHT-IRON RAFTERS

secures almost entire immunity from Breakage of Glass, extreme facility for Repairs, and absolute freedom from Drip.

It is most extensively adopted, and meets with unqualified approval.



CUCUMBER AND MELON FRAMES AND PORTABLE PLANT PRESERVERS.



WILLIAM PARHAM,

Horticultural Builder and Hot-water Engineer,

NORTHGATE WORKS, BATH;

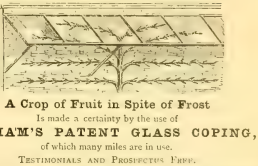
AND

280, Oxford Street, London, W.

*** Full size Specimen Houses and Drawings of many important Works which W. P. has carried out may be seen at either address.

ILLUSTRATED CATALOGUES and PRICE LISTS free.

Designs and Estimates prepared free of charge for Horticultural Buildings and Hot-water Works of any magnitude.



A Crop of Fruit in Spite of Frost

Is made a certainty by the use of

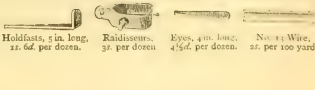
PARHAM'S PATENT GLASS COPING,

of which many miles are in use.

TESTIMONIALS AND PROSPECTUS FREE.

Price, with 21 ounce glass and iron framing, 7 feet wide, 2s. 6d.; 5 feet wide, 3s. 9d. per foot run.

GALVANISED WALL WIRING and ESPALIERS.



Holdfasts, 5 in. long, 12s. 6d. per dozen. Raidisseurs, 3s. per dozen. Eyes, 4 in. long, 4½d. per dozen. No. 11 Wire, 2s. per 100 yards.

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18s. to 30s. per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or £5 per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded £5 to £7 10s. per 100, or 18s. per dozen.

ANTHONY WATERER,
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Contains the following excellent sorts
(Carriage Free):—

PEAS, Ringleader .. .. 1 quart
" Improved Sangster's .. .. .. 1 "
" Veitch's Perfection .. .. .. 1 "
" Fortyfold .. .. 1 "
" Prizetaker .. .. 1 "
" Blue Scimitar .. .. 1 "
BEANS, Johnson's Wonderful .. .. .. 1 "
" Broad Windsor .. .. .. 1 pint
" Dwarf French .. .. .. ½ "
" Scarlet Runner .. .. .. 1 "
BEET, Nutting's Red .. .. .. 1 pkt.
KALE, Asparagus .. .. 1 "
" green curled .. .. .. 1 "
BRUSSELS SPROUTS .. .. .. 1 "
BROCCOLI, Adams' Early .. .. .. 1 "
" Snow's Winter White .. .. 1 "
" Purple Sprouting .. .. .. 1 "
" Walcheren .. .. 1 "
CABBAGE, Early Nonpareil .. .. 1 "
" Enfield Market .. .. .. 1 "
" Worcester Incomparable .. .. 1 "
" Red Pickling .. .. 1 "
CARROT, Early Horn .. .. .. 1 oz.
" James' Intermediate .. .. .. 1 "
" Improved Altringham .. .. 1 "
CAULIFLOWER .. .. 1 pkt.
CELERY, fine Red .. .. 1 "
" fine White .. .. 1 "
CRESS, Broad-leaved .. .. .. 2 oz.
" Curled .. .. 1 "
" Austrian .. .. 1 pkt.
CUCUMBER .. .. 2 pkts.
ENDIVE, Moss Curled .. .. .. 1 pkt.
LEEK, Musselburgh .. .. 1 "
LETTUCE, Paris White Cos .. .. 1 "
" Drumhead .. .. 1 "
" Worcester Cabbage .. .. .. 1 "
MUSTARD .. .. 4 oz.
MELON .. .. 1 pkt.
ONION, White Spanish .. .. .. 2 oz.
" James' Keeping .. .. .. 1 "
PARSLEY, Extra Curled .. .. .. 1 pkt.
PARSNIP, Hollow-crowned .. .. 1 oz.
RADISH, Wood's Early Frame .. .. 1 "
" Long Scarlet .. .. .. 1 "
" Red Turnip .. .. 1 "
" White Turnip .. .. .. 1 "
SAVOY, Green Curled .. .. .. 1 pkt.
SPINACH, Round .. .. 2 oz.
" Prickly .. .. 2 "
TURNIP, Early Snowball .. .. .. 1 "
" Early Red-top .. .. .. 1 "
TOMATO, Large Red .. .. .. 1 pkt.
VEGETABLE MARROW .. .. .. 1 "
SWEET BASIL .. .. 1 "
SWEET MARJORAM .. .. 1 "

SEED WAREHOUSE, 61, HIGH STREET,
WORCESTER.

THE
NEW PLANT and BULB COMPANY

Beg to call special attention to their NEW LIST (No. 31), just published.

CONTENTS:
NEW HARDY BULBS,
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NEW HARDY CYPRIPEDIUM,
NEW FERNS,
SEEDS of NEW HARDY FLOWERING PLANTS, &c.;

All of sterling merit, and at low prices. Post-free on application.

LION WALK, COLCHESTER.

STOCK VERBENAS.

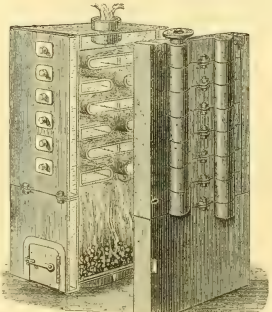
JOHN KEYNES'
STOCK PLANTS are now ready.
Very fine and clean.
CASTLE STREET NURSERY,
SALISBURY.

Sole Medallists for the Best Hot-Water Apparatus at the United States Centennial International Exhibition, Philadelphia.

By Her Majesty's *Royal Letters Patent*

WRIGHT'S
ENDLESS-FLAME-IMPACT
HOT-WATER BOILERS.

GUARANTEED
THE MOST POWERFUL,
THE MOST RAPID,
THE MOST ECONOMICAL,
THE SIMPLEST,
AND THE CHEAPEST
IN THE WORLD.



It is the only Hot-water Boiler in which

The whole interior is specially arranged to secure the largest amount of the direct and most powerful "flame impact," delivered on the most effective surfaces. Outside deposit reduced to a minimum by the endless strokes. The interior currents are specially arranged for the most powerful circulation, whereby nearly treble the amount of water is rushed through the furnace and nearly treble the amount of heat absorbed from the ascending products. Inside deposit reduced to a minimum by the extraordinary circulation. Every volume of heat, large or small, is *forced* to travel (*will he nil he*) over the *entire* surfaces, from bottom to top, delivering *seventeen* blows on surfaces at right angles in its ascent.

Entirely water-jacketted: loss of costly heat, therefore, absolutely impossible; and danger from fire reduced to a minimum. The flame-stream is entirely broken up and disintegrated. Air and gases thoroughly mixed and burnt, and the formation of smoke largely prevented. The whole interior one large combustion chamber. The flame kept in most intimate contact with the entire surfaces. From its extraordinary rapidity, it will be found of the greatest value in case of accident or mistake. By means of the "central rib" every inch of the interior is visited by the water in rapid circulation. Cold water fed in on one side, and taken away hot on the other. Water, once heated, never submitted to flame-action again. The whole ten sections deliver into the "hot column," one above the other. Extraordinary power for actuating the circulation when so situated.

May be erected, repaired, and taken down by any ordinary workman. India-rubber between all the joints, allowing every facility for expansion or contraction. Not a "fixture." May be altered to any power or level. In handy sections. Breakages easily repaired at trifling cost, &c.

No horizontal heating. No brickwork. Outside flues entirely abolished, &c.

For details and particulars as to the various sizes made, and prices, please see our pamphlet, entitled, "OUR BOILERS AND HEATING," which will be handed to all applicants, post-free.

We are prepared to supply **Thirty Different Boilers** of all powers, sizes, and heights, and can vary these to suit any particular situation or requirement.

WM. WRIGHT & CO.,
HOT-WATER ENGINEERS,
AIRDRIE, near GLASGOW, N.B.

THE ROYAL NORFOLK SEED ESTABLISHMENT
ESTD 1844.

DANIELS'
SEED POTATOS.



Our Stocks of POTATOS are warranted True to Name and Free from Disease, all being carefully selected at the time of growth, and afterwards passed through the hands at least three or four times before being sent out, and all inferior, misshapen and forked tubers carefully discarded.

To improve the culture and encourage the diffusion of really good varieties, we have determined to offer at the lowest possible rates COLLECTIONS OF POTATOS FOR EXHIBITION PURPOSES, and trust our efforts in this direction will meet a want so much felt by our Customers and the gardening community generally. The selection in all cases must be left to us; it will be very carefully made, and only those of known excellence and superior qualities included.

COLLECTIONS.

	1 lb. each.		7 lb. each.		14 lb. each.
	s. d.		*s. d.*		*s. d.*
12 varieties	3 6	..	17 6	..	34 0
18 "	5 0	..	25 0	..	48 0
24 "	7 6	..	32 6	..	63 0
36 "	10 6	..	50 0	..	95 0

All carefully labelled and packed.

The above are nett prices for cash, with no charge for packing.

Seed Orders of the value of 20s. and upwards, including Potatos, carriage free to any Railway Station in England or Wales.

Price Lists on application.

Special Quotations given for large quantities.

Our Stock of Potatos is the most complete in the Kingdom, and consists of upwards of eighty varieties.

DANIELS'
ILLUSTRATED GUIDE
FOR
AMATEUR GARDENERS.

The most complete, useful, and beautiful Seed Catalogue ever published.

Price 1s., post-free. Gratis to Customers.

The "Illustrated Guide for Amateur Gardeners" contains 112 pages of beautifully illustrated Letterpress, with two superbly finished Coloured Plates, Original Articles on the Rearing and Cultivation of various Garden Crops and Flowers, and complete Instructions for the successful Management of the Kitchen and Flower Gardens throughout the year, together with a Select List of choice Kitchen Garden and Flower Seeds, Seed Potatos, &c.

The most practical and comprehensive Guide for the Amateur yet issued, and should be read by every Horticulturist.

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Seed Growers
NORWICH.

WEBB'S
HOME GROWN
SEEDS
CARRIAGE FREE
WEBB'S
COMPLETE COLLECTION
OF
VEGETABLE SEEDS,
Produce the best vegetables
all the year round
CARRIAGE FREE TO ANY RAILWAY STATION
PRICE 21/-
FIVE PER CENT DISCOUNT FOR CASH

WE ALSO SUPPLY COLLECTIONS AT
10s. 6d., 15s., 30s., 42s., 63s., and 105s.
The above contain liberal assortments of the best varieties in cultivation.

WEBB'S
SPRING CATALOGUE
FOR 1877
Contains full instructions for the successful cultivation of
THE BEST VEGETABLES and THE CHOICEST FLOWERS.
Post-free, 1s. Gratis to Customers.

"A publication of remarkable beauty and interest. The book is one of the best works on Gardening that has yet appeared."—*The Magnet, January 8, 1877.*

THE BEST CAULIFLOWER,



Webb's Early Mammoth Cauliflower.
An excellent compact variety of exceptional merit; stands the drought remarkably well; heads large, firm, and beautifully white; the best for main crop.
Price 1s. 6d. per packet.

All Goods of 20s. value and upwards Carriage-free to any Railway Station in England or Wales.
Five per Cent. Discount for Cash.

The Queen's Seedsmen,
WORDSLEY, STOURBRIDGE.

B.S. WILLIAMS'

CHOICE
FLOWER AND VEGETABLE
SEEDS FOR 1877.

	Per packet.—s. d.
BALSAM, Williams' Superb Strain .. 2s. 6d. and	1 6
BEGONIA FREBELII	2 6
BEGONIA SEDENI SEMI-PLENA	2 6
BEGONIA, Hybrid, finest mixed..	2 6
CYCLAMEN PERSICUM GIGANTEUM.—This is a great improvement on the old type, the flowers being thrown well above the foliage, each flower measuring from 2 to 2½ inches in length; pure white, with a fine bold violet-purple eye .. .. 5s. and	2 6
CYCLAMEN PERSICUM, Williams' Superb Strain, ... 2s. 6d., 5s. 6d., 7s. 6d., and	1 6
CELOSIA PYRAMIDALIS PLUMOSA	1 0
CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., ... 2s. 6d., and	1 6
CINERARIA, Weatherill's Extra Choice Strain, 5s., ... 3s. 6d., 2s. 6d., and	1 6
GLOXINIA, Finest Drooping Varieties	1 6
,, Finest Erect Varieties	1 6
PRIMULA, Williams' Superb Strain, Red, White, or Mixed .. .. .. 5s., 3s. 6d., 2s. 6d., and	1 6
PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance	5 0
PYRETHRUM GOLDEN GEM	1 0
SOLANUM, Williams' Improved Hybrids	1 6
STOCK, Williams' Improved Giant Scarlet Brompton	1 6
WALLFLOWER, Harbinger, Autumn and Winter flowering	1 0

Packets of Flower Seeds, excepting heavy kinds, Free by Post.



VEGETABLE SEEDS.

	Per packet.—s. d.
BEANS, Williams' Early Prolific Dwarf French—per qt.	3 0
BRUSSELS SPROUTS, Welch's Giant, one of the finest in cultivation .. .. .. per packet	1 0
CUCUMBER, Walker's Hero (New)	2 6
,, Osmaston Manor	2 6
ENDIVE, Williams' Gloria Mundi	1 0
MELON, Osmaston Manor Hybrid	2 6
,, Lewis's Beauty, (New)	2 6
,, Surprise (New)	2 6
ONION, Williams' Magnum Bonum	1 6
PEA, Williams' Emperor of the Marrows .. per quart	2 6
TOMATO, The 100 Days .. .. .. per packet	1 6

*** *All seeds amounting to 20s. will be delivered free of carriage to any Railway Station in England.*

☞ ILLUSTRATED SEED CATALOGUE gratis and post-free to all applicants.

VICTORIA & PARADISE NURSERIES
UPPER HOLLOWAY, LONDON, N.

SATURDAY, FEBRUARY 17, 1877.

SCHOOL GARDENS IN SWEDEN.

GOTHENBURG in Sweden has been lately basking in the full sunshine of celebrity on account of its experimental attempt to diminish intemperance by establishing municipal public-houses. From the last accounts there seems some reason to doubt whether the experiment has been attended with all the success claimed for it, but no one will dispute the town's claim (if it care to make it) to originality and independent thought. The matter recalls to our mind another instance of a similar character emanating from that quarter, and relating to our own special subject.

A few years ago an attempt was made in Sweden to teach gardening at country schools, of which a full description was given at the time by Von Huttig of Gothenburg, which, however, attracted no attention in this country. As, however, some features of the plan may possibly be of use as hints for ourselves, we think we may occupy the attention of the reader to worse purposes than by giving a summary of the information communicated by Von Huttig.

By the term school garden is meant a garden granted by the Town Council or others in authority, to the public school of a district, in which the pupils shall receive instruction in horticulture.

In Germany they are almost unknown, and in Sweden they are still rare; and even at the present day they there receive much opposition from the prejudiced ideas of the people, who are of opinion that every minute not occupied in reading is so much time lost.

For more than ten years an eminent Swedish author and pomologist, Dr. O. Eneroth, sought to awaken public interest to the importance of introducing horticulture as a subject of instruction into our public schools. His efforts have not been wholly fruitless; all the authorities, including the Ministry, desire the introduction, but as yet it is not the law of the land. A new school statute indeed has lately been promulgated, but sufficient provision has not been made for securing competent teachers. The teachers have to be taught before they can teach. Various other difficulties were encountered, in the way of inducement, inspection, time, interference with other studies, and the ambulatory character of many of the schools in Sweden, arising from the sparse population and the want of school houses. Where these do not exist, the master collects some of the scholars together in one peasant's house, then passes on to another in three months' time, when he gets some more—and so on. The teacher has often to go miles to his scholars—and it is not surprising that under such untoward circumstances the teaching of horticulture has not made the desired or expected progress.

Some progress, however, has been made. The establishment of regular schools, with judiciously contrived school-houses built by the pecuniary assistance granted by the State, the provincial representatives, and the agricultural society of the province, as well as by private individuals, is going on. Every community requires, according to its extent of from 1 to 4 and more square miles, a greater or less number of school-houses, with a corresponding number of teachers; and when any new school building is now erected, at the representation of the school inspector, a possible garden at some later period is borne in mind, and the inspector usually does not rest

until the garden is laid out. Von Huttig has established a horticultural school, in which he gives lectures, which help to qualify teachers of horticulture. His efforts, however, are still much hampered, and he complains of the prejudices of the community which have to be removed. The case, he says, was different in Schonen, where he had established a similar course in Alnarp's agricultural institution. The schools there are for the most part firmly established, the general interest in horticulture very great, and from forty to fifty candidates apply every year for the ten free situations which have been created there by the Agricultural Society. He acknowledges that no doubt the greater part of his pupils, who probably only visited his institute at the pressing representation of the school inspector, return to their homes soon to forget what they learnt with him, having no opportunity of making use of their knowledge. "The rest, however," says he, "especially when they have a garden to work in which has been laid out by an expert hand, are my pride, the joy of the community, and the model of the school youth; for where the teacher has been able to awaken a love in the children for plants in garden, field, and wood (I speak from experience), there arises a new life in the house and home—the taste for order, cleanliness, and economy is awakened; a fresher air goes through the whole property, and the industrious countryman ends by forgetting the brandy bottle in his occupation amongst the well-loved children of Flora and Pomona."

The school garden, as used in Sweden, serves not only for the advancement of horticulture, but also as a means of attaining other aims—for instance, the nursery gardens of the school gardens directly and indirectly assist in the rewooding of the bare mountains and extensive wastes; the kitchen garden forms the foundation of a future farm; the fruit garden, which is laid out in the form of a small English park with indigenous and foreign trees, shrubs, and flowers, awakens a taste for order and cleanliness, love for plants and flowers in general, and the whole garden is instrumental in consolidating the principle of "mine and thine," about which principle, as far as it bears reference to garden and forest products, boundless confusion is said to reign in Sweden.

The system followed in the school gardens consists in entrusting to each of the elder schoolchildren a part of the kitchen garden, of the orchard, and of the nursery garden, which they tend and care for under the superintendence of the teacher. The harvest of vegetables and fruit, as well as the fruit trees and berry bushes which it has reared, are allowed to be taken home by them, and prove to the parents of what use the school garden has been. Von Huttig's experience has been that no pupil meddles with or pilfers from his neighbour's property, and this respect, this holding sacred the property of others, may have no small influence upon the after life of the pupil.

The Swedes are a peculiarly agricultural people, and taking advantage of this predilection, the vegetable division of the school garden is arranged and considered as the foundation of agriculture.

Amongst the hindrances met with by Von Huttig to the firm foundation of a school garden, the want of manure was a principal. When he proposed that the children, to the number of fifty, eighty, or 100, who frequented the school should procure manure from the cesspool, there was only one answer—none of the children would consent to that, neither would the community allow it. What was to be done? This he got over by personal example. "I remember now with great gratitude," he says, "to my much respected master, G. A. Fintelman, at that time a head gardener, residing near Potsdam, having once been ordered to bring a barrowful of manure from a cesspool, which he mixed with the earth with his own hand, as for the culture of Amaranthus it should be used in a comminuted state. I frequently make similar experiments here in Sweden. In my lectures upon the preparation or conversion of manure from latrines into compost or *poudrette*, or by its use in a liquid state, the pupils have to take part *nolens volens* in the practical application of my instructions, and the prejudices of my audience are immediately overcome. And in this way I am convinced many thousands of hundredweights of valuable manure, which is otherwise only a cause of uncleanness, bad smells, and sicknesses, might be profitably employed, and all fear of the failure of the principal agent in forming a school garden, manure, would vanish."

Next, as to the nursery garden of the school garden. The scholar (girl as well as boy, for the home garden will at some time or other have to be tended by the housewife) begins his work by the sowing of fruit kernels; he sees them, his own property, shooting up, and watches their growth with the greatest interest. He promotes its growth by stirring up, keeping clean, and watering the earth; he transplants the little stem, prunes it, forms his plants to beautiful strong trees, and at his departure from the school takes them to his own home, plants them on some convenient spot, and cares for them as a mother for her children; he has seen that the tree has a living existence, and the love he bears for one individual extends to all that bears the name of plant. He will learn to understand God, who makes everything so beautiful and useful in His works; and the too common destruction of old and young plants in garden and wood, from a spirit of mischief, will cease when the school gardens become universal.

Nor does Von Huttig confine his nursery to fruit trees. It also has a place reserved for the sowing of forest trees, and he tells that he has found by experience that the school children afterwards often manage to procure a piece of the barren common from the community in which to plant out their little trees, and protect them by fencing it round; and he regards this as a commencement of rewooding the bare mountains, and of improving the climate, which, owing to the giant strides with which the extirpation of the forests in Sweden has been carried on, "will soon enough be so bad that the cultivation of the land will become impossible, and the means of sustenance for the inhabitants become precarious."

The orchard of the school garden yields fruit for the wants of the house-keeping; the trees provide shoots for the nursery, and for the replacement of the older trees in the community. On that account, as many trees are planted as there is convenient place for in the orchard, each tree of a different sort. And as at the planting of the garden there is a choice of the best known kinds of trees, the school garden is gradually ousting the bad kinds of fruit which have been hitherto cultivated, and supplying their places by good sorts. The orchard must not be planted with the kitchen garden, as is often the case in Sweden, for then only dwarf trees could be employed. Tall trees would soon so overshadow the whole garden, that the vegetables sown or planted beneath them would die from want of light, air, and dew; consequently, he usually plants the orchard on a small piece of ground at the side of the kitchen garden or nursery, but the pleasure garden he places where there is plenty of space, planting it with fruit trees in different ornamental forms, with groups of berry bushes, with paths running in pleasant curves, and groups of flowers in fine, well-kept sward. A few indigenous, as well as foreign trees and flowering shrubs, give variety and heighten the æsthetic impression of the whole. The school garden he endeavours to make a pattern of cleanliness, order, and good taste.

Where there is room for it, he makes a small plantation of Willows—which it appears are so much neglected in Sweden (although the country is specially suited to their growth) that they have to be imported for the basket-makers—even if only of a few rods in extent. Its management is conducted according to the rules of forestry. Where there is no room for this he encloses the garden, at least on one side, by a Willow hedge, which after its first growth is plaited, and later cut and clipped, for the sake of the withes, which are used for basket-work, &c., or as cuttings.

On the other side of the school garden he plants a Hawthorn hedge, which has been of late highly recommended in Sweden for the boundaries of different fields, &c. The school children, therefore, must be taught in the school-garden the management of such hedges.

Lastly, the school-garden is intended also to afford instruction in book-keeping. For this purpose a journal is established in every school-garden. Each pupil of the school who has part in the garden has also part in the journal in which he, under the direction of the teacher, enters upon the proper side the expenditure for the kitchen garden, nursery and orchard, and duly and in proper place records the work done and the harvest gathered. And as in general a well-ordered book-keeping is in every business an occasion for the introduction of order and economy, such will be the result in school and house garden, as well as in the house and field.

New Garden Plants.

LÆLIA CALOGLOSSA, *n. hyb.**

This is a very lovely new hybrid. The dark brownish pseudobulb and leaf are nearly like those of Lælia Boothiana (Cattleya lobata), but, as stated, of different colour, more like a good Lælia Perrini. At all events they are very small when you regard the great flowers; these are as those of the Lælia Boothiana, but of a lighter purple. The lip is charming, not only for its anterior crisp and undulate part, but for its colours. The disk is dark purplish, bordered with white. It has two sulphur-coloured areas in front of the disk, a purplish line running between those areas of same colour connects the basilar disk, and another covering the anterior lobe. The lateral edges of the lip are also light purplish. It is one of Mr. Dominy's very good products. No doubt a good Cattleya labiata was one of the parents. Whether Lælia crispa or Boothiana, that is not sure: I believe the latter. It has just flowered with Messrs. Veitch. *H. G. Rchb. f.*

MILTONIA WARSCEWICZII.

A new variety of this polychrome species has just made its appearance. It has sepals and petals, brown as usual, with white tips. The lip, too, has its small yellow area at the base, provided with projecting procivities indicating the keels. The brown disk standing before it has a violet border, and this again is surrounded by another most pallid violet zone, the margin being white. It is unusually delicate, though it boasts neither vermilion nor gold. It comes nearest to the variety flowered in 1870 by W. W. Saunders, Esq. It would be highly interesting to know whether these varieties keep constant in colour each year, or whether their colours change, as is most decidedly the case in Stanhopeas. I have to thank for the flower Mr. C. Newman, gr. to W. H. Michael, Esq., Cholmeley Park, Highgate. *H. G. Rchb. f.*

PELARGONIUM NEW LIFE.

WE referred at p. 398 of our last volume to this novel Pelargonium, and now give the illustration (fig. 32) which appears in Mr. Cannell's catalogue for the present season. The variety or sport—for we know not what it is—appears to have originated in the Isle of Wight, and to have passed last autumn into the hands of Mr. Cannell of the Swanley Nursery, Kent,

* *L. caloglossa.* — Pseudobulbo humili turbinato; folio cuneato ligulato; racemo bifloro (certe etiam pluriloro); sepalis ligulatis acutis; tepalis oblongis acutis lobulato-crispulis; labello oblongo lato medio trilobo, angulis lateralibus obtusis lobulatis, lobo antico lato obtuso lobulato crispulo. *H. G. Rchb. f.*

by whom it will be distributed. In habit and general character it is said to resemble the well-known popular variety called Vesuvius, differing only in having the blooms invariably striped. Mr. Cannell in his characteristic style remarks that "its sale and propagation will never cease until it is seen in every window." A cutting, it appears, has been stolen, and a reward is offered for its discovery.

FLORENTINE GARDENS.

Florence: *March* 2, 1876.—Situated at a low level, and completely sheltered by hills, Florence in the advance of vegetation presented a greater contrast to the North Lombardy plain than two degrees of lower latitude would represent, for spring was here at least a month earlier than at Trieste and the northern Italian cities; and the *forigi*, or flower-women, both in the flower-markets and streets, were already well supplied with the early produce of the delicious



Fig. 32.—pelargonium (zonal) new life.

climate. Seen from the surrounding heights, the huge dome of the cathedral, with its many-coloured campanile, and the towers of the churches rise out of the dense variegated mass of the mediæval city, which dies away into the surrounding grey hills through a bright halo of white villages and villas spreading up on all sides amidst Olive gardens, sombre groups of Cypressus, and light fleecy patches of Almond trees in full flower. One of the most striking features to the new-comer is the laying out of the squares or piazzas, in which the horticultural features harmonise so thoroughly with the surroundings, as to put to shame our own efforts at city gardening, which in our West Central squares goes little beyond the fencing-in of an unhealthy deciduous thicket by a forbidding iron railing.

In the Florentine squares the development of distinct features is aimed at. Crowding is always avoided, and the symmetrical disposition of a few trees and plants, generally in association with sculpture and fountains, brings all into pleasant harmony with the architectural surroundings. Chamærops Fortunei, C. humilis, and tall Yuccas are contrasted with Thuja aurea and other Coniferæ of massive form; and a further contrast to the whole is obtained by the introduction of feathery masses of Ferula and Araucaria excelsa as central features.

Our English climate would of course limit the available selection, but with Yuccas, Thujas, Araucaria imbricata, Retinosporas, and other Coniferæ, associated with Ferula, Gunnera scabra, and the common Rhubarb, just such effects could be obtained as are so pleasant to the eye in the Florentine squares.

Florence is rich in public gardens. The Cascine, a continuation of the Lung Arno, is a noble promenade, well-kept, and perfect as regards planting and simple dignity of effect, though there is nothing special to note in a purely horticultural sense. The establishment, including the Muses de Storia Naturale and the Botanical Garden, is the central point of attraction to the naturalist visiting Florence, and for its size is one of the most complete and best ordered in Europe. It has been of gradual growth by additions made to the *specola*, or observatory, founded under the Medicis. The botanical collections include a fine series of wax models prepared by MM. Calamai and Tortari, under the direction of Professor Amici, also a good collection of wood sections, fossil plants, &c. The first nucleus of the natural history collection was formed by Pietro Leopoldo and Targioni, by the former of whom the garden was founded a few years after the museum. The formation of the splendid main herbarium (L'Herbier Central) is due to Professor Parlatore, the present director, who commenced it about the year 1844, and to this has recently been added, in a separate adjacent gallery, the fine private herbarium of the late Philip Barker Webb.

The botanical garden, immediately adjacent to the museum, though well-ordered, bears evidence of intermittent growth, and consists of semi-isolated patches and terraces rising up to and intermixed with the Boboli Gardens. The glass-houses, as in most Italian gardens, are defective in structure, and the cultural details are, in consequence, scarcely equal to those in English establishments of the kind.

In the cultivation of bulbous plants in pots and cold frames the garden greatly excels, and there is perhaps no other botanical garden in Europe that could exhibit so complete a collection of European bulbs in a thoroughly healthy condition. Amongst the Croci, of which there is a fine series, there is a species under the names of lagenæformis striatus and aureus striatus, to which I must draw the attention of Crocologists, as it accords with nothing that has heretofore been described, with a bright orange limb, the three outer divisions suffused externally with bronze. It somewhat resembles the plants in cultivation under the names of stellaris and sulphureus striatus, but the almost entire slightly indented scarlet stigma separates it from the aureus and mæsiacus group, and seems to connect it with susianus and reticulatus, between one of which and aureus it may possibly be a hybrid: there were a few patches of it grown for ornament in the King's garden, but I could ascertain nothing about its history or origin.

The botanic garden is too limited for an extensive collection of trees, but in a small open quadrangle fenced in by high walls under the Pitti Palace is an interesting collection of Chinese and Japanese species, including a grand specimen of Sophora japonica, various species of Camellia, Salisburia adiantifolia, Magnolia fuscata, M. Yulan, M. obovata, M. anonæflora, Cunninghamia sinensis, Daphne variegata, Chamærops excelsa, Laurus Camphora, Hydrangea quercifolia, Thea viridis, &c.

There are also a few good Coniferæ scattered about the garden, but the general collection of trees is meagre, and might be augmented with advantage. *Geo. Maw, F.L.S.*

THE PHYLLOXERA.

A gentleman the other day called my attention to a long article on the subject of the invasion of France by the Phylloxera, from the pen of Professor Planchon, of Montpellier, in the *Revue des Deux Mondes* for January 15 of the present year. From what this writer indicates, there is an opinion prevalent, which, however, he does not seem to vouch for, that some of the American foxy Vines resist the attacks of the insect. [See our issues for August 21, 1875, and June 3, 1876. Eds.] If this could be verified, say by the Scientific Committee of the Royal Horticultural Society, it would be worth while to grow such Vines as V. Labrusca, V. rotundifolia, or any other that might be found to be proof against the attacks of the pest, and inarch our own Vines on them, as Plums, Pears, Peaches, and other fruit trees are inarched or grafted. Some say that all the foxy flavoured Vines of America are exempt from attack.

It is not for me to say how the committee should proceed in the matter, but one certain way of getting at the truth would be to plant a Vine infested with the insect in a box, or pot, with one or other of these American Vines, and in the course of one season the proof either way would be absolute. If this question could be set at rest, and the fact certified, that such Vines as I have alluded to really resisted the insect, a boon of immense value would be conferred, not only on this country, but on Europe.

To practical men it is perfectly clear that though the sulphocarbonates, and other remedies proclaimed by French *savans*, may kill the Phylloxera, it is not possible to get it applied so as to secure this result. Any one who has seen and examined the vineyards of the Rhine, must know that the roots of the Vines extend into fissures of the rocks, where no insecticide can be got near them. If a remedy of universal application is ever discovered, it must be in the use of a stock that the insect won't feed upon; and whoever makes this discovery will immortalise his name. From what Mr. Tillery wrote the other day, I observe that he is making experiments with some infested Vines: let me call his attention to the subject in hand.

While on this matter it may not be out of place to remark that smaller matters than the ravages of Phylloxera have attracted the attention of Government, and that it might be well if by an Order in Council, or in some other way, it was made compulsory on any one having the pest to report it at once, and to destroy the Vines within a given time. In this way it might be stamped out of the country, and kept out, if the importation of Vines was forbidden under a severe penalty. *W. Thomson, Tweed Vineyard, February*, 1877.

FERTILISATION OF PLANTS.

(*Continued from p.* 139.)

Petunia violacea.—A dingy purple variety was cultivated for five generations. The ratio of the average heights of the intercrossed to the self-fertilised was 100: 71; but in the third generation the difference was reversed, for the heights were then as 100: 131. Mr. Darwin's explanation (p. 275) is, that the seeds from which the self-fertilised plants of the third generation were raised, were not well ripened, which fact,

he says, gave them an advantage (?), and refers to a similar case in Iberis, but in p. 192 he attributes the inferiority of the very same crossed plants of this third generation of Petunia to *their* not having been sufficiently ripened, and thus producing weakly plants compared with the self-fertilised, as (he again says) also occurred with Iberis; but on p. 103 we read:—"I record in my notes that the self-fertilised seeds [of Iberis] from which the self-fertilised plants were raised [and which were 5 or 6 inches taller than the crossed], were not so well ripened as the crossed." Hence, there are both errors of statement as well as adverse reasonings from the data! Mr. Darwin also accounts for the greater growth of the eighth generation of Ipomœa from their having been raised from unhealthy parents (pp. 38, 39). Surely, if it be beneficial to have unripened seeds and unhealthy parents, at least as far as height is concerned—and Mr. Darwin has selected that as his standard of superiority—natural selection ought to have prevented seeds from maturing, and encouraged the visits of aphides! But I think we may find another explanation. On p. 274 Mr. Darwin adds a very significant sentence:—"It is a remarkable fact that in one pot in which the plants of both lots grew extremely crowded, the intercrossed were thrice as tall as the self-fertilised." This implies that in the other pots they were not so crowded. Now, there is abundant evidence throughout the book that intercrossed and perhaps especially crossed plants, *i.e.*, with new stocks, show, as a rule, a very great superiority over self-fertilised plants when struggling in competition; but, when not crowded, or when grown in open ground, then the difference between their heights and weights is greatly reduced, and may be actually reversed. Indeed Mr. Darwin had already stated this fact in his *Animals and Plants under Domestication*, vol. ii., p. 128, in alluding to his method of culture:—"It is of importance that the two lots of seed should be sown or planted on opposite sides of the same pot, so that the seedlings may struggle against each other, for if sown separately in ample and good soil, there is often but little difference in their growth." I will return to this fact hereafter. Hence I would attribute the vigour shown by the self-fertilised plants of the third generation of Petunia to less crowding. And here I would venture to remark that Mr. Darwin's plan of sowing both intercrossed and self-fertilised seedlings in the same pot—though with the express object of imitating Nature, and thereby revealing the superiority of the former—would have been benefited had he also grown similar pairs in separate pots. Then, there is reason to know that the relative heights would have been much nearer uniformity. As it is, the absolute vigour of neither can be estimated, though the relative vigour is clearly in favour of the intercrossed. Mr. Darwin, indeed, himself elsewhere recognises the great importance of freedom of growth for self-fertilisation to be successful; for in speaking of an experiment with an equal-styled "perfectly self-fertilising red-flowered variety of Primula veris," he says:—"Judging from the previous generations, the extreme unproductiveness of the self-fertilised plants in this experiment was wholly due to their having been subjected to unfavourable conditions, and to severe competition with crossed plants; for had they grown separately in good soil, it is almost certain that they would have produced a large number of capsules."

Canna Warszewiczii affords another case resembling Pisum sativum, for this species is highly self-fertile, and "as plants are cultivated in pots, and are not exposed to competition, they have been long subjected to uniform conditions;" and Mr. Darwin adds, "we have no right to expect much or any good from intercrossing plants thus descended and thus treated." And no good did follow, except that the intercrossed plants yielded rather more seeds, viz., as 100 : 85. But the self-fertilised plants mostly flowered before the intercrossed.

There are two more plants, *Eschscholtzia californica* and *Reseda odorata*, I will remark upon, for I think Mr. Darwin has drawn erroneous conclusions from them.

If the reader will carefully peruse the first paragraph of chap. xii., pp. 436-7, I think he would be led to suppose that Reseda and Eschscholtzia were good examples to illustrate the "injurious effects of self-tilisation, for as [some individuals of] these are sterile with their own pollen, they have been long naturally crossed, and the artificial crosses in my experiments," says Mr. Darwin, "cannot have increased the vigour of the offspring beyond that of their progenitors. *Therefore the difference between the self-fertilised and crossed plants raised by me cannot be attributed to the superiority of the crossed, but to the inferiority of the self-fertilised seedlings, due to the injurious effects of self-fertilisation.*"

The last sentence, which I have italicised, is very misleading.

In the introductory remarks on Eschscholtzia (p. 109), the second sentence directly contradicts the above, for it runs as follows:—"A cross greatly increases the productiveness of the flowers of the parent plant." This is repeated on p. 275, in the words, "A cross does some good."

Mr. Darwin received seed from Brazil, where Eschscholtzia is "absolutely self-sterile," and, therefore, unlike English-grown plants, which are more or less self-fertile. It proved, however, to be not so sterile in this country; hence he was able to raise self-fertilised plants; the relative fertility of the intercrossed to the self-fertilised being as 100 : 15—where the "15" represents so much absolute gain, and that is considerable for a single generation; but in the next generation the relative fertility appears now as 100 : 86.7! Turning next to the comparative results between the heights of the first generations—*i.e.*, grandchildren of those grown in Brazil—the heights are as 100 : 101, and in the second generation as 100 : 116! Mr. Darwin observes on this:—"As the grand-parents absolutely required cross-fertilisation, I expected that self-fertilisation would have proved very injurious to these seedlings. . . . But the result showed that my anticipation was erroneous."

He next crossed the Brazilian plant with an English stock, and it would be inferred by analogy that great benefit should accrue; but the self-fertilised actually beat the crossed in height as 109 : 100, and in weight as 118 : 100; and Mr. Darwin further remarks that the self-fertilised were also apparently superior in hardiness. The only point, then, where the crossed were superior to the self-fertilised was in fertility; but when we remember that Eschscholtzia is absolutely self-sterile in Brazil, it is more surprising to find the ratio so near equality in two generations.

Surely, then, it is unfortunate that Mr. Darwin should have specially alluded to this plant as proving the "injuriousness" of self-fertilisation, for his own data not only fail to support his conclusion, but maintain exactly the reverse, for the acquirement of self-fertilisation is, *per se*, so much actual gain to the plant of a new and ready means of propagation; secondly, having acquired that, such plants, by gaining new constitutional elements by transportation to this country, became more vigorous than the normally intercrossed, or even than plants crossed with a new stock.

Eschscholtzia is not a unique case, for Reseda, likewise mentioned as supporting the idea of the injuriousness of self-fertilisation, also tells against such being the case.

Reseda lutea is sometimes absolutely self-sterile. Some plants, however, produced a few spontaneously self-fertilised capsules; propagating from these latter in pots, the results gave the mean ratio of heights as 100 : 85, and in open ground as 100 : 82. And Mr. Darwin adds:—"It is a singular fact that the tallest plant in the two rows was one of the self-fertilised." The ratios of their weights was still more striking—viz., of those in pots 100 : 21, but in open ground as 100 : 1!

Reseda odorata.—This species shows degrees of fertility from absolute self-steriliy to full self-fertility. Arranging Mr. Darwin's results as follows:—I. Intercrossed plants from the highly self-fertile parents, compared with self-fertilised. *a* (in pots), heights were as 100 : 82, weights as 100 : 67; *b* (in open ground), height as 100 : 105 (weights not given). II. Intercrossed plants raised from a semi-self-sterile parent, and compared with self-fertilised plants, raised from the same parent. Mr. Darwin here makes a remark similar to that upon Eschscholtzia:—"I expected that the seedlings from this semi-self-sterile plant would have profited in a higher degree from a cross than did the seedlings from the fully self-fertile plant, but my anticipation was quite wrong." *a*, height as 100 : 92, weight as 100 : 99; *b*, height as 100 : 90 (weights not given).

Now, comparing these two sets of results, a remarkable fact is seen, that in the first generation the plants from fully self-fertile and self-fertilised parents grown in pots (*a*) do not give such high results as the self-fertilised plants raised from semi-sterile parents under the same circumstances. But while the former show a vast improvement when grown in the open ground (I., *b*), the latter show none!

Now it is a general rule, as already stated, that self-fertilised plants cannot stand competition at all equal to intercrossed plants; but when planted in the open ground the contrast is greatly lessened, *i.e.*, the ratio becomes more nearly one of equality, in other words the self-fertilised recover vigour in a higher ratio than the intercrossed are improved by freedom of growth. So here, from I. (*b*) it is to be inferred that the self-fertilised have a greater "elasticity" of growth, so to say, than the intercrossed. This was likewise the case with the weights of Reseda lutea. II. (*a*) would seem to show that the vigour of the offspring from parents semi-sterile is relatively greater than that of the offspring from fully fertile parents when compared with the intercrossed plants of each kind; and had not Eschscholtzia showed a similar fact these results of Reseda could scarcely have been considered trustworthy.

Hence it is very unfortunate for Mr. Darwin's argument to have especially selected Reseda and Eschscholtzia, for they certainly do not prove any "injurious" effects to arise from self-fertilisation, but just the reverse!

The fact appears to me to be this:—The word "injurious" is a purely relative term. If a plant is so highly differentiated that it has not only become adapted to insect agency but also to be self-sterile, then, of course, to put its own pollen upon the stigma of a flower, rather than that of another plant, may be said to be, relatively to the latter process, at least useless if not injurious. But when we see a plant thus usually self-sterile becoming, under changed circumstances, self-fertile, this power of self-fertilisation is actually so much positive gain, as Mr. Darwin admits "the obvious fact, that the production of seed is the chief end of the act of fertilisation, and that this end can be gained by hermaphrodite plants with incomparably greater certainty by self-fertilisation." Now it is clear that many plants have become highly differentiated by adaptation to insects, and in becoming so, the pollen has physiologically changed correlatively to such a degree as to be useless on the flower's own stigma. This therefore is so much absolute loss to the plant, as it now has to depend, with less certainty, upon the chance visit of insects; but when the plant can recover its lost power, and especially when it can acquire fresh and new constitutional elements, then, as we see in Reseda and Eschscholtzia, the first result is the absolute re-gain of self-fertilisation, while this may be accompanied by an equality with, or even a superiority in vigour to, the intercrossed.

In a later communication I purpose continuing the subject of self-fertilisation. *George Henslow.*

ASPECTS FOR PLANT-HOUSES.

MR. BESTER'S arguments in favour of altering the aspect of span-roof plant-houses, from east and west, to north and south, strike me as being a little one-sided, and I fear the plants would think so too, if only one side of the house was exposed to the sun. It appears to me that a lean-to house placed against a wall would suit the plant nearly as well, and be much warmer. As regards the shading of the house in winter by the framework, I should think that the sun about noon-day shining comparatively perpendicularly, first on the east side, then passing over the ridge to the west side, would meet very little obstruction, and I do not think the sun would melt ice on the north side of a span-roof at all. Secondly, the fact of a house being warmer at 5 o'clock than at 10 on a summer morning may be due to the ventilation being closed at 5 o'clock and open at 10, rather than to the effect of the sash-bars shading the interior. Thirdly, as to the impossibility of closing span-roof houses facing east and west till late on a summer evening, owing to the sun shining full on the west side till late at night—that is a question between the sun and the advocates of the early closing movement; and as the sun is rather behind the times in the matter of shortening its working hours, the only thing to be done is to leave down the blinds on the west side, till Old Sol retires for the night. This is surely better than in a roof facing south, where the sun only gets shining into the interior for a few hours near noonday, owing to the sash-bars acting as a shade as soon as it gets a few degrees on either side of the

meridian—at least, if they shade it in one case they will in another also.

Now, let us look for a little at the position Mr. Bester advocates—viz, sides facing north and south. He says it receives the full force of the sun, and it shines right through the house. I say the sun can shine on the south side only, and if there are tall plants in the centre of the house, as is generally the case in span-roofed buildings, they will keep the sun from shining past them, and a lean-to would suit the same purpose, and be warm too.

I believe there is more scorching due to the thin 16 oz. glass so extensively used now-a-days, than to the sun's glare on the moisture.

All great cultivators will have great difficulties to contend with, in this world, so long as the sun goes its daily rounds in the hot-headed, independent way it has done hitherto; and I would respectfully advise your readers to consider the other (or north) side of the question before they alter the position of span-roof houses.

While an article like Mr. Bester's is very good as affording an opportunity of discussing the question in the pages of the *Gardeners' Chronicle*, still, as a friend of mine, a horticultural builder, said to me the other day, "You have no idea, Mr. C., what trouble such articles give us builders; for instance, when a gentleman getting up a span-roof house sees an article like this, he makes me put it up according to the directions given in the article; and then other people seeing the house, blame the builder for placing it with a bad aspect! and make up their mind that they will not employ me to do their work, if I do not know how to place it properly! But that is a mild case. Why, it is only a month or two since one of the garden papers had an article copied from another paper giving full instructions to those about to erect glass, with a specification, specifying among other things that the boiler is to be capable of heating the whole up to a temperature of 180° in the coldest weather, and the wood to be sent to the job without being painted or primed, so that people may see if the timber is good or not. Fine work it would be, especially in wet weather like this, and you know no person will take a builder's word against such an article.

"It is the same in the heating, too. There is that new endless something boiler that burns dirt; in fact I expect to hear every day that they are burning bricks in it, without fuel; then we shall have a brick-kiln as well as a limekiln heating apparatus. In fact, I am thinking of bringing out a new boiler myself; it is to be heated with turpentine flannels wrapped all round the boiler. You know there is an awful heat in a piece of flannel wetted with turpentine. I use it on my breast when I have a cold, so I can speak from experience, and remember, Mr. C., I shall expect a first-class testimonial from you when you see it." *Aqua-Calida.*

NOTES ON OPEN-AIR VEGETATION.*

THE winter, so far as it has gone, has been rather remarkable, wind and rain in excess, with comparatively little snow and frost, particularly in this district of Scotland. The first snow which fell, and perhaps the heaviest, was on the 8th and 9th of November, doing a vast amount of injury at the time by breaking down the branches, and damaging the bark of many deciduous and evergreen trees throughout Scotland, such as Oaks, Beeches, Elms, Silver Firs, and Spruces. This, with subsequent falls, rapidly disappeared. Although snow up to this time in this locality has been less in comparison to many winters, rain has, however, fallen in greater abundance during the last five months than has been known in this district during the same period for many years. So much has this been the case that all low and level grounds are saturated with water, and therefore very much against the flowering of many of the hardy spring bulbs. The Snowdrop, for instance, at this particular time (January 31) used to be abundantly in bloom, not only on the elevated grounds, but all over the level garden lawns; now they are only to be seen partially in flower on raised and sloping banks where the ground is somewhat dry, while those on flat lawns and in low, damp situations are scarcely appearing above the surface of the soil. This dampness may also account for the backwardness apparent in the flowers of the Crimean Snowdrops (Galanthus plicatus), Leucojum vernum, Crocus susianus, and even the varieties of Crocus vernus, all of which were recorded in flower during the month of January last year, when the weather was colder. I am not prepared to say how long it is since we had such an amount of moisture during any one winter; this, however, I do know, that for the last fifty years we have never been troubled with water in some of our garden stokeholes till the last month, necessitating pits to be sunk in them, and a daily baling out of a quantity of clear water. What effect this excess of moisture will ultimately have on the roots of many shrubby and herbaceous plants growing near the surface it is difficult to say.

Owing to the comparative mildness of the winter, so far as it has gone, many of the autumn plants continued more or less in flower throughout it, not, however, in very good condition—kinds in all probability which would not have been in flower during an ordinary severe one, such as Primroses, Polyanthus, Gentiana acaulis, Veronica rupestris, Lithospermum fruticosum, Potentilla alba, Iberis, Aubrietia, Wallflower, &c., while the various species of Hellebores have been remarkably fine, as well as Tussilago fragrans, Sternbergia lutea, and Crocus Imperati (both the latter growing on high parts of the rock garden), Erica carnea alba, Jasminum nudiflorum, Garrya elliptica, and Viburnum Tinus. The flowers of the common Hazel have been particularly abundant throughout the month, and if no frost should occur a full crop of Hazel-nuts may be looked for in autumn.

From the selected list of forty-two plants whose flowering has been annually recorded during the last twenty-seven years four species only flowered during January, while eleven species of this number were noted during the same month last year.

Corylus Avellana ..	January 14, 1876.			January 1, 1877.	
Tussilago fragrans ..	,,	12	,,	,,	3 ,,
Hepatica triloba ..	,,	12	,,	,,	8 ,,
Galanthus nivalis ..	,,	26	,,	,,	15 ,,

Besides herbaceous plants, there are also several other shrubby species which are usually noted as being in bloom in the open air at this particular time, but which are still considerably behind. Of these may be mentioned the Daphne Mezereum, Rhododendron atrovirens, R. Nobleanum, and Cornus mascula; but whether this arises from the sunless, wet autumn, or the want of the necessary amount of frost to mature them for early blooming, it is difficult to say, probably both combined.

In order to continue the meteorological tables which I have carried on during the last twenty-two years, showing the amount of frost during each month from October till April inclusive, I have to add the following observations. During October, 1876, we did not record a single degree of frost, notwithstanding that 353° were registered during the united October months for the last twenty-two years. The lowest markings were during 1856, 1857, and 1862, when 3° only were indicated during each October month; while the highest was during 1859, when 56° of frost were registered. The lowest markings during the month of October, 1876, were on the 2d, 23d, 25th, 26th, 27th, and 31st, when 37°, 37°, 36°, 37°, 33°, and 35° were indicated, while the highest morning temperatures were on the 7th, 8th, 9th, 17th, 18th, and 19th, indicating respectively 55°, 53°, 53°, 50°, 50°, and 50°.

During the month of November, 1876, the thermometer was thirteen times at or below the freezing point, indicating collectively 82°, being two more than was noticed the previous year—the lowest markings being on the mornings of the 7th, 8th, 10th, 11th, 29th, and 30th, indicating 26°, 26°, 20°, 22°, 23°, and 25°, while the highest morning temperatures were on the 3d, 4th, 5th, 17th, 18th, and 19th, indicating 45°, 45°, 46°, 45°, 42°, and 43°.

During the month of December, 1876, the thermometer was twelve times at or below the freezing-point, indicating collectively 43°, while the corresponding month last year indicated 81°. The lowest temperatures were on the mornings of the 1st, 13th, 23d, 24th, 26th, and 27th, indicating 29°, 25°, 24°, 26°, 27°, and 27°, while the highest morning readings were on the 2d, 5th, 6th, 7th, 10th, and 11th, indicating respectively 42°, 43°, 44°, 45°, 43°, and 43°.

This last January the thermometer was sixteen times at or below the freezing-point, indicating collectively 73°, while 103° were registered during the same month last year. The lowest markings during January were on the mornings of the 2d, 3d, 12th, 15th, 22d, and 23d, indicating 20°, 18°, 23°, 27°, 26°, and 28°, while the highest morning temperatures were on the 8th, 9th, 11th, 19th, 20th, and 28th, indicating 40°, 37°, 37°, 38°, 39°, and 37°.

* Read at the February meeting of the Edinburgh Botanical Society, by Mr. M'Nab.

NITROGEN AND VEGETATION.

(*Concluded from p. 171.*)

THE absorption of ammonia by soil is controlled by a number of conditions; the physical and chemical characters of the soil, its condition as to moisture, and its being covered or not by vegetable growth, must largely influence the extent of the absorption. Schlösing made experiments on two soils. The ammonia in these soils was determined, and they were then freely exposed to air, but sheltered from rain. Dry soil was found to absorb ammonia to a considerable extent; a limit must, however, be reached as soon as the tension of ammonia in the soil equals that in the atmosphere. With moist soil the case is different; here the ammonia absorbed is quickly oxidised to nitric acid, and the soil is consequently capable of continuing the absorption of ammonia for a far longer time, and of taking up a much greater quantity.

In the appropriation of atmospheric ammonia by plants and by soil, but especially by the latter, we appear to have an important supply of nitrogen to vegetation. The amount of combined nitrogen supplied to the soil by rain is known to be quite insufficient to account for the amount found in the vegetable growth annually produced; the supply furnished by the rain is, however, supplemented by this direct absorption from the atmosphere both by soil and plant. Schlösing has repeated with great care the experiments of Deherain, but can find no evidence that the decayed vegetable matter of soils has the power (as was asserted) to produce ammonia from the free nitrogen of the atmosphere. He believes that there is at present no evidence that the free nitrogen of the atmosphere becomes available to plants, except to the small extent in which it is converted into nitrous acid by electrical discharges in the atmosphere. This nitrous acid is oxidised and carried to the soil by rain in the form of nitrate of ammonium.

While this action of electricity is, in Schlösing's judgment, the only original source of combined nitrogen on the surface of our globe, there are several actions by which combined nitrogen is lost. It is absolutely lost to some extent during the decay of nitrogenous organic matter (as farmyard manure), when an insufficient quantity of oxygen is present, a portion of the nitrogen reverting under these conditions to the free state. It is lost to our soils to a large extent by the removal of nitrates in the drainage-water, a form of loss which has already been discussed by Dr. Gilbert in the lecture previously referred to. The loss to the soil from this cause must in many cases exceed the whole amount of nitrogen supplied by rain. The nitrates thus lost by drainage pass into the rivers, and finally into the sea. Here they serve as food for marine plants, which in their turn become the nutriment of marine animals. The plants and animals on their decay furnish ammonia; but the ammonia contents of the ocean cannot exceed a certain point without interchange taking place with the air resting on its surface. The atmosphere is thus continually enriched with ammonia, which is immediately diffused, and carried by winds over the surface of the land. From the atmosphere the soil finally takes up as ammonia the nitrogen it had previously lost as nitric acid. Continents, with their porous soils, and shallow waters, are, in fact, an oxidising medium; continental nitrogen tends to resolve itself into nitric acid, which finds its way to the sea. The deep waters of the ocean present no such facilities for oxidation; here nitrogen finally takes the form of ammonia, and entering the atmosphere recommences its circulation in Nature.

Such is the simple and beautiful conception of Schlösing. The ocean is the vast storehouse of combined nitrogen for the whole world; ammonia is the carrier by which this nitrogen is gradually conveyed to every part of the globe, which supplies nitrogenous food to the whole vegetable kingdom, and balances the gains and losses of land and sea. If we believe with Boussingault that the production of nitrous acid by electric discharges takes place to a very considerable extent in tropical regions, far exceeding the amount annually brought down in rain in these higher latitudes, we have also in the am-

monia of the atmosphere the vehicle by which this great original source of combined nitrogen is made available for the whole globe; for as the nitrates produced by electrical discharges in the tropics run their course, they must sooner or later take the form of ammonia, and entering the atmosphere become subject to the laws of diffusion.

We must, in conclusion, say a few words respecting the recent investigations of another French chemist, M. Berthelot. We have spoken already of the fact that an electric discharge through the atmosphere causes a small quantity of the nitrogen and oxygen in the air to combine and form nitrous acid. M. Berthelot has made the results produced by an electric discharge through gases a special subject of study; he finds that many combinations and transformations can be effected by this means, and that a silent discharge of electricity produces a greater chemical effect than a visible spark. In the course of his experiments he observed that moist cellulose (filter-paper), or a solution of dextrin, absorbed nitrogen from ordinary air when placed in a vessel through which an electric discharge was maintained; this nitrogen he states entered into non-volatile combinations, and was evolved as ammonia only when the paper or dextrin was heated with alkalis at a high temperature. In the earlier experiments Berthelot employed a powerful induction coil as the source of electricity; in his last published paper he gives the results obtained when employing only the ordinary electrical tension of the atmosphere. The moist paper, or dextrin, was placed in a sealed glass tube filled with air; the outside of the tube was coated with tinfoil, and connected with the earth. Inside the glass tube was another tube, insulated from the outer one; this was coated with silver foil, and connected, by a platinum wire, passing through the outer glass, with the atmospere at a height of about 2 yards from the ground. The construction was such that the outer tube had the electric tension of the earth, and the inner tube the tension of a layer of air 2 yards above the earth's surface. The experiments continued two months. On opening the tube, and analysing the paper or dextrin, nitrogen was found in every case to have been fixed in appreciable quantity.

These results obtained by M. Berthelot are certainly startling, and will require thorough confirmation before they can be received as established facts. In M. Berthelot's opinion they point to a hitherto unrecognised source of combined nitrogen to vegetation. Plants, on his view, acquire nitrogen from the atmosphere through the medium of electric action. The question will doubtless before long be submitted to investigation by other chemists.

Before closing these notes of recent investigations we may remark how little either of them touch the great practical questions brought out by the Rothamsted field experiments, and dwelt on by Dr. Gilbert in his lecture. The action of atmospheric ammonia, and of atmospheric electricity, however important we may suppose them to be, must have their action on the fields at Rothamsted as well as on other parts of the globe; it is clear, therefore, that their united efforts are incapable of sustaining the small and gradually diminishing cereal crops which are grown at Rothamsted without nitrogenous manure. On the other hand, it requires a distinct kind of facts from those yet assumed to explain the widely different relations to nitrogen of graminaceous and leguminous crops, which is taught so prominently by the Rothamsted results, and is supported by universal agricultural experience. *R. Warington.*

SPECIMEN FUCHSIAS.

THE county of Wilts is famous for its splendid exhibition Fuchsias. A batch of growers living in the districts of Trowbridge and Devizes have for some years past vied with each other as to who should produce the finest examples of cultural skill at the exhibitions of the Trowbridge and Keevil district horticultural societies, the Bath floral *fête*, and other places, during the months of August and September, and the invariable result is such an exhibition of specimen Fuchsias as is perhaps scarcely equalled in any other part of the United Kingdom. The leading growers are Mr. J. Lye, gr. to the Hon. Mrs. Hay, Clyffe Hall, Devizes; Mr. Thomas King, gr. to R. V. Leach, Esq., Devizes Castle; Mr. J. Doel, gr. to J. E. Hayward, Esq., Trowbridge; Mr. J. Hobbs, gr. to J. Gayton, Esq., Trowbridge; Mr. J. F. Mould, nurseryman, Pewsey, and Mr. J. Matthews, Trowbridge.

The illustration on p. 211 (fig. 35) represents an example of the well-known variety Arabella, one of a group of six varieties exhibited by Mr. J. Lye, Clyffe Hall Gardens, at the meeting of the Trowbridge Horticultural Society on August 25 last. On this occasion Mr. Lye was placed 1st with six and four varieties, Mr. J. Hobbs being 2d in each class. Mr. Lye's plants averaged 6 to 7 feet in height, and from 3 to 4 feet in diameter at the base, most symmetrical in shape, and with the lowermost branches completely draping the pots. Cleanliness, freshness, and a general style showing high-class culture, were the characteristics of all the plants in the leading groups in these two classes. Mr. Lye is now the champion grower of the district, and every year he has to run the gauntlet of a severe competition. His



FIG. 33.—DWARF JAPANESE PINE TREE.

plants excite the highest admiration of all who see them, and could they be exhibited in London in the style in which they are shown at Trowbridge they would be looked upon as illustrating a veritable floricultural sensation.

The cultural process adopted by Mr. Lye can be set forth in a few words. Cuttings are taken at the end of March or the beginning of April, the most vigorous growths being selected for the purpose; they are placed singly in thumb-pots, and put into a Cucumber or Melon frame having a suitable moist bottom-heat. As soon as the roots reach the side of the pots the plants are repotted, and this is repeated as required up to the first or second week in July; at the same time stopping and pinching back the shoots, in order to get the plants to the proper shape required.

The plants are then allowed to flower during the autumn, and thus is laid the foundation, so to speak, of the plants that will be exhibited a twelvemonth after. At eighteen months of age Mr. Lye has exhibited these plants 8 feet in height and 4 feet through, well covered with flowers.

Mr. Lye does not confine his exhibiting to plants eighteen months old; as his best specimens vary in age from one and a-half to five years, according to the duration of the varieties, as some last longer than others. After the plants are five years of age they are discarded, and replaced by young plants raised in the manner above described.

But to continue the method of treatment followed by Mr. Lye. About the end of October, when the plants have done flowering, they are pruned back to two or three joints beyond where they were cut back the previous year, placed in their winter quarters to rest, and kept moderately dry. The last week in January or the first week in February, the roots of the plants are thoroughly shaken clear of the old soil, and repotted. The young plants struck the previous spring are placed in 14-inch pots; the older ones into 16-inch pots, and the compost used is made up of equal parts of good fibry loam and leaf-mould, a little peat, and silver or sea sand, and some good rotten cow-dung, all of which is well mixed together before using. The plants are placed after repotting in a cold greenhouse, and kept under glass till the first week in June, then they are placed out-of-doors, and are well syringed during hot weather to keep down red-spider, &c., and occasional doses of manure-water are given. The best kind of liquid-manure for the Fuchsia, Mr. Lye finds to be horse-dung or soot, put into a tub to soak for a week or ten days before using, and a good soaking is given to the plant about once a week. With plants cultivated in this way Mr. Lye has taken twenty-nine first prizes with Fuchsias since 1869, and that in the face of severe competition.

Mr. Lye is also a raiser as well as a cultivator of Fuchsias, and has produced some fine exhibition forms, found in the following list of the varieties he culti-

vates for show purposes. Light varieties: Mrs. J. Lye, white tube and sepals, dark red corolla shaded with purple—remarkably free, and possessing an excellent pyramidal growth; Arabella, a good old variety; Miss Lye (Lye), in the way of Arabella, but having a darker corolla; Marginata, a charming variety, the pretty pink corolla being distinctly margined with carmine on the edges; Schiller, a good old variety; Rose of Castile, remarkably free and effective; Delicata (Lye), white tube and sepals, light rose corolla, good free habit of growth; Arabella Improved (Lye), a marked improvement on the old form; Beauty of Swanley (Lye), an extremely pretty light Fuchsia, pure waxy white tube and sepals, the latter most elegantly reflexed; corolla bright pink, of good shape; habit free and most graceful; white Souvenir de Chiswick (Lye), a showy white variety, resembling in general habit the dark variety known by this name—white tube and sepals, the latter long and beautifully reflexed, corolla bright rose-pink; Queen Victoria (Doel), white tube and sepals, with dark red corolla, very good for exhibition; and Covent Garden White (Doel), an excellent market and decorative variety.

Of dark varieties the following are grown:—Favourite (Doel), scarlet tube and sepals, very free blooming—a capital show variety; Pauline, dark red tube and sepals, and purple corolla, a good old exhibition variety; Gazelle, scarlet tube and sepals, and purple-blue corolla, one of the very best of the section, and having a good habit; Constellation, much in the way of Gazelle; Charming (Lye), scarlet tube and sepals, purple corolla, excellent habit, and a good grower: a specimen of this shown by Mr. Lye at the Bath exhibition held in September last was acknowledged by all the leading growers present to be the best flowered specimen they had ever seen; Elegance (Lye), scarlet tube and sepals, with light blue corolla, drooping graceful habit; Puritani, a fine old variety; Improvement, glossy red-carmine tube and vermilion sepals, deep violet-blue corolla tinged with carmine; Swanley Gem, tube and sepals coral-scarlet, the corolla rose-coloured and prettily frilled, a distinct and showy variety; and the Hon. Mrs. Hay (Lye), a very free blooming and showy dark variety, but rather coarse. Of double varieties the two following are grown by Mr. Lye:—Marksman, tube and sepals bright carmine, purple corolla, a good grower, and one of the very best doubles; and La Neige, a variety resembling Madame Cornellissen, but much larger, tube and sepals carmine-red, and snow-white corolla.

One great feature in Mr. Lye's specimen plants is the entire absence of the appearance of anything like artificial supports, except in the case of the central stake to maintain the plant in an erect position. There is a complete covering of leaves and blossoms, even the pots in which the plants are growing are almost, if not quite, hidden from view.

Mr. Lye's professional triumphs are not confined alone to Fuchsias. For fourteen years past he has been an exhibitor of fruit, flowers, and vegetables, and has taken over 400 prizes, the greater portion having been 1st prizes. He has been in the Clyffe Hall Gardens ever since he was a lad, and gradually worked his way up to be head gardener. Mr. Lye's father had the management of the farm lands under Admiral Bouverie, and the Hon. Mrs. Hay, his daughter, for the space of forty years; and when he became disabled he was pensioned for life, and Mr. Lye succeeded to the management both of the farm and garden. One of the principal features of the estate is the fine examples of Scotch Fir, which are much admired for their magnificent proportions.

Mr. Lye is also the raiser of one of the most promising of the new Potatos of last year, viz., Lye's Favourite. It is a seedling from the Red Emperor, very distinct in character, and of excellent quality. *R. D.*



Fig. 34.—A Japanese House Garden.

JAPANESE GARDENS.

Some time since we were enabled to lay before our readers some account of the process by which the Japanese gardeners succeed in dwarfing trees of various kinds, and growing them in vases of porcelain of relatively small dimensions. The illustration we gave on that occasion (fig. 33, p. 206) was copied from one which appeared in the *Revue Horticole*. The present one (fig. 34) is taken from a treatise on Japanese gardening, brought home in the *Challenger* by Mr. Moseley, and represents a miniature mountain, with toy-houses amid trees and woods, and laved at the base by a tiny lake. The "trees" most frequently used are species of Retinospora and other dwarf Conifers, and frequently dwarfed species of Pyrus, the flowers of which have a pretty effect.

Notices of Books.

Thomé's Text-Book of Botany.*

Mr. A. W. Bennett has issued a translation of "the recognised text-book of botany in use in the technical schools of Germany, which (first published in 1869) is now in a fourth edition;" and he recommends it on the score that it is believed "that no work of the same scope is yet to be found in the English language embracing the whole range of elementary botany, of a size and price (6*s.*) to bring it within the reach of nearly all students of natural science."

The first three out of (in all) eight chapters deal with anatomy. Whether Germans begin with anatomy in teaching botany we know not, but we unhesitatingly say that the arrangement is unphilosophical. A young pupil must follow in his individual case the methods by which the science itself has been elaborated, *i.e.*, analytically and not synthetically. He must begin with morphology. Lindley, Henfrey, and Oliver rightly follow this plan; and to try to teach the pupil to reconstruct the plant out of its elements is a method only to be regarded as a pernicious survival. The almost gigantic figures before us do not compensate for this false principle, although the matter appears to be brought down to the latest knowledge.

Mr. Bennett's object (he says) was to adapt the work to the use of candidates for the South Kensington, and for seven of the London University examinations; but we doubt whether he has entirely succeeded. Chapter 4, on morphology, has hardly a page of letterpress on roots, and involves one, if not more errors, *e.g.*, Plantago major (and Mr. Bennett gratuitously adds Scabiosa succisa) is given as an example of a præmorse root, both being rootstocks. "Phyllotaxis," "stipulation," and "metamorphosis" are requirements in the London University scheme. The first is most meagrely treated; the two-fifth and three-eighth "divergences" being alone alluded to; the spines of Gooseberry are called stipules, and the bladders of Utricularia are described as "floats," and figured; but not a word is added as to their true carnivorous nature, and Mr. Bennett adds in a note that the pitcher of Nepenthes is regarded as an "expansion of the lamina" instead of a gland.

Another error of importance is the retention of the old theory of a calyx-tube, no mention whatever being made of the receptacular tube. It is not only thus in the text, but supported by the translator in a note. This is the more remarkable, as he translated Sach's *Text-Book*, where the development is fully described (p. 200).

Of all the requirements of a candidate for the London University examinations, that upon which the examiners lay most stress is the "demonstrations of the botanical characters of plants," and no work professing to be a guide for their examinations is complete without some instructions as to how to describe plants. Lindley, Henfrey's *Text-Book* (edited by Masters), and Oliver alike insist upon this, and the total absence is a serious blot in Mr. Bennett's adaptation of Thomé's work.

The systematic portion, which is equally divided between Cryptogams and flowering plants, is adapted to the *Genera Plantarum*, and describes the cohorts, together with such orders as are required for the above-mentioned examinations. *X.*

—— Messrs. Cassell, Petter & Galpin announce the early publication, in monthly parts, of a new work, with paintings from Nature of the wild flowers and plants of Great Britain, under the title of *Familiar Wild Flowers*, by F. E. Hulme, F.L.S., F.S.A., Art Master at Marlborough College.

—— Among the articles in the February number of the *Gardener* are the following:—Bottom-heat, &c.; Manures and Manuring; Lessons in Drawing; the Apple—Cultural Suggestions; Dissemination of Seeds; Gardeners' Mutual Improvement Societies; Flowering Pelargoniums in Winter; A Seventh Year of Rest for Vines—Would it be Gain? Sympathy Between Head and Under Gardeners; Double Chinese Primulas; Notes on Abutomemias; Forcing in Darkness to get the Common Lilac White, &c.

—— The principal contents of the *Villa Gardener* for February are articles on How to Reduce your Coal Bills; Embellishing Villa Residences; the Economy of the Rubbish Heap; Gardening for Beginners; Coccocypselum discolor; Stocks in Pots; Hedge Rose Budding, and the Budding of Wild Rose Stocks in Shrubberies or Woods; Winter Dressing Fruit Trees for Insects.

PUBLICATIONS RECEIVED.—L'Olivier, par A. Coutance (Paris, Rothschild)—Report of the Commissioners of Agriculture for the Year 1875 (Washington)—Monatschrift—Journal de la Société Centrale d'Horticulture de France—American Agriculturist—Report of the Board appointed to enquire into the Cause of Disease affecting Live Stock and Plants of Brisbane—Le Moniteur Horticole Belge—The Garden Oracle.

Natural History.

STOCK DOVES.—I enclose the contents of the craws of two stock doves shot here this day, numbered 1 and 2. Packet No. 1 contains the leaves of Turnips (I imagine), and a few grains of Wheat, with other seeds. I have never before found this mixture of food in the craw of the stock dove. The contents of No. 2 are the same that I have often found in them. I hope to learn that these latter are the seeds of some noxious weeds; for if so, these beautiful birds must be doing incalculable good at this time of year, and ought not to be condemned (as they frequently are, I fear) to wholesale destruction with their really mischevious brethren of the Columba family—the wood-pigeons. *H. F. V.* [Seeds found in No. 1 were Cerastium arvense, Chenopodium, Polygonum, probably aviculare; few Turnip or Charlock seeds, Wheat grains (decayed), and possibly Turnip leaves. In No. 2, almost entirely Chenopodium; the remainder, Polygonum aviculare.]

Obituary.

WE have the painful duty of recording the demise of Mr. JOHN HARRISON, of The North of England Rose Nurseries, Darlington. Mr. Harrison a few months ago removed from the establishment at Darlington, to a comfortable residence in his nursery at Catterick Bridge. On Sunday afternoon, the 4th inst., whilst on his way to chapel, he fell down suddenly as if in a fit; he was removed home as speedily as possibly, and soon afterwards died. The deceased had been in the nursery trade upwards of fifty years, and died at the advanced age of seventy-six. The event will create a void in the horticultural world, and many will have to deplore the loss of a valued and sincere friend. As a Rose grower he stood deservedly high, and was an efficient supporter of most of the principal exhibitions in Yorkshire and Northumberland, besides other parts of England.

He had been a successful exhibitor of the Rose for a number of years, taking prizes at all the leading exhibitions. If there is a consolation for his loss, or if there is a mitigation for our grief, surely it will be found in the good name he has left behind; high and low, rich and poor, everybody speaks well of him. His innate goodness of heart, his genial happy humour, his charitable disposition, his manly straightforward bearing, his noble nature, and the proud position he had attained for himself, all combine to make us feel the loss we have sustained. Mr. Harrison leaves behind him a sorrowing wife, and several children. Two of his sons, aged from thirty to forty, have been brought up to the nursery business.

Mr. Harrison's remains were removed from his residence at Catterick Bridge, near Richmond, to Darlington, on Wednesday, the 7th inst., and interred in the family burial ground.

—— We also record with regret the death of Mr. WILLIAM MELVILLE, of the Tyneville Vineries, Jersey, which sad event took place on January 27, in the sixty-sixth year of his age. Mr. Melville was for thirty years gardener at Dalmeny Park, near Edinburgh, and retired about eight years ago on a handsome annuity from the Earl of Roseberry. He was an enthusiastic cross-breeder of plants, particularly of the Brassica tribe, and sent out amongst others the Albert and Roseberry Sprouts and the Variegated Kale. He was also the raiser of the Muscat Champion Grape, and was one of the first in early life to improve the Pansy. He brought up a family of fifteen children, to all of whom he gave a good education, and six of them were brought up as gardeners. Mr. Melville had a happy and pleasing disposition, and was fond of talking about, and communicating his ideas upon, his favourite hobby—the cross-breeding of plants.

—— Died, at Croydon, on February 8, JOHN SAMUEL GLENDINNING, aged 33 years.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Any additions that have to be made to the hard-wooded stock in the shape of young plants to be obtained from the nurseries, should at once be attended to, as when thus got before growth has commenced, they are much better than when subjected to packing and transit with fresh soft shoots upon them. In all cases give the preference to young healthy plants, however small, over such as have suffered the slightest through being kept too long in the pots they occupy. The larger plants may tempt the eye, but little ones in a free condition always outgrow them, and rarely fail to outlive them. Erythrina crista-galli (the Coral plant) is a very useful subject for conservatory decoration; if it is kept in a greenhouse temperature it will bloom about the end of July, but by treating as hereafter described it can be induced to flower twice. Plants shook out now, potted in good loam, to which is added a sixth of well-rotten manure and a fair amount of sand, and put in a house where there is a nice growing temperature, will bloom during the spring. After they have had a rest for a few weeks, cut back, repot, and start again. They will flower in the autumn—a time when there are not so many indoor blooming things. Plants of Aralia Sieboldii, raised from seed last year, if now put into from 10 to 12-inch pots, will, before the time comes to plunge them out-of-doors, get nicely established. Potting soils that were advised a few weeks ago to be got under cover should be frequently looked to and turned over, so as to bring them from the saturated condition which everything exposed has been in to a fit state for use, and to see that there is a sufficient quantity of peat, loam, and leaf-mould for all purposes that may be required during the spring months. They should occupy, if possible, an open shed where the wind will be free to have full access to them. Should any very urgent the potting operation may appear, on no account attempt to carry out the work until the soil is in a fit state as to dryness, as even the strongest growing plants in existence will not succeed if potted in material that is too wet, however porous it may be rendered by the use of sand. Beginners in plant culture frequently do not pay enough attention to this matter. One means that I have used to test the state of the soil as to moisture is to take a bit betwixt the finger and thumb, just a small pinch, when prepared with the sand in it, and if any perceptible water can be squeezed out, it is too wet for use.

Heaths.—Many of these, if in a healthy satisfactory state, will be growing actively, and pushing up their blooming shoots, the roots, too, being correspondingly at work. Plants that need it should have a shift now. If this is done carefully, they will not be checked at all, and will bloom better than if left in a cramped state; there is also one great additional advantage, that there is not near so much danger of their dying when the potting operation is performed early, as when it is deferred until later on. The finest-wooded varieties do best in peat of a harder description, and they must not have so much root-room as sorts that are free growers, which latter ought never to be allowed to get into a condition anything like pot-bound. If this ever occurs, they are a deal more likely to suffer when they have more root-room given them; these do not need so much sand in the soil as the others. Pot all hard, and do not for a few weeks admit any side air near the plants. A day or two previous to potting go over them very carefully to see if any need watering. Camellias.—Plants that bloomed in the autumn will now be commencing to grow; they ought to be encouraged by putting them where they will have a temperature of 55° by night, and 10° or 15° more in the day, with plenty of moisture in the atmosphere and also at the roots. As they go out of flower they should be cleaned well with sponge and brush; this ought to be done before they begin to grow, as the young tender leaves are soon injured.

CONSERVATORY.—The climbers here should be regulated, cutting-in those that need it closer now than at any other time in the year. Give as good and thorough a cleaning as possible if mealy-bug or scale exists. All subjects that are permanently planted out will be benefited, as well as look better, even if they are not infested with either of the insects mentioned above, by being well cleaned to remove the dirt that gets on the leaves during the winter season when the syringe is not much used.

* *Thomé's Structural and Physiological Botany.* Translated and edited by A. W. Bennett. (Longmans.)

SOFT-WOODED GREENHOUSE PLANTS.—There is no time in the year when Cinerarias are more useful for cutting than just about Christmas, as they give us the scarce, indispensable colour—blue, at a season when there is little else of it but early forced Hyacinths and Violets, and however acceptable both these are, they look dull by the side of a bright Cineraria. To have them at this time they should be sown at once, as any attempt at hurrying them in their latter stages is sure to end in weak, poor heads of flower. Such kinds of Lilies as commence growing early, as, for instance, eximium, or longiflorum as known by some, will by this time have appeared above-ground, and must at once be exposed to the full light in a pit or frame where they can be protected from frost, otherwise, if they are allowed to become drawn now, no after-treatment can remedy the mischief. *T. Baines.*

ORCHIDS.—It will now be necessary to go through the collection, and top-dress or pot many of the plants, according to their several requirements. If there are a number that will need potting, whether to give them a larger shift or on account of the soil having got into a sour and soddened condition, it should be borne in mind that only such sized pots should be used for the plant so can reasonably be expected to fill in one, or at the most two seasons. Orchids invariably delight in having a hard substance near at hand, to which the roots may speedily cling soon after they start away from the base of the bulbs or young growths; and if this is the inside of the pot, or crocks, or charcoal, the roots will keep longer in a healthy and growing state than if large pots are used when the plants are shifted, and few or no crocks used among the soil. Bearing this in mind, see that in potting the pots are well crocked, the pot-sherds being fixed in the pots in an upright position, and taking care to put them in so that they will be as open as it is possible to get them. On these place some sphagnum moss, and in making the plant up use some small crocks or pieces of charcoal in the soil, as well also as fixing some larger pieces with the soil as the operation progresses. A little sharp silver-sand mixed with the soil will be very beneficial in keeping the soil open and sweet. Many of the plants, however, will not require fresh potting this season, and where such is the case they should be top-dressed as far as it can be done without injury to the roots and young bracts. The surface, too, of some of the plants will have got covered over with small seedling Ferns, or with the green conferva that so quickly spreads upon plants that for a lengthened period during the season are kept continually moist. Pick this all carefully out, and add some more moss, or some fresh peat mixed together, in amongst the roots. Press the whole well together, that the plant may stand firm, then with a few stakes make the whole secure and steady. Where, as recommended last season, any bulbs of Dendrobiums were pegged down on the pots of the Aerides, Vandas, &c., they should now be taken off, and fastened on blocks, or put into small baskets, where they will get a little more careful attendance than if left to push up long shoots among the other plants. They should, however, be taken away, chiefly because the quantity of roots they would make in the pots they were pegged down in, would make it in some cases a difficult matter to get them out, at the same time endangering the plant from whence they are taken. The East India plants and the Dendrobiums should be taken in hand first. Before the houses are rearranged, sponge all the glass inside, and scrub the woodwork, rafters, &c., and arrange them all so that each may have the advantage of the direct rays of sunlight so far as it can be managed. An advance must now be made in the temperature of the houses, and a little more moisture given during the daytime. Suiting readings:—East India-house, 60° to 63°; Dendrobium-house, 55° to 60°; Cattleya-house, 55° to 58°; Odontoglossum-house, 50° to 53°. Raise the temperature 5° by fire-heat, and if the sun should break through, another 5° by its aid may be permitted and gladly accepted. When the air outside is favourable—and this winter at present it has been so in an unusual manner—advantage must be taken of the opportunity, and air given to all the houses at the bottom ventilators. Cœlogyne cristata will now be gay with bloom; see that they are kept free from insects, otherwise they soon become spotted. Another of this genus that will now be showing signs of growth is C. pandurata; this will grow very freely in moss and peat, and must be kept in the East India-house: as the young growths advance the flower-spike pushes up in the centre of the new leaves, and as its peculiar green and black flowers expand it forms an object at once attractive and fantastic. When growing it must have a good supply of water, and since its hard shiny leaves are often attacked by red-spider, it will continually need looking over and sponging. *W. Swan, Fallowfield.*

FRUIT HOUSES.

PEACHES AND NECTARINES.—In early started houses by this time the trees will have reached that stage of growth when disbudding is usually effected. Although this practice is necessary at times, without doubt it is, in the case of early forced trees, often too vigorously applied, so much so to be even more detrimental than beneficial. Instead of divesting the trees of so much foliage at the present period, we nip out the points of the shoots, leaving from four to six leaves below, and thin out the spurs which are so formed when the foliage and fruit are somewhat more developed, letting all the terminal ones which are not over-exuberant, and otherwise checking those which are likely to absorb more than their share of sap. Continue to liberally apply the syringe over the trees twice every day, and especially about those portions which are placed near the heating medium, whereby the much invincible enemy, red-spider, often first appears. Every means which is calculated to produce a stimulating effect in the house should now be employed in the way of sprinkling, &c., and a light sowing about once a week of guano on the mulching material will also be productive of good; artificially, 55° to 60° at night, and 60° to 65° in the day should still rule, and 70° to 85° by solar means; ventilate at 70° and close at 75°. Be cautious in airing at the front of the house when cold drying winds prevail, unless, as it should be, a heated pipe is fixed as to moderate its effects. Take advantage of suitable occasions for impregnating the flowers as they open in successional houses, and pursue a similar course of treatment here to that already indicated for the early house. In later houses the coldness of the season has brought out the flowers considerably before the usual time. A free course of ventilation is indispensable here under existing circumstances—50° outside, otherwise, should severe weather ensue, much harm may happen in those houses without means of resistance. *G. T. Miles, Wycombe Abbey.*

CUCUMBERS.—Since my last paper was written we have experienced a few bright sunny days, a condition under which forcing has made satisfactory progress, and as few plants secure speedily show the beneficial effects of sun-heat than Cucumbers, the occupants of this department have made considerable improvement in growth, vigour, and quality of the fruit. Unfortunately, a return to wet weather will necessitate increased firing to dry up the top and bottom heat, and the cultivator must be constantly on the watch for red-spider, which invariably follows, and if not at once checked will soon work serious mischief amongst plants which have been some time in bearing. If taken in time, the best remedy for its destruction is careful sponging of the leaves; but when being better than cure, occasional syringings with a weak solution of Gishurst on mild evenings when hard firing can be dispensed with will be found the means of keeping the Cucumber grower's worst enemy in check. Mildew, the result of impure atmosphere combined with a low, stagnant atmosphere, shows itself, apply the usual remedy and resort to conditions the reverse of those which have caused it. Remove male blossoms. Avoid overcrowding of young growths and foliage; impregnate the most promising fruits. Ventilate on all favourable occasions, and close early with a moist growing atmosphere. Where beds composed of fermenting materials are not ready for the reception of young plants, give them another shift into larger pots and return to the nursing pit until all danger of burning has passed away. Keep up a good supply of fermenting materials for bottom heat, and early in autumn collect Oak leaves for use as required, and see that the stock of loam under cover does not fall short. If through the past winter it has been out in the wet, a few days' exposure to the atmosphere in a dry airy place will be necessary before it is taken in to use. *W. Coleman.*

ORCHARD HOUSE.—Although the temperature has ranged high, fruit trees in cold houses, particularly when ventilation has been well managed, are very little, if any, forwarder than those on the open walls. This undoubtedly is due to the absence of sun, but with a change to bright weather trees under glass will make rapid progress, and many of the early flowering kinds will soon begin to develope their blossoms—the most delightful, as it is the most anxious time for the owner of the unheated orchard-house, who will of course have canvas, tiffany, or other protecting material ready for use in the event of a change to frosty weather. When the pot culture of fruit trees was in its infancy, the idea of warming an orchard-house was looked upon as an unnecessary extravagance, but experience proves the contrary—the cost of many of the small slow-combustion boilers is so trifling, they require no brickwork for setting, the pipes can be fixed by a handy labourer, and all that is required in the way of fuel is a moderate supply of small coal or coke for producing sufficient heat to counteract the injurious effects of frost or damp where the trees are in bloom. Trees which have been some time under glass must have sufficient water to keep the soil in a healthy growing state, but those which have recently been taken in will hardly require it before the end of the month. The modern mode of preparing trees for pot-work by annual lifting, root-pruning, and replanting in the open ground until well furnished with flower-buds, is more economical than the system of potting up maidens to fill up space in the orchard-house which might otherwise be occupied by fruit-bearing trees. *W. Coleman.*

KITCHEN GARDEN.

Some few crops will require particular attention in sowing about the end of this month, although very much of its utility will depend upon the state of the soil, for if it is not in a good state to receive seed, it is better to wait a week or so rather than risk the crop; but Parsnips, if required fine and in quantity, should be sown the first favourable chance. These are not at all averse to strong, still ground, well manured the previous year. And at the time of sowing, if the soil is not in a well-pulverised condition on its surface, and tolerably dry, draw out the drills, and sow the seeds (which should always be new), and fill up the drills with fine dry soil and sifted coal-ashes. If slugs attack the young plants when up, put some quicklime in a scrin canvas bag, and shake it over the beds on mild evenings. Peas will again require attention in sowing about the end of the month, and one long row of an early sort and one of a good second early will suffice for succession at present. The advancing crops will require to have the earth drawn up to the rows, and the earliest will require some shelter against cutting winds. Small branches of Spruce Fir are well adapted for the purpose; we have also used with great advantage the stumps of worn birch besoms, which, stuck in thickly on each side of the rows, are excellent protectors. The earliest sown Beans will also be advancing, and should have the earth drawn up to the rows, and some dry leaf-mould inserted along the rows amongst the plants, which, owing to the mild winter, are rather drawn. Look over Cauliflower plants in frames and under handlights, and remove all decaying foliage, stir the surface of the soil, and afterwards dust the surface with dry soot, lime, and sharp coal-ashes, mixed together. Lettuce plants in frames or under south walls will also be benefited by surface stirring and dressing. Some Myatt's or Veitch's Ashleaf Potatos planted now at the foot of south walls will come in very useful for succession after frames and ridges, which, when there is a sufficient supply of fermenting materials, may be made up at the end of the month similar to Cucumber and Vegetable Marrow ridges, by marking a bed in the open ground 6 feet in width, and of a length in proportion to the material available. Throw out the soil right and left to the depth of 18 inches or 2 feet, fill up the trench with from 2 to 3 feet of prepared dung, let it stand a few days for the violent heat to pass off, then cover the surface with 4 inches of soil, lay on the seeds Arches row from row and 6 inches in the row, and cover all up about 5 inches; the middle will sink considerably, so that by the time the tops appear through poles may be laid from side to side, and mats spread over on cold nights. Here, again, some Wheeler's Early Frame Radish is sure to come in useful; a pinch or two of Lettuce seed also thinly scattered over the surface will do no harm, and often proves very valuable for maintaining a succession. Some Brussels Sprouts seed should be got in at once for the earliest planting; a warm south border is best, and if possible place some handlights over the bed for a time, but avoid drawing the plants up weakly. The first opportunity should be taken, when the soil is sufficiently dry, to stir the surface well amongst growing crops of Cabbage and Lettuce, also to remove all dead and decaying leaves from the beds of winter greens of all sorts as well as from the Broccoli beds. Looking forward a little to the requirements of next month beds should be at once put through the process of deep trenching and abundant manuring for the purpose of making new plantations of Globe Artichokes and Seakale at the proper time. Jerusalem Artichokes should now be planted: these are generally banished to the outskirts, but if much in request they will well pay for good ground and extra attention. A busy time is pressing close upon us, and all arrears of trenching, manuring, and preparation of the soil should be pushed forward at every opportunity. *John Cox, Redleaf.*

THE JAPANESE PERSIMMON (Diospyros Kaki) fruited with Mr. G. F. Wilson. It was tried by the members of the Royal Horticultural Society—result, a general pucker—only the account put it "wry faces." Such an indignity must be looked into, and Kaki was at once analysed. Over two per cent. of tannic acid found. Now we know what was the matter. Any Southern darkey would have said, "Dem 'Simmins wasn't ripe." It must have been a very funny thing to have seen that august body with its mouth involuntarily in a whistling position. We doubt if this fruit will completely ripen in England. We tasted of the first fruit that matured here, and there was no trace of astringency. *American Agriculturist.*

THE

Gardeners' Chronicle.

SATURDAY, FEBRUARY 17, 1877.

THE annual meeting of the ROYAL HORTICULTURAL SOCIETY passed off in the quietest and tamest of manners, reflecting, perhaps, the paralysis which seems to have temporarily affected the Council. The official report was taken as read, although it was only put into the hands of the Fellows as they entered the room, together with a very imperfect balance-sheet. We must refer to the full reports on another page for the details. It must suffice here to make a few general remarks. In the first place, in spite of the disappointment that will be felt at the absence of any scheme of reorganisation and reconstruction, there is much to support the opinion that the existing Council is the best and most honest that the Society has had for some years. It is satisfactory, too, to note that the utterances of the President are decidedly more horticultural than on a former occasion. Though himself one of Her Majesty's Commissioners, and having local interests of his own in South Kensington, the President fully admits the disastrous nature of the alliance between a horticultural society consisting of a small number who care for practical and scientific horticulture, and (at one time) a large number who had no special taste for gardening, but who were willing to pay to be amused, and to subscribe towards maintaining a private recreation ground for their families.

The President told the Society that if between Christmas next and the Christmas following £10,000 be not raised, Her Majesty's Commissioners will be in a position to "extinguish the Society," a phrase that we presume is not to be interpreted literally.

With reference to the debenture-holders (whose only claim we are told is upon *surplus* income), the Council, like honest men, but not uninfluenced by the fear of personal liability we imagine, express their sense of the obligation under which the Society rests to the holders of those documents, and their desire to meet those obligations honourably.

What, then, is the outlook? Suppose—and it is not impossible that, at the last moment, some of the residents, awakening from their present indifference, and fearful of losing a convenient airing-place, will render it more than a supposition—suppose the £10,000 is raised, what will be the result? Why, that the Kensington Garden, with all its burdens, would be retained till the expiration of the lease, unless, indeed, Parliament, urged on by the general Press, should interfere to prevent the appropriation to a class of what should be free to the public. Surely this is not a pleasant prospect to look forward to, for it has been all but universally admitted as most desirable that the connection between the two discordant interests—the horticultural and the residential—should be put an end to as soon as possible. Each might work in harmony with the other if desired, but practical independence is the best for both parties. This has been affirmed at a general meeting, and, as we have seen, the Council admit its desirability. But, say they, they have tried in vain to effect this separation in various ways. They find that the Society is so tied and fettered this way and that, that it is impossible to obtain that freedom and liberty that all desire so strongly. We give the Council credit for what they have done in this matter, and if they have failed, their failure is not greater than that of their predecessors, while it is partly redeemed by excellent work of a horticultural kind for which all horticulturists are grateful. But their failure to accomplish their purpose surely does not justify them in hugging their chains and making them girt more tightly. If they cannot rid themselves of their fetters all at once, a persistent application of the file will ultimately accomplish the desired end. "We have done all we can: what more remains to be done that we have not done?" is in effect the cry of the Council. And as they have not been able to decide upon any satisfactory answer to this question they have decided to go on in the old rut—to spend a thousand a year (see the report) at Chiswick, for the purpose of growing decorative plants for Kensington, and thus waste a large portion of what little substance they have, in the interests of the resident Fellows, in the hope, unquenched by experience, that they will be repaid by an increased subscription list.

It is this tendency to move in one groove only that has aroused the alarm, we might even say the indignation, of many of the staunchest horticulturists. Let the Council take example by a beast that is tethered. He does not — albeit tied and restricted in his range — move backwards and forwards in the same directions only, like a sentry, but he radiates in all directions, and he goes round from one point to another to an extent limited by the length of his tether. He does indeed make the best of the situation. The Council is tied—we all want to loosen the tie. We can't do it at present, but surely our choice of work is not limited to one direction only, and that direction one which has been proved to be wofully unprofitable. Granted that for the present we must wear our fetters, we are not debarred from extending the real horticultural work of the Society in the provinces and elsewhere in some one or other of the many ways in which, as we have often pointed out, good useful work may be done. Lord ALFRED CHURCHILL, who more than once has shown a broad comprehensive judgment of the duties of the Society, did indeed announce a proposal which is decidedly a step in the right direction. Many more of a similar character have been already pointed out, and might be adopted with very little cost and without prejudice to South Kensington interests. The re-establishment of a great provincial show is one powerful means for good, which we are glad to find is again under the consideration of the Council. Anything in fact, which is conceived in a broad liberal spirit in the interests of horticulture and of the general public, deserves support, and will certainly win approbation; while, on the contrary, any narrow, class or local policy is unworthy a great Society, and is sure to meet with the reprobation it deserves.

—— SOME curious facts in connection with the FLORA OF RODRIGUEZ have been set forth in a communication to the Linnean Society (February 1) by Dr. I. BAILEY BALFOUR, son of the distinguished Edinburgh Professor. The vegetation is essentially insular, as might be expected, but dry and temperate rather than humid, and tropical in character; it is of Mascarene type, with affinities, however, bearing likeness to Polynesian and American regions, though Asiatic types prevail. It seems many common and wide-spread plants have been introduced, and the ancient flora of the island from various and unknown or doubtful causes in great part destroyed, in this respect calling to mind the St. Helena flora, well known to have been destroyed by man's agency. A somewhat remarkable and well marked feature is the heteromorphism exhibited in the leaves of many of the plants, especially shrubs. It seems that the young produce leaves, as it were, of a lower stage of development than the adult; and as the individual increases in age the leaves successively produced approach more nearly the mature form, until at a certain stage of its growth only typical leaves of the adult are found. Once this stage is reached all the leaves produced on the branches are of the adult form; but should any adventitious shoots develope from the base of the trunk, or appear on the stem anywhere below its first branching, these always have the juvenile, and not the adult form of leaf. This heterophylly, as a whole, is in degree and kind somewhat variable, though among species pretty uniform in its variations.

—— Between the years 1870 and 1875 Professor STEERE, of the University of Michigan, U.S., made a journey across South America, thence to the Philippines and other regions in the East, for the purpose of collecting objects of natural history to enrich the museum of his University. Among other things obtained was a collection of plants. His colleague, Professor HARRINGTON, has now worked some of these out, and at a late meeting of the Linnean Society (February 1) gave a list of the tropical Ferns met with. Among these many novelties from the little frequented islands of the Philippines have now been described, and Formosa has likewise yielded several new forms.

—— Mr. DOWNIE has planted in front of his residence in the Pinkhill Nursery some thirty varieties of bedding Pansies and Violas, one row of each, for proving during the coming season, and he informs us that a white Pansy which he raised two years ago, and named Profusion, opened its first flowers on January 6, and is now nearly in full blossom, while there is hardly a flower to be seen on the other varieties.

—— As illustrative of the retention of the dormant living power in the vegetable embryo when subject to a long-continued low temperature, Mr. R. IRVING LYNCH exhibited at the meeting of the Linnean Society (January 18) A MEMENTO OF THE ILL-FATED "POLARIS" EXPEDITION. This consisted of a pot of growing Wheat, sown from some of the grain left in Polaris Bay, Smith's Sound, 81° 38′ N. lat., by the crew of the American Expedition. Captain Sir GEORGE NARES, who obtained it, in a letter to Dr. HOOKER says the grain lay exposed to all the rigours of the climate from 1872 to 1876. Nevertheless, the sample brought home, when sown at Kew, yielded about 64 per cent. as capable of germination. Two Peas also sprouted, besides a grain of Maize, this latter having a special interest from being a comparatively tropical plant.

—— It is impossible to contemplate the beauties just now being developed in country gardens by masses of many coloured Primroses, Polyanthus, double Daisies, early Violas and Pansies, the beautiful Myosotis dissitiflora, the rich vermilion Anemone fulgens, varied Hepaticas, crimson and golden Wallflowers, and others of the charming hardy spring flowering plants, without feeling an anxious desire that some of these rural delights might be made to administer to the pleasure and happiness of our town-ridden poor, whose floral sights are chiefly confined to the exceedingly formal and, alas! too evanescent display of bedding-out arranged for their delectation during the summer months. To carry out spring gardening on a large scale might well prove too great a burden for any of our park superintendents, but in suitable spots and within convenient range it surely would not be impossible to create a small spring flower garden such as are now common enough in well kept gardens. To transplant Belvoir, Cliveden, or Glen Eyre, into the midst of London would be beyond the power of mortal, but to attempt even at a distance a humble imitation is not impossible. Such a spot as the garden adjoining Palace Yard would perhaps offer the desired space, and the introduction of hardy flowering plants in that locality in the early spring would, perchance, assist to shed a little sweetness where it is much needed. The requisite material need not be planted until just before the flowering period, and then the masses of colour would soon become prominent. Even if the result was not all that could be desired it is well worthy a trial.

—— Next May the HORTICULTURAL SOCIETY OF VIENNA will hold a festival exhibition, to celebrate the fiftieth anniversary of its existence. According to the circular issued by the committee of organisation, the first flower show in Vienna was held on May 9, 1827, counting among its supporters Professor JACQUIN and Baron HÜGEL, both names familiar to botanists in this country. Although the exhibition is



FIG. 35.—FUCHSIA ARABELLA, AS GROWN BY MR. LYE.

not to be of an exactly international character, foreigners are invited to take part in it. Dr. E. FENZL is the Secretary.

—— In view of the proposed NEW FLOWER MARKET IN VIENNA, various reports on the markets and market plants of other countries have appeared in *Der Gartenfreund*. The list for the Paris markets during the first three months of the year may be of interest for comparison with the plants and flowers to be had at Covent Garden during the same period :—

1. Tropical and temperate plants grown for their flowers :—Azaleas, Camellias, Rhododendrons, Roses, Lilacs, Hoteia japonica, Deutzia gracilis, Iberis, Libonia, Erica, Echeveria retusa and coccinea, Primula sinensis, Tulips, Crocuses, Mignonette, show Pelargoniums, various winter flowering Begonias, Lily of the Valley, Cyclamens, Violets, and Gardenias.

2. Tropical and temperate plants with ornamental foliage :—Chamærops, Latania, Areca, Corypha, Cocos, Rhapis, Philodendron, Dracæna, Pandanus, Ficus, various Ferns, Bromelia, Curculigo, Aspidistra, Cyperus alternifolius, Tradescantia, Peperomia, Oplismenus, Maranta, Echeverias, &c.

3. Hardy plants with ornamental foliage :—Acanthus, Aucuba, Euonymus, Viburnum Tinus, Helleborus niger, Yucca, Hedera in variety, various Conifers, &c.

4. Annual and other plants for bedding (sold in baskets) :—Alyssum saxatile, Arabis verna, Viola tricolor, Cheiranthus Cheiri, Aubrietia deltoides, Bellis, Silene, Myosotis, Primula, Centranthus, Iberis, Saxifrage, &c.

5. Trees and shrubs of all kinds.

—— At the February meeting of the Edinburgh Botanical Society Mr. M'NAB laid on the table a bunch of what is generally called the FLORIDA MOSS (Tillandsia usneoides). This is a Bromeliaceous plant, the order to which the Pine-apple belongs, and named from its resemblance to the Usnea barbata (Old Man's Beard), a lichen found covering the bark of many trees in damp British woods. The Florida moss is sent to the United States for the purpose of decorating churches and dwelling-houses at Christmas. In Florida this plant is found in large quantities, covering and often killing the Live Oak (Quercus virens), the tree on which it is parasitic and mostly abounds. It is also extensively used for packing Oranges for exportation. The specimens exhibited by Mr. M'NAB were all quite fresh, as seen when exposed to heat and moisture, and were presented by Mrs. MASON, of Philadelphia, to Mr. M'NAB's two daughters before leaving America on January 25. It was with this plant that the Philadelphia Centennial Exhibition was decorated.

—— The HISTORY OF VEGETABLE GALLS is no unimportant study, and Mr. W. BEYERINCK, who is making them his speciality, has a wide field for operations. In a quite recent number of the *Botanische Zeitung* he gives the first of a series of articles on this subject. His idea is to work them out physiologically and systematically. An arrangement of galls based upon their animal occupants without regard to the nature of the perfectly developed galls, although to great extent in harmony with Nature, he would not regard as natural. All excrescences caused by insects are taken into account. The leading idea in the investigation is that every gall formation is the consequence of an effusion of fluid in the cells. The nature of this fluid is taken into consideration. When this scheme of arrangement is completed we shall probably give an outline of it.

—— According to GODLEWSKI (*Bibliographische Berichte über die Publicationen der Akademie der Wissenschaften in Krakau*, 1876), LICHENS, or at least Borrera ciliaris, the one employed in the experiments, in darkness use up all the oxygen of the air, and exhale carbonic acid ; and they form no other gas until there is available oxygen. The intensity of respiration increases with the temperature. In twenty-four hours they will appropriate about their own volume of oxygen when subject to a temperature of 62°.6 Fahr.

—— Our young contemporary, the *Journal des Roses*, describes in the February number a show of 6000 Roses held at Coulommiers towards the end of last September. One exhibitor sent a collection of 190 select varieties ; another sent 500 flowers of the Rose du Roi and 220 of Paul Neyron. One of the features of many French shows, including the one named, are the lady patronesses, who contribute separate prizes awarded by judges selected from their own ranks. The coloured plate in this number is the Rose Mrs. Laxton, as drawn by MACFARLANE for the *Florist and Pomologist*. Among miscellaneons matter is a list of shrubs and trees in flower in the open air at Brie-Comte-Robert, including a plant of the Rose Camille Bernardin, with six half-expanded buds as fine as they are often seen in May or June.

—— Sir WALTER C. TREVELYAN informs us that MANDRAGORA MACROCARPA, seeds of which he got many years ago in the Island of Cerigo, Greece, has been flowering freely in the open ground all the winter in his garden at Wallington, Northumberland.

—— We learn that the named and certificated ROSES raised by Mr. LAXTON, viz., Dr. Hogg, Mrs. Laxton, Charles Darwin, Emily Laxton, and Marchioness of Exeter, are in the hands of Messrs. PAUL & SON, of Cheshunt. Mr. TURNER, as we mentioned previously, tendered for the purchase of the unnamed seedlings.

—— M. SABATÉ has devised, and exhibited before the Horticultural Society of France, a gauntlet of chain armour to be used for removing the bark of the Vines, and with it the winter eggs of the PHYLLOXERA. The sulpho-carbonates are proved useful as an application to the roots, but it is necessary to attack the enemy in the cracks of the bark also, and for this purpose the rods are drawn through the gloved hand with the result of removing the old bark and the insects. The glove might be used for removal of moss from the bark of trees and for other purposes.

—— The following questions are proposed for discussion at the CONGRESS AT AMSTERDAM, and we are asked to give an opinion on the subject before February 20. As we have but just received the papers, it is impossible to express any opinion upon them. We may, however, say, that Dr. RAUWENHOFF, of Utrecht, is the Chairman of the Committee, and that DRS. OUDEMANS, of Amsterdam, SURINGAR, of Leiden, MULDER, of the Hague, and DE BOER, of Groningen, with other eminent men, form part of it. The Congress will be divided into three divisions :—1, Botany ; 2, Horticulture ; 3, Vegetable Products. We subjoin the questions proposed to be discussed in relation to horticulture :—

What is the best way to organise experimental gardens and horticultural laboratories ?

The best mode of conveying instruction in horticulture.

The permanence of varieties among bulbous plants.

The influence of manures on cultivated plants, especially on Hyacinths, Tulips, and Cabbages.

The best method of ventilating greenhouses.

The influence of coloured glass on the development of flowers.

—— Mr. GAMMIE, of the Sikkim Cinchona plantations, has lately adopted the plan of UPROOTING THE CINCHONA TREES, for the sake of the bark of the roots, which is found to be very rich in Cinchona alkaloids (8 per cent.). In this way thinning is effected, and thorough deep cultivation of the soil is effected, which may be replanted at once, allowed to lie fallow, or used for some other crop in rotation.

—— According to M. DUBOST the total annual value of the following VEGETABLE PRODUCTS OF FRANCE may be estimated approximately as follows : —Cereals, 2430 millions of francs ; farinas, 310 ; vegetables, 282 ; fruits, 180 ; wine and cider, 1200 ; miscellaneous, 531 ; woods and plantations, 350 ; straw and forage, 250. Total, 5533 millions of francs.

—— From documents just received (though dated as far back as December 9, 1876) we learn that the opening of the AMSTERDAM INTERNATIONAL HORTICULTURAL EXHIBITION AND BOTANICAL CONGRESS will take place on April 12. We give the following abstract of rules, &c. :—

Any one will be allowed to exhibit and compete for the prizes.

Those who intend to exhibit must notify their intention by writing (post-paid) before March 1, 1877, directed to the Secretary-General, with statement of the objects they wish to send, as each object must be notified on a separate form.

Those who have complied with the regulations will receive forms to fill up, and will be informed of the conditions on which a reduction of freight will be allowed by the different means of transport.

Foreign exhibitors will be duly informed as to the conditions on which free import, without examination on the frontiers, will be granted by the Minister of Finance.

The forms mentioned will have to be sent in properly filled up, in duplicate, to the Secretary-General before March 15 next.

All plants must be duly labelled, with the scientific name distinctly stated.

Plants newly introduced must bear, besides the name, as far as possible, the statement of their origin, the period of their introduction, and the names of the person or persons who have transmitted them, the place where they were introduced, and who first named or described them ; hybrids, by whom reared, and their pedigree.

The articles must be forwarded carriage-free, and addressed to the Board of Commissioners of the International Horticultural Exhibition, Palace of Industry, Amsterdam, on April 6, 7, or 9 next.

Live flowers, bouquets, and fresh vegetables will also be admitted on April 12, before 9 o'clock A.M. Trees, shrubs or plants for the open air will be received from March 15 until March 31.

Plant-houses and other buildings, fountains, or such-like objects, requiring much time for their location, will be admitted only during the month of March. Exhibitors abroad will have exceptional facilities allowed as much as possible.

A jury, to consist of competent Dutch and foreign scientific gentlemen, will be invited to award the prizes. The jurors will assemble on April 10, at 11 o'clock A.M.

The exhibition will be open to the public from April 13 until May 2, 1877.

The objects shown must be removed on May 3 and 4. Objects not reclaimed three days after the closing of the exhibition, remain at the exhibitor's risk.

During the exhibition no objects may be removed without a special permission of the Commission.

In no case will it be allowed to deliver objects sold during the exhibition to the purchasers, or to remove them in any other way from the exhibition.

During the exhibition a Congress will be held, where opportunities will be offered for discussing subjects connected with the exhibition. Of this Congress a separate programme is issued.

Nearly seven hundred classes are mentioned in the schedule, for which gold, silver, and bronze medals, and certificates of various grades will be offered. In addition to the horticultural exhibition, there will be an exhibition of various vegetable products, as cotton, tobacco, cinchona, madder, indigo, caoutchouc and gutta-percha, fatty and oily substances, materials for making paper, cereals, catechu, vanilla, rhubarb and sarsaparilla. Medals and prizes will be awarded as in the case of the horticultural exhibition. The secretary is Mr. J. B. GROENEWEGEN.

—— Dr. GEORGE KING, the Superintendent of the Royal Botanic Gardens, Calcutta, has lately published a valuable MANUAL OF CINCHONA CULTIVATION IN INDIA, giving an account of the history of the Cinchona, the collection of the seeds in South America, the introduction of the plant into India, the modes of cultivation adopted in that country, the chemistry of the bark crop, and various appendices giving statistical details as to the condition of the plantations, the value of the products, and various other matters. The publication will be of very great value in all those colonies where Cinchona cultivation is practicable.

—— Few people will assert that the prevalent style of STAGING CUT BLOOMS OF ROSES in this country is an artistic or pleasing one ; but when the judging of the merits of perhaps from half-a-dozen to a dozen collections has to be got through in about as many minutes—and this is not unfrequently the case —it is out of the question to permit exhibitors to exercise their ingenuity in setting off their collections by auxiliary plants and flowers. Space, as a rule, is not wanting, but so much is sacrificed to time. This, doubtless, will continue to be the rule at most provincial shows, because, in the first place, it is next to impossible for some of the exhibitors to get their products staged unless they bring a sufficient number of hands with them to do the work—local committees commonly forgetting, or not knowing, that they should make it a part of their duty to provide men to assist in this work. Secondly, the managing committees of many provincial shows, although most

anxious for the success of their shows and energetic in their labours to secure it, do not include among their number, men of practical experience in making the most of the material at their disposition, and, being unaware of its importance, fail to secure the services of a qualified person to superintend the arrangements. The consequence is that a few of the early birds secure the most advantageous points for exhibiting their products, to the detriment of those who, through no fault of their own, arrive later ; and frequently unseemly squabbles ensue, resulting in waste of time, dissatisfaction, and an unsuccessful show, so far as an effective display is concerned. But, if the most is made of the time, and a small, but well organised, staff of men be employed under an able superintendent, promoters, exhibitors and visitors alike are satisfied and gratified. And it is for the consideration of those who superintend the staging, whether some advantageous changes might not be made without adding too much to the labours of the usually overworked judges. It is quite unnecessary to dwell upon the blemishes in our shows, not excluding many of those held in the metropolis. Of course so long as the plants, flowers, and fruits exhibited are limited to those in competition for prizes it is out of the question to treat them and arrange them as if they were contributed with the object of making an effective whole. But let somebody with the power and ability introduce some novelty in the hitherto almost unvarying monotony.

— In the *Botanische Zeitung*, Dr. O. DRUDE proposes a MODIFIED CLASSIFICATION OF THE PALMS, the basis of which is the separation of the New and Old World forms, based upon the facts that no species of Palm is indigenous both in America and the Old World ; no genus is common to both worlds, and even the tribes are almost limited by the same laws of distribution. The arrangement is briefly this :—

1. *Calameæ.*—Tropical Africa, Asia up to 30° N. lat., and the Sunda Isles and Australia to 30° S. lat.

2. *Raphieæ.*—Equatorial Africa, Madagascar, Mascarenes, and Polynesia.

3. *Mauritieæ.*—Tropical America, from 10° N. to 15° S. lat.

4. *Borassineæ.*—Africa, Mascarenes, Seychelles, and Western Asia to 30° N. lat.

5. *Cocoineæ.*—America, 23° N. to 34° S. lat.

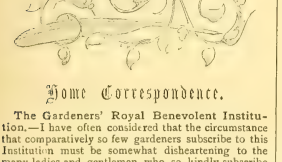
6. *Arecineæ.*—All around the world from 30° N. to 42° S. lat.

7. *Chamædoreineæ.*—America, 25° N. to 20° S. lat. ; Madagascar, Mascarenes, and Seychelles.

8. *Iriarteæ.*—America, from 15° N. to 20° S. lat.

9. *Corypheineæ.*—Asia, to 30° N. lat. ; Sunda Isles, Australia, to 17° S. lat.

10. *Coryphineæ.*—All around the world from 40° N. to 35° S. lat.



Home Correspondence.

The Gardeners' Royal Benevolent Institution.—I have often considered that the circumstance that comparatively so few gardeners subscribe to this Institution must be somewhat disheartening to the many ladies and gentlemen who so kindly subscribe to its funds, and also take a lively interest in its prosperity. It may possibly be worth while to attempt to inquire into the cause or causes of this apparent lethargy on the part of those for whose special benefit the Institution was originally formed, and still continues to exist. I am perfectly aware that among gardeners generally, guineas are things by no means plentiful, but I do not think this circumstance the only or primary cause of this lukewarmness or apparent indifference on the part of gardeners. There are very few mechanics or even agricultural labourers who do not subscribe to a benefit society of some kind, and the sum subscribed seldom, if ever, falls under the amount of one guinea annually, indeed it is oftener considerably more ; so that I can hardly think that among gardeners the inability to spare this sum can be the principal cause of preventing so many from subscribing to the funds of the Institution. I am inclined to think that there is much in Mr. Findlay's letter at p. 147 which requires the serious consideration of all those interested in the prosperity of this excellent institution. I think it very likely that many gardeners may reason with themselves in this way, viz. : "Supposing that I should subscribe to this Institution, and supposing also that at some future time I may be so unfortunate as to need its assistance, I am quite unknown to and can have no influence with any of the influential supporters of the Institution, and I should hardly have the shadow of a chance of being placed upon its funds. So I will content myself with joining the Oddfellows, or the Foresters, &c., as the case may be." Therefore I feel quite inclined to think, with your correspondent, that the system of canvassing should as far as possible be discontinued, as it certainly has the appearance of being unfair towards a portion of the candidates. Before an election takes place the secretary invariably takes care that every subscriber to the funds of the Institution is duly furnished with a list of the names of the proposed candidates, which list also states their respective ages, with the necessary particulars, as regards their circumstances, family ailments, &c., and this to me appears to be quite sufficient as a guide to subscribers who may have no personal knowledge of the candidates to enable them to judiciously dispose of their votes. There is also another circumstance which I think may operate as a preventive to gardeners becoming subscribers, viz., the fruitlessness of the pension itself when obtained ; for it ought to be borne in mind that £16 or £12 per annum would, some twenty-five or thirty years ago, go farther towards furnishing the means of keeping body and soul together than £25 or £20 will do at the present time. For answer to this it may, of course, be said, and very possibly with truth, that the funds of the Institution will not admit of higher pensions being paid, unless the number of pensioners be allowed to diminish. In my opinion, however, even this very undesirable alternative would be preferable to what I cannot help thinking that it would be better that the Institution should support thirty or forty of our aged and deserving, although indigent brethren, in comparative comfort, than to keep double the number merely alive ; at the same time I most sincerely trust that it may never be found necessary to have recourse to this alternative I have alluded to, viz., a reduction in the number of pensioners. And I beg to respectfully call upon my brethren of the spade, and more particularly upon my younger brothers, to show that they possess the essential *esprit de corps*, and put themselves at once in communication with Mr. Cutler, the excellent and indefatigable secretary of the Institution, who will, I am sure, be pleased to receive and to acknowledge their subscriptions, which they will very likely, after all, miss less than they may now suppose. And they will tend in a great measure to enable the Institution in some degree to increase the amount of its pensions, without reducing, but if needful increasing, the number of its pensioners. In conclusion I sincerely trust that every subscriber to the excellent Institution may never, in the slightest degree, require its assistance. *F. Grieve.*

— I can fully indorse the remarks made by Mr. Findlay at p. 147 as to the growing evil of canvassing for votes at the election of pensioners of the Gardeners' Royal Benevolent Institution, especially as regards nurserymen. In some instances it even appears to be degenerating into a trade advertisement. I have had similar remarks to those quoted by Mr. Findlay made to me when recommending gardeners to subscribe, and know those who have withdrawn subscriptions chiefly on that ground. It certainly has become a growing evil, that requires a check. *J. A. P.*

Rainfall at Houghton Hall, Rougham, Norfolk.—I beg to hand you a report of the rainfall for this part of the country during the past year :—January, 1·05 inch ; February, 2·76 ; March, 2·34 ; April, 5·17 ; May, 0·73 ; June 1·78 ; July, 2·90 ; August, 2·38 ; September, 4·18 ; October, 0·58 ; November, 3·25 ; December, 4·34 : total rainfall in the year, 32·36 inches. My rain gauge is a double cylinder (copper), 3 inches in diameter, made by Bryson, of Edinburgh. It is sunk 20 inches in the ground, and stands 1 foot above it. The last three April seems to have exceeded anything I have noticed in the reports published in your columns. *J. Hartnell, Bailiff, Houghton Hall, Norfolk.*

Veitch's Self-Protecting Broccoli. — This is undoubtedly one of the greatest acquisitions to gardeners that has been introduced for many years, and will be sure to find its way into every garden where a winter supply of so valuable a vegetable is desirable, as its season commences when all other autumnal varieties cease. Mr. McIndoe, in his letter of recommendation at p. 83, appears surprised, as well he may be, that no mention had been made of it in your review of the fruits and vegetables of the past year, but to my mind it is very much more surprising how it could have been deemed unworthy of the Royal Horticultural Society's Certificate, which is of infinite more importance, because if "Royal Certificates" mean anything (which undoubtedly they do for those who obtain them), and even, for the sake of supposition, if they are valued only as an honorary award, why should their certificate have been withheld in this instance ? *Richard Westcott, The Gardens, Raby Castle, Darlington.*

The Hardiest Tritoma.—It is, perhaps, worthy of note that while the flower-spikes of the other species of Tritoma (Uvaria media, Uvaria glaucescens, and grandiflora) succumbed to the first frosts and drooped and withered at once, those of Tritoma Rooperi have borne the same low temperature uninjured, and many plants of this species, which have bloomed through the winter, are still showing flower in Messrs. Backhouse & Son's nurseries, at York. T. Rooperi is a dwarf species (from 1½ to 2 feet high), well adapted for positions in groups or borders where the taller kinds might be considered *de trop.* It commences to flower later than T. Uvaria. *Ebor.*

Eucharis amazonica.—The plant of which I send you a photograph is in the possession of R. Hanbury, Esq., Poles, Ware. Much having recently been written about Eucharis, a few remarks upon the plant in question may be interesting. It was at its best on January 8, there being on it at that time forty-four flower-stems, the total number of flowers being 264. This same plant was in full flower on September 1 last : it then produced thirty-six flower-stems, the number of flowers was not then recorded, but the flower-stems at that time were stronger than at the present, many of them being seven and a few eight flowers. This same plant last May produced twenty-five flower stems, and in January, 1876, it produced thirty. Besides flowering three times last year, it flowered three times in 1875, and we hope to obtain similar results during the present year. Thus it will be seen this plant since January, 1876, has produced 135 spikes, and, taking an average of five flowers on a stem (which is quite within the mark), gives a total of 675 flowers. One great point in the cultivation of this lovely flower is to grow a basic crop of leaves quickly and liberally, with an abundance of liquid manure at the root, and plenty of atmospheric moisture. *J. Hill, Poles, Ware.*

Ficus Cooperi.—A plant of this growing under glass in one of the plant-houses in the Dalkeith Nursery has produced thirty small well-set fruits. The plant, growing in an 8-inch pot, is, upon the whole, a very interesting looking evergreen bush, which I take to be the same as I have met with in the jungle on the Malabar coast, Goa territory, East Indies. *Charles Kay, Dalkeith.*

Potatos and Parsnips.—Believing as I do that the Colorado beetle will reach this country, and thinking of the havoc it would probably make in Ireland, I was pleased to see your notice of it in the *Gardeners' Chronicle* of the 3d. I hope the public will see the prudence of planting fewer Potatos, and sowing more Carrots and Parsnips, the value of which, more especially of Parsnips, is very much under-rated. *Richard Walker, Warwick Road, Upper Clapton.*

The Seasons.—In this mild and early season some of your readers may like to have their memories refreshed as to former ones, and to compare them with the present year. I see from my notes that during the last ten years those most like the present one were 1868, 1869, and 1872. In 1868 a mild winter was followed by a forward spring without a check. The last three weeks of January were mild and wet, February fine, March mild and wet, May magnificent ; Walnuts, Spanish Chestnuts, and Ash in full leaf by the end of the month. I had a dish of Strawberries (Black Prince) fully ripe on the 31st. June and July were hot and dry, and the Wheat in this neighbourhood was carried by the end of July ; my Hop-picking was over on September 11 ; a very good fruit year. I cannot recall another year without a check in the spring. In 1869 the winter was very wet, windy, and mild ; but the second week in February Almond trees were in full blossom in London. [They were so at the present time in the S.W. districts. EDS.] In sheltered places near here many Blackthorns were in full bloom by February 16 ; abundance of wild Daffodils here by the 19th ; on February 28 Hyacinths in flower in the open border ; grass grew all the winter, and my lawn had to be mown by the middle of February. March was cold and severe, April fine and warm ; by May 2 Lilacs and Apples were in full blossom, Pears over. May a miserable cold month ; much east wind, yet wet. June very cold. July a splendid month. A good year for common fruits, but hardly any wall fruit. In 1872, from the end of December to the end of February remarkably mild and wet ; wild Daffodils abundant by March 4, and Ribes sanguineum by

March 8. The first half of March fine and dry, then snow. In April a good deal of cold and wet, but still a forward season. By April 10 abundance of Cowslips and Stellaria and some wild Hyacinths were out. By May 5 Lilacs in full flower, Laburnums, Horse Chestnuts and Weigela coming on rapidly, and plenty of grass. May and half June wretchedly cold and wet; the weather improved on June 17, and some very hot weather in July. A very bad fruit year. *William Wickham, Knitsel-Wyck, Alton, Hants.*

—— Wild flowers are following the example of their more cultivated relations, and blossoming early, for I picked in my walk on the 10th a very pretty nosegay of "wildings." The small white Potentilla, the pale yellow Oxlip, a lovely little pale blue Veronica, bright Buttercups, Primroses, and the catkins of the Hazel nut. On the 7th I saw a wasp, and on the 3d a humble-bee enjoying the sunshine; so insects, like the birds, are evidently under the impression that spring has come. *Helen E. Watney.*

Melianthus major.—To show the mildness of the past winter I have now a specimen of the Melianthus major, between 3 and 4 feet high, coming into bloom. This plant has been out several seasons, but usually dies down every winter and shoots again in the spring. This year it has kept on growing without any cessation. I cut two blooms of the Magnolia grandiflora the middle of last month, and the trees continue in bloom now. *S. Hanbury, Bishopstowe, Torquay.*

Garden Walks.—I should be much obliged to any of your readers if they would kindly tell me the best way of making garden walks. The gravel in this country is bad, full of clay, and the gravel walks consequently are covered with weeds and moss. I fear that the asphalte walks, made of a mixture of tar and sea sand, would look black and like the paths in the Black Country, which are very unsightly. Again, I have been advised to put down a lime and sand walk, made in the same manner as a cottage floor, but doubt much whether this would answer out-of-doors. I should be extremely grateful for advice from any one who has practically tried it, whether it is possible to combine tar and sand or gravel, so as to make a perfectly hard and lasting walk, and yet not present that dismal appearance which is generally has, giving also an estimate of the expense per square yard. I may add that I can get here any quantity of sea-sand of a beautiful colour. *Paulet M. Compton, Mapperton House, Beaminster.*

Fertilisation of Plants.—In Mr. Henslow's very interesting paper on the above subject, at p. 139, when alluding to Pelargonium zonale, he mentions the circumstance of my having influenced the colour of the flowers, as well as the foliage of Geranium pratense by using the pollen of various Zonal Pelargoniums, and says, "It would have been a desideratum to know what, if any, effect was produced by the crossing on the zones, but nothing is said about it." I may have, however, state that in the experiments alluded to, no indications of the transmission of zones to the leaves of the seedling Geraniums could be perceived, although this was anxiously watched for, and its appearance would have been regarded as an assurance that the cross had been effectual. There were, however, the change of colour in the flowers of many of the plants, as well as the condition of variegation in the leaves of several of them, to lead to this belief, and although the variegation gradually disappeared as the season advanced, the plants have nevertheless been preserved in order to ascertain if the marking will again appear in the newly-produced foliage. I think I have already stated in a former communication on this subject, that the experiment was also reversed, that is, the Geranium pollen was used to fertilise blooms of Zonal Pelargoniums, and hopes were entertained that some change may also be induced in the colour of their flowers. Should this be found to be the case, the circumstance will in due time be made known. *P. Grieve.*

Royal Horticultural Society.—In a leading article on the fortunes of the Horticultural Society of London my name is mentioned as that of one of those who "have been with scant ceremony dismissed from their offices on account of insufficient funds." However little cause the Society may have to applaud itself for some of its misdeeds of this kind, I think it only fair to say that its conscience has nothing to accuse itself of as far as I am concerned; but, as a matter of fact, long after other sacrifices became necessary, the Council retained me in the employment of the Society, and I only abandoned it because, on receiving the appointment of Assistant Director of the Royal Gardens, I was pledged to give my whole time to the Government service, and had, therefore, no choice in the matter. I have little desire to plunge into the sterile field of horticultural politics, but I cannot refrain from saying that it seems impossible not to view with regret and dismay the new aspect which the affairs of the Horticultural Society have taken. Once again its face is turned from what is useful and honourable to what, in the opinion of sane people, must seem useless and foolish. To make Chiswick stand to horticulture as Kew does to scientific botany was a laudable, and in the present state of horticultural activity a perfectly feasible programme. But that a great society in its last stage of decay should consume itself in the wearisome attempt to maintain what I may but uninteresting garden in the summer lounge of a fashionable quarter, and should be complacently satisfied with the imperfect achievement of its undignified task, is most deplorable. *W. T. Thiselton Dyer.*

—— As a lover of horticulture, and a twenty-guinea compounder, I feel a great interest in the future of our Society, and attended the annual meeting on Tuesday. I was much surprised at the very limited attendance of the Fellows, and the utter absence of any practical suggestions by those present. It appeared to me, from the address of the noble Lord in the chair, that the main obstacle to the resuscitation of the Society consists in the claims of the debenture-holders and the vacillation of the Council as to the recognition or otherwise of such claims. Now, the debenture-holders either have a legal claim or they have not. If they have, the country of law are as much bound to see as to any other class of Her Majesty's subjects who may happen to have made unprofitable investments; while if their claims are of a moral or sentimental nature, and they are in distressed circumstances, doubtless a subscription among their many wealthy friends in the neighbourhood of the inauguration of the Palace would loudly against the future welfare, or perhaps the very existence of our useful Society being any longer endangered by the hesitating policy of a Council whose sympathy with the unfortunate debenture-holders appears to culminate in the hope that somebody else will relieve them. *A Twenty-Guinea Fellow.*

—— My attention having been called to the paragraph in your last number in which you speak of the "dismissed with scant ceremony," by the Royal Horticultural Society, of Professor Dyer, Rev. M. J. Berkeley, and others, I cannot refrain from expressing my astonishment at your receiving circulation to a statement which, as regards the first-named gentleman, is absolutely the reverse of the fact. As regards Mr. Berkeley the simple fact is the Council were most reluctantly, and, with his full concurrence in the necessity of the measure, compelled to deprive the Society of his services on the same reasons that forced the Council to take this step necessitated certain other reductions in the establishment, and nothing was or could be further from their intention in doing so than to act with any want of courtesy towards those with whose services they were obliged to dispense. *Robert Hogg, Journal Horticultural Society.* [We regret the error into which we fell with reference to Professor Dyer. As to the "scant ceremony" in the other cases no doubt it was unintentional, but it was none the less unfortunate. EDS.]

Curmeria Wallisii, Mast.—I was much pleased to find in the *Gardeners' Chronicle* of January 27 a figure and description of this fine new foliage plant, of which Mr. Wallis spoke very highly in his letters to me, specially pointing out the fine variegation and the neat dwarf and compact habit, which made it far superior to C. Roezlii. The dried specimens he sent me I handed over to Dr. Regel, who described them in the *Gartenflora*, October, 1876, under the name of Homalomena Wallisii. Dr. Regel does not recognise Curmeria as a good genus, not being sufficiently distinct from Homalomena in his opinion. Dr. Masters, in describing the same plant, was without doubt not aware of this fact. *E. Ortgies, Botanic Garden, Zurich.* [We are greatly obliged to our correspondent for indicating the prior publication of Curmeria Wallisii, of which we were, of course, unaware; but we believe the genus Curmeria is quite distinct from Homalomena—not, as usually written, Homalonema—of which latter we intend to give a figure shortly. EDS.]

The Clive House Seedling Grape.—I should not have taken the least notice of the above, had my name not been dragged in amongst the misstatements of Mr. Bell in the *Gardeners' Chronicle* of last week. I can only say that I corroborate every word that my friend Mr. Bowie said about this Grape in your issue of January 20. Mr. Bowie knew the Grape for years before I ever saw it; and if seedling Vines had ever been brought to this place, they were never seen or heard of by any one here as far back as I can trace. I have ample proofs that the Grape was raised by Mr. William Caseley in this garden some twenty years ago, and it has been grown and fruited here ever since. How it can now turn out to be a new Grape and a Clive House Seedling are problems I leave for the horticultural public to solve. The other Grape alluded to by Mr. Bell did not secure the same honours that his adopted child did from the Fruit Committee of the Royal Horticultural Society, was simply because it was thought by some of the committee that the flavour came too near the Muscat flavour of that excellent Grape, Mrs. Pince's Black Muscat, to be distinct. As Mr. Bowie has stated the plain facts connected with this valuable late Grape, I shall take no further notice of the subject, whatever other fallacious statements may appear. *Alexander Ingram, The Gardens, Alnwick Castle.*

—— So thoroughly convinced am I of the truth of what I previously stated in the *Gardeners' Chronicle* about this Grape, that I intend next year, having no interest to serve in this matter further than I there mentioned. For somewhat more than forty years I have been in the habit of paying a visit to the gardens at Alnwick Castle more than once every season, and by the different gardeners employed there during that time I have had every facility afforded me for seeing all that was considered worthy of notice. I distinctly remember having the seedling Grapes, which at that time were such in reality (and of which that in question is one), pointed out to me. I afterwards frequently examined them, and when they began producing fruit I had much pleasure in tasting and comparing it with that of other Vines. Nor, so far as I remember, have I ever heard the Grape called by any other name there than Caseley's Seedling, and that not only during the last summer, as Mr. Bell asserts, but for many years previously. Mr. Bell knows the conditions with which he promised to comply when he obtained the Grape from Alnwick Castle, but which he has now broken; and I am sorry that poor old Mr. Baillie should in his declining years have allowed himself to be made the scapegoat of Mr. Bell in this transaction. *Robert Brame, The Gardens, Chillingham Castle.* [As the Fruit Committee has had this subject under consideration, and has, moreover, cancelled the name, it would serve no useful purpose to continue this discussion. EDS.]

Effects of the Mild Weather.—Will you allow me to say that I have for many years taken great pains to note the difference between a mild winter and a severe one. All my experience goes to show that mild winters are generally followed by late springs, and often by fruitful seasons. Although we have in our hedgerows Elder, Honeysuckle, and a few other plants, showing signs of forward vegetation, yet this does not necessarily foretell an early spring, for these very early leafing shrubs and flowers generally come early, especially when we have had an early hard winter, followed by a mild February, such as we are having at present. The fact is, tree vegetation is much behind what it was at this time last year, and the Pear blossom-buds are much behind their usual state of development. The Angora Pear is the earliest leafing tree that I know, after the Elder and Honeysuckle, and it was in full leaf in February last year. I have examined it to-day, and see no appearance of its foliage being put forth. The heads of Elm and other trees are thickening, and showing signs of moving on, but this is always the case early in the season. Tree vegetation generally begins about the middle of December, before the sun has entered Aquarius; consequently their buds have made considerable progress some time before the sun has entered the ram. I mention this early development to show that it has nothing to do with the mildness of the season, but is an effect of a change in the magnetical current, which appears to me to take place prior to the sun's return to perihelion on December 31. But I am not philosopher enough as yet to give a reason why the magnetical current should precede the sun, supposing it does so, as indicated by the growth of trees commencing, as I said above, early in December, or at least about the middle of it. Some of your more learned correspondents may be better able to elucidate this interesting matter. *John Scott, Merriott.*

Scott's Wasp Destroyer.—I have seen nothing so effectual for destroying wasps as this mixture, which is also the best thing for destroying their nests that I have ever used. We have four large vineries here, and last summer the wasps were very troublesome in the garden, but by applying the wasp destroying mixture two or three times our Grapes were not in the least hurt. It is a boon to gardeners, and no one who has Grapes to grow should be without a bottle of it. It is very simple, and may be used by a lady or gentleman as easily as by the gardener. *H. Farr, Foreman, Syston Park.*

The Colorado Abies Menziesii.—This tree, which was mentioned in your columns at p. 48 as one of the most charming of all the Spruces, and specially remarkable for the bright blue glaucous hue of the entire plant, is without any doubt the same as one of which Mr. B Roezl collected a great quantity of seeds in the Colorado Mountains in the autumn of 1874, together with seeds of the most beautiful Picea concolor, Picea bifolia, Pinus aristata, &c. Mr. Roezl spoke very highly of the decorative value of this Spruce, the foliage glittering like silver in the sun, and said it ought to be called Silver Spruce, and when once fairly known would become a great favourite.

He also took it for a variety of Abies Menziesii, but said that it never made such tall trees, and had a much better, much more compact habit. With the seeds he sent me also branches and cones; on comparison I found it to be the Abies commutata of Prof. Parlatore (Abies Engelmanni, Parry), and therefore adopted this name in distributing these seeds, which were of excellent quality. No doubt there must be now a great quautity of 2-year seedlings in the principal nurseries on the Continent and in England, where Messrs. F. Sander & Co. were entrusted with their sale. Those nurserymen who bought of these seeds will be glad to learn no doubt that their stock of small Abies commutata is the very same thing as the new Fir in the garden of Professor C. S. Sargent, at Brookline, near Boston, and will take all the better care of their little seedlings. *E. Ortgies, Botanic Garden, Zurich.*

Ancient Resuscitated Yew at Bettws Newydd.—The gigantic old Yew, of which the base is here illustrated (fig. 36), is one of two now growing in the churchyard of Bettws Newydd, between Abergavenny and Usk in Monmonthshire. The original sketch was made by the writer last autumn during the meeting of the Cambrian Association in Monmouthshire. Together great Yews at Bettws Newydd are considered remarkably large even in this district, where Yews of great size are common. The tree illustrated is 30 feet 6 inches in circumference at 5 feet from the ground, and is not only remarkable on account of its great size, but for its singular regrowth or resuscitation from within. The internal stem was probably at first an adventitious descending root, now it is a columnar stem of great size, which serves to support and feed the battered and time-riven old shell. Many descriptions of resuscitated trees will be found in the back volumes of the *Gardeners' Chronicle*, one of the best being by the late Mr. J. T. Moggridge, in the volume for 1870, p. 1248. *W. G. S.*

Cæsalpinia brevifolia.—Will you allow me to reply to your remarks at p. 151, on the native names for the Cæsalpinia brevifolia, or Balsamocarpon, Algarroba, &c. I had a drawing of the plant made, and sent copies of it to many parts of South America. From the gentlemen who replied and forwarded the real pods with the native names, I selected for my pamphlet the two most frequently employed. I might have given many others, but although I described what was wanted, I had pods sent me home of other plants which weighed 4 or 5 oz each. These were also known as Algarroba. The best known Algaroba is the Ceratonia Siliqua, or Locust Bean, on which the Spaniards feed their cattle. Balsamocarpon is the name the Government of Chili employed at the Vienna Exhibition to describe this gum. From the seed sent to India, Ceylon, and Australia, I hope soon to hear of a good result, although it is a difficult shrub to propagate. If any of your readers can assist in getting a further supply of this seed, it will be gladly welcomed, as my small stock of a few pounds is exhausted. *Thos. Christy, Jun.*

Mushroom Culture.—In your issue of Jan. 27 you give an account of a Mushroom-bed producing an extraordinary crop of very fine Mushrooms, as exhibited at South Kensington, and for the benefit of the readers of the *Gardeners' Chronicle* you also give Mr. Hepper's method of making, spawning, and subsequent working of the bed. I confess I am somewhat alarmed, and most certainly should hesitate before adopting the treatment set forth at p. 115. Apart from having serious doubts as to the manure getting a great deal too hot, and in a measure destroying the spawn, what strikes me most forcibly with fear is the very high temperature (90°) which is maintained in the house for a period of "three weeks." I certainly never heard of a Mushroom-house being kept at such a high temperature before, and I can well imagine what the Mushrooms would be like in No. 1 bed when No. 2 was put to work, in fact I should decidedly say there would not be any. What with cutting Asparagus in three days after the placing of the crowns in heat, and growing Mushrooms in a temperature of 90°, 1877 certainly, so far, abounds in horticultural wonders. I had the privilege a short time since of seeing a remarkably fine crop of Mushrooms in the garden of H. Bramwell, Esq., Crown East Court, Worcester, which far surpasses anything I ever saw before; these were grown in an arched cellar underneath a range of early and forced vineries. There is no piping or flue in the place, and Mr. Helman, the head gardener, informed me it was not necessary, the temperature of the house being very steady at about 58°. The beds were of the usual form, and made on the paved floor, corresponding in depth with those usually seen, but the Mushrooms were decidedly the best I ever saw. The spawn, I was told, was supplied by Messrs. Francis & Arthur Dickson & Sons, 106, Eastgate Street, Chester, and they have just cause to be proud of its excellent quality. *W. C.*

Bedding Lobelias.—I am in possession of a variety named Emperor William, which for brilliancy of colour and compactness of habit surpasses any that I have ever grown or even seen. I am unable to give its history beyond the fact that it was raised by a Harrow gardener, and three years ago obtained a First-class Certificate. I have grown it two years, and it has been an object of admiration to every one who has seen it. Should Mr. Shrives (p. 251) like to try it, I shall have great pleasure in sending him a batch of cuttings. *P. Davidson, Stanmore Park, Great Stanmore.*

—— No bedding Lobelia of recent introduction has proved more useful and permanent in character than the semi-pumila Blue Beauty. This variety has flowers the size and colour of speciosa—not a purple tint, but the bluest of blue Lobelias—allied to the habit of pumila, but of a more robust growth. The plant forms an almost flat head of flower from the first, and maintains this desirable habit all through the season. It is a first favourite at the Crystal Palace, the Royal Horticultural Gardens, and at Heckfield, and in many other of the best flower gardens. I believe that Blue Beauty has not yet received the honour of a First-class Certificate at South Kensington, but that can scarcely derogate from its value, as some Lobelias that have recently received that honour there have never been seen in such good form since. The Lobelia is so entirely a bedding plant that it is somewhat strange the Floral Committee should grant certificates to any kind until they have been tested as bedding-out plants at Chiswick for a season; Violas and Pansies have to undergo that ordeal, and why not Lobelias? For the past year or two the beds there have been too unreservedly placed at the disposal of the Pelargonium Society as a trial garden for the seedlings of its members, but all the Fellows are not affected with the scarlet fever, and therefore may well be desirous to see some space given to other plants quite as useful and not less meritorious than bedding Pelargoniums. It should be the aim of the Council to make the Chiswick garden as practical as possible, relegating the mere decorative element to its proper place. *A.*

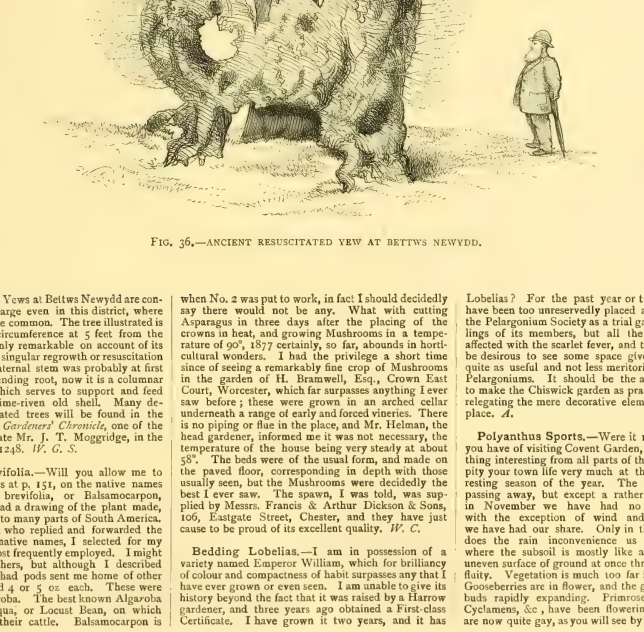


FIG. 36.—ANCIENT RESUSCITATED YEW AT BETTWS NEWYDD.

Polyanthus Sports.—Were it not for the facility you have of visiting Covent Garden, and seeing everything interesting from all parts of the world, I should pity your town life very much at this the most interesting season of the year. The winter is rapidly passing away, but except a rather sharp frost early in November we have had no winter weather, with the exception of wind and rain, of which we have had our share. Only in the delay of work does the rain inconvenience us in this county, where the subsoil is mostly like a riddle, and the uneven surface of ground at once throws off all superfluity. Vegetation is much too far in advance. The Gooseberries are in flower, and the generality of fruit buds rapidly expanding. Primroses, Polyanthuses, Cyclamens, &c, have been flowering all winter, and are now quite gay, as you will see by the few I enclose.

My principal object in sending is to call your attention to some singular sports raised from one or two varieties of the older bracteate forms of Polyanthus, to show you to what extent they perpetuate themselves, and throw off others even more grotesque than themselves; and, still more strange, to sport back, not only to the normal form, but to produce some really good coloured Polyanthus forms. I send you a sight of the old blue Polyanthus, which equally produces single or compound flowers. I also send you the nearest approach to a double Cyclamen I have seen; this variety of ibericum is quite constant, but I have not yet been able to advance beyond this. *J. Tyerman, Tregoner, Cornwall, February.* [The rich and varied bouquet above referred to included :—1. Two fine varieties of white Primrose, found wild in the woods near Tregoney, and which usually flower some weeks before the common sort. 2. Seedlings flowered for the first time, and likely to be useful for spring decoration ; a maroon-crimson variety is very rich. 3. Seedlings from bracteate varieties, showing how greatly they vary ; later on they will be more interesting ; quite one-half of those at present blooming show the monstrous form. 4. A gold-laced Polyanthus, which invariably produces solitary flowers, like the Primrose. 5. A double-flowered Cyclamen ibericum ; this, having a short-petaled species, looks much better in the duplicated form than does C. persicum. EDS.]

Skimmia japonica.—The above plant, when well grown in large pots or tubs, is one of the most hardy and ornamental berried shrubs in cultivation. From its low-spreading habit it can be trained into a nice bushy form, and in the winter months, when covered with coral berries, it is not a bad substitute for the more popular Holly. Owing to the scarcity of Holly berries last year my plants of the Skimmia in pots have been much noticed this winter, and I have had no end of applications for sprigs of them covered with berries, and some for berries for sowing. I find that the Skimmia, when grown in pots, does best in a light loamy soil, mixed with a little peat or leaf soil, and as it flowers early in the spring, a little protection is required in severe spring frosts to insure a full crop of berries. *William Tillery.*

An Early-blooming Ornithogalum.—During the past week I have noticed some plants of a very dwarf species of Ornithogalum in bloom in the nurseries of Messrs. Backhouse & Son, at York. It appears to be a stemless species, the umbel of flowers springing from amid the leaves, and rising to a height of about 1½ inch, while the individual flowers are fully 2 inches across, with very narrow petals. I understand it was received under the name of O. sororum, but I have not been able to ascertain anything about its origin. *Ebor.*

Mr. R. S. Yates' Nursery at Sale, Cheshire. —All lovers of plants who have paid Mr. Yates a visit during the last twenty years (and their name is legion) will remember the grand plants of Cœlogyne cristata in the houses at Sale. I have seen them on several occasions, but never saw them in such fine condition as at the present time. They are marvels of culture, and in a most perfect state of health. There can be no doubt that this is the most beautiful and useful of the genus ; and the reason why all who grow the plant are not so successful as Mr. Yates is because they do not adopt the same simple means, for it ought to be remembered that there are Cœlogynes and Cœlogynes. For instance, C. Gardneriana is found on trees in moist, shady woods—its favourite locality is in the immediate vicinity of a waterfall, whilst C. cristata is found growing on rocks exposed to the full glare of light. Imagine (if you can) a mass of this plant, 4 or 5 feet in diameter, with 150 spikes of large blossoms, pure white, with the exception of the centre of the labellum, which has bright yellow fringes and plaits, the blossoms 4 inches in diameter, and four and five flowers on a spike. This is what I saw at the above gardens the other day ; and there is also in the same house a large quantity of another equally charming flower, about 200 spikes of bloom being open. I refer to the lovely Lælia anceps : the rich rosy lilac colour of these flowers is really splendid, and I know of no two white flowering Orchids more beautiful than these ; and I feel sure that Mr. Yates' collection of these two gems are the finest to be seen in the country. There are hosts of other things one might mention, but I merely draw attention to the above-named, inasmuch as I consider the quantity and quality extraordinary. *Bruce findlay.*

Omphalodes verna.—*Apropos* of the association of Omphalodes verna with double white Primroses, alluded to at p. 50, permit me to mention something similar which I have observed on one of the banks flanking the noble rockwork of Messrs. Backhouse & Son, York. The upper part of this bank is covered with Omphalodes verna, which has spread itself, in wild fashion, over an area of some yards in extent, and, in the course of the spring, when the plants are well in flower, and the entire surface is one sheet of brilliant blue, numerous random plants of the common Wood Anemone (A. nemorosa) crop up in bloom here and there through the carpet of Omphalodes, with charming effect, the pure white of the Anemones coming out in strong relief on the deep blue of the Omphalodes. In addition to this, on the brow of the bank, immediately under the expanse of Omphalodes, are broad patches of Myosotis dissitiflora, while, lower down still, the base of the bank is covered with a sheet of Chrysosplenium alternifolium, the numerous yellow flowers of which, lying closely down upon, and contrasted with its dark green foliage, when seen in mass have a peculiarly rich appearance. When these plants are all in bloom together, the effect is indescribably fine ; and, although it is simply the result of the natural growth and spreading of the plants for some years, I do not remember to have seen anything to be at all compared to it, in the most elaborate attempts at "bedding" or premeditated arrangement which have come under my notice. *Ebor.*

West's Patent Trellis.—Whether the above is a patent or not, I beg to state that a trellis in every respect similar, according to your description and illustration, for which it may be lowered by means of chains, instead of by "turning a handle," was erected here about fourteen years ago, two years before I took charge ; but its use was discontinued after the first trial. The worst objection to it, however, was that to let the trellis down to within reach of a man 6 feet high it required to be some 2 or 3 feet shorter than the rafters, thereby entailing a loss of training space equal to about 150 square feet in our lean-to vinery 50 feet long, or nearly 1 cwt. of Grapes in the season, which we thought would more than compensate for the extra trouble of using garden lines, and time, if that can be reckoned of any account. It will be seen by the drawing in last week's *Gardeners' Chronicle* that the trellis has to be shortened half the length of the "hip-rafter" at the back in order to leave room for it to descend. Another objection to it, especially in the case of stove climbers, is that the tendrils lay hold of the permanent fixtures of the roof if the plants are left undisturbed for a short time, and then the trellis won't work. A Vine tendril, once it gets woody, will carry a stone weight. The vinery in question here was designed by Ormson, of London, if I remember rightly, and was erected by our own joiners. *J. Simpson, Wortley Hall, Sheffield.*

Reports of Societies.

Royal Horticultural.—Last Tuesday the annual general meeting of this Society was held in the Council-room, South Kensington, under the chairmanship of the President, Lord Aberdare. At the Council-table were the following members :—Lord Alfred S. Churchill, Major Mason, Dr. Denny, Mr. Henry Webb (Treasurer), Dr. R. Hogg (Secretary), Mr. William Haughton, Mr. Kellock, and Mr. Campion. Amongst others there were present the rev. C. Bates, Messrs. Bateman, Bull, C.B., Dr. Masters, D. Wooster, Guedalla, Shirley Hibberd, De Castro, Godson, sen., G. F. Wilson, J. Lee, A. Grote, B. S. Williams, Maurice Young, H. J. Elwes, H. Veitch, Liggins, G. T. Saul, J. Fraser, Tweedy, &c.

The Assistant-Secretary, Mr. DICK, having read the minutes of the last meeting, which were confirmed, and scrutineers for the ballot of the Council and officers having been appointed in the persons of Messrs. Veitch and Lee, the report, as follows, was taken as read :—

REPORT OF THE COUNCIL TO THE ANNUAL GENERAL MEETING, ON FEBRUARY 13, 1877.

Notwithstanding the many disadvantages with which the Council have had to contend, they have the satisfaction of congratulating the Society on the progress that has been made during the past year in the advancement of scientific and practical horticulture.

At no time in the history of the Society has greater interest been manifested in this pursuit, both commercially and as an intellectual recreation ; and the operations of the Society have been directed not only to promote and encourage, but to anticipate the growing taste for horticulture by providing for it as it developed.

The Scientific, the Fruit and the Floral Committees have met during the year without intermission, and worked assiduously at their respective branches ; and under their superintendence and direction much valuable work has been done in the garden at Chiswick as well as at the meetings at South Kensington.

The meetings of the Scientific Committee have been well attended, and the most interesting facts in the morphology and physiology of plants, as well as in the branches of teratology and pathology, have from time to time been brought before the meetings, and the investigations of the entomological department, with reference to the injuries produced by insects on plants, have been of the greatest importance. Mr. Smith's observations on the resting-spores of the Peronospora, referred to in last year's report, were on several occasions fully confirmed, while the facts afforded by the late lamented Mr. Smee's very numerous microscopical preparations of the oospores *in situ*, tended greatly to confirm the accuracy of Mr. Smith's researches, while his discovery of resting-spores in the Phytophora Solani, a fungus which is sometimes almost as destructive as the Peronospora, demands especial attention. Amongst other matters, the grafting of a dwarf Sunflower on the Jerusalem Artichoke, and that of different species of Solanum one on another, as effected by Mr. Maule, of Bristol, though requiring confirmation, were of high interest ; while Dr. Hogg's attempt of a classification of Apples was brought before the committee and favourably received, its secretary bearing ample testimony to its usefulness, and to the credit which its operations ought to confer on the Horticultural Society.

The Fruit Committee has also been engaged in doing good work in its department, and the reports of the experiments that were conducted at Chiswick under its superintendence will be found in the part of the Society's *Journal* which has recently been issued. These consist of elaborate trials of 214 varieties of vegetables. Besides the reports that are already published there are others in preparation which will treat on 150 varieties of Strawberries.

The large collection of cordon-trained Cherry trees, covering the west wall of the garden at Chiswick, fruited last season for the first time, and of these many notes were taken, by which it will form the basis of a report. This is the most complete collection of Cherries that can be obtained, and consists of some hundreds of varieties, all of which will be proved as to their adaptability to the climate and their uses in this country. The cordon-trained Peaches on the south wall show a great promise of fruit for the present year, which will enable the Fruit Committee to compare them with one another, to ascertain their merits, and to name them accurately. The crop of Peaches in the large orchard-house was most satisfactory, as well as that of the Vines in the large conservatory.

The distributions among the Fellows in this department were 3851 packets of cuttings of fruit trees.

The work of the floral department has been by no means unimportant from a practical point of view. The most useful of the observations made during the past year have been those relating to the double-flowered Zonal Pelargoniums—a class which had rapidly increased in numbers, and of which it was highly desirable that a knowledge of the best sorts should be obtained. This has now in great measure been secured, as will be seen by a reference to the report in the recently issued number of the *Journal* of the Society.

Some modification has also been made in the mode of testing the merits of the new varieties of Zonal Pelargoniums, of which an extensive series has, thanks to the raisers and growers of these plants, been annually brought together at Chiswick for a considerable period. Instead of bedding-out all the novelties the first year, as has hitherto been done, the Floral Committee thought it would be more desirable to grow the new sorts for the first year under glass, in order to test their suitability for pot culture, and the second year, when better established plants would as a rule be attainable, in the open air, in order to ascertain their adaptability for bedding purposes. This has accordingly been done, and it is proposed to follow the same plan in future.

The actual trial collections consisted of 165 varieties of double Pelargoniums, thirty-nine cases of Fly-leaved Pelargoniums, and 182 sorts of new Zonal Pelargoniums. For the opportunity of procuring these very complete collections of Pelargoniums, the Council were indebted to the Pelargonium Committee.

The distributions in this department to Fellows have been 2900 plants of various kinds, 1600 packets of cuttings, and 20,000 packets of seeds. It has been found that the distribution of plants gives much greater satisfaction to Fellows than the former mode of balloting for them.

A valuable mixed collection of ornamental hardy herbaceous plants has been formed, and arrangements have been made for making beds of the florist's flowers, such as Ranunculus, Anemones, Carnations, Picotees, Auriculas, &c.

The number of plants that was supplied from Chiswick for the decoration of the conservatory and gardens at South Kensington was 47,872 up to July 18, when the supply was discontinued ; and the estimated value of those is £901 7*s*.

The state of the subscription list has not as yet been such as to justify the Council in issuing the usual schedules of flower shows, but they hope that it will ere long enable them to do so on a scale creditable to the Society. Although the great shows are suspended, under unusually favourable circumstances, attended with considerable loss, the Council, having regard to the general feeling of the Fellows in favour of these shows, and their practical use in popularising horticulture, have decided to continue them in as efficient a manner as the funds at their command will permit. The provincial shows stand on a more favourable footing, and the Council have now under consideration where and when the next shall be held.

The Council will continue to encourage the fortnightly meetings which form so great an attraction to all lovers of flowers, fruit and horticulture generally. At these meetings may be seen all the novelties that have been collected by commercial or private enterprise from every part of the world, and also many of not less interest which art has produced in our gardens at home. The large attendances of Fellows and their friends that are usually seen at these meetings are an evidence of the interest that is taken in this part of the Society's work. To make these meetings even more attractive it is

intended to try the experiment of holding them in the conservatory, and to have a military band in attendance.

Through the liberality of many of the exhibitors and some distinguished amateurs, Fellows of the Society, who have from a spirit of devotion to horticultural science supported it at great personal expense, the Council were enabled in July and November of last year to present two as grand exhibitions as have ever been seen in the gardens at South Kensington, and they have reason to believe that it is in contemplation to act in the same liberal manner some time during the present season.

The agreement entered into with Her Majesty's Commissioners in April last authorised the Royal Horticultural Society to borrow £7000 upon their guaranty of repayment, in event of the cessation of the gardens. The Council have borrowed upon this security £5000, which enabled them to pay outstanding liabilities, prizes and medals; so that on December 31 last the Society had a balance in hand more than sufficient to pay all their outstanding liabilities. The Society may be said to have commenced this year without debt or liability (except that attaching to surplus income in respect of debentures), which has not been the case for very many years past.

On the other hand, the Council have to regret that the receipts of the gardens have not proved sufficient to pay the interest on the debentures.

The strictest economy has been exercised—salaries and outgoings have been reduced by about £1000 a year, and towards the close of last season it was thought advisable to reduce the expenditure still further, by closing the entrance from the west side of the gardens. This has, however, been re-opened, and will so continue as long as funds will admit.

The Council have, in their circular of December 21, 1876, so fully addressed the Fellows on their position with reference both to Her Majesty's Commissioners and the debenture-holders, that they deem it to be unnecessary to return to the subject, more especially as that position remains unchanged. They content themselves with reminding the Fellows that, while their connection with South Kensington subsists, they are bound to do their utmost to obtain an income sufficient for the discharge of these contract obligations, viz., the maintenance of the gardens, the payment of interest on debentures, and the payments of rent to the Royal Commissioners. In spite of all their efforts their receipts during last year have sufficed for none of these purposes. Not only did the debenture-holders and the Commissioners remain altogether unpaid, but the Council were obliged, by a necessary regard for economy, to make an inadequate provision for the maintenance of the gardens and their enjoyment by the Fellows. It appears to the Council, and they trust that in this view they will be supported by the Society, that, unless sufficient funds are forthcoming for the fulfilment of their obligations, a proper regard for the dignity no less than for the scientific interests of the Society, dictates the earliest possible retreat from a connection which was entered into with so much hopefulness and with such fair prospects of enlarged utility.

The PRESIDENT said no doubt they had all read with satisfaction the statement in the report of the actual work done towards the advancement of the science of horticulture, and he drew special attention to that because the Council, like the rest of the Fellows, had read the disparaging remarks which had appeared from time to time as to the proceedings of the Society. No doubt the unfortunate circumstances which had been the subject of so much conversation in that room had had to some extent a prejudicial effect upon the working of the Society. It was undoubtedly true that a large portion of the funds which might have been devoted to the advancement of horticultural science had been necessarily applied to the maintenance of the gardens at South Kensington. It was also true that the *Journal* of the proceedings of the Society, which had been read with the utmost possible interest by all who were attached to horticultural science, had been discontinued. There was no question that the connection of the Society with the South Kensington Gardens under the modern phase which had unfortunately existed during the last two or three years had been prejudicial to the interests of the Society. The subject had been made the matter of very unjust comment in consequence of that union with South Kensington. It was not for him to defend it; it had been proposed by the Prince Consort many years ago, and advocated by him on the one hand, and by Dr. Lindley and the most earnest supporters of the Society on the other. There had been then a hope that the effect of this union would be to popularise science to a very great extent. But he could not say that, in his opinion, this anticipation had been realised, and he doubted whether the anticipations entertained at that time were even realised at the time when the Society was most prosperous, because their prosperity meant the enrolling of a large number of subscribers from South Kensington to enjoy the pleasure and advantages of these gardens. But when they read that 47,000 plants a year had been brought from Chiswick to these gardens [and he might have added the published reports of experimental trials], it could not be said that the scientific portion of the work had been neglected. Well, they must all feel that having entered into this union it was not possible lightly or easily to withdraw from it. In the first place it was absolutely necessary that they, as men of honour and principle, should do their utmost to give effect to the intentions of those who brought about that union. Even supposing there was a failure of the object which had been in view, they had still a sense of honour left towards those who had advanced large sums of money in the hope of the project becoming prosperous. There were some persons who had advanced a sum, in round numbers, of £50,000, and there were also the holders of life tickets, who had paid down their money on the faith of the undertaking; so that while there was a vestige of hope left it was the duty of the Council to do their best to advance the prospects of the Society, and to secure the interests of the debenture-holders and the holders of life tickets. Well, they were all aware of the results of all that had been done. They were under a special interposed lease for three years, during which time the Royal Horticultural Society could not be extinguished. If at the end of the three years the annual sum in subscriptions of £10,000 were not realised, the Commissioners would be in a position to extinguish the Society.

Mr. WM. HAUGHTON (Council), interposing, said that the condition was, that if the amount for one year was under £10,000 —

The PRESIDENT: In any case we must show that we have brought up the subscriptions to £10,000. All that we received from all sources last year was £5800, and therefore you can judge for yourselves what an amount of effort must be made to secure the sum which it is proposed we must raise. No doubt it may be that the attempting the absorption of the gardens by the Commissioners may lead to increased efforts, and may lead, as we and all the Fellows desire, to the promotion of real benefit both to Chiswick and South Kensington. If that be not so, you must see that it is utterly impossible for the Society to go on in its present position. I ask, can we remain as tenants, bound to pay £2500 a-year which we cannot pay? Again, of what use is it for us, who have a burthern of £2000 a-year, which ought to be paid to the debenture-holders, to remain here, when during the past year we were equally unable to keep up the gardens in proper condition, and when we were obliged to close all the entrances but one? I think you will feel with me and with the Council that is not a befitting position for this Society to occupy. You will agree with me that it is not right that this Society should be constantly exposed to the charge that they are endeavouring to keep up a position which they are unable to maintain. Even in an ordinary life finds that he is spending more than his income, it is his duty to make his income and expenditure balance, and to give up every source of unnecessary expenditure. It is equally the duty of this Society to endeavour to square its expenditure and receipts by preventing itself from trying to support gardens like these, for which an adequate income is not provided. Ladies and gentlemen, I have stated before, and I am glad to state it again, that having by the assistance of the Commissioners relieved this Society from a state of bankruptcy, I think it my duty to do my best to keep from incurring fresh debt. You will bear in mind that during the next two years we shall not be, I am sorry to say, able to keep up the present gardens in their former condition; we shall be obliged, I am sorry to say, to refrain from doing many things we should much like to do for the extension of horticulture; but I think one great object we should keep in view during the two years is, that your Society should not suffer any discredit by entering into pecuniary liabilities it cannot meet. Gentlemen, I wish you to understand distinctly that only for the Commissioners we should be involved in debt; the sum of £5000 which was advanced by Mr. Freake was applied to the payment of debts. I say again, that it is our duty to prevent the Society from again engaging in liabilities it will not be prepared to discharge; and especially as it has no likelihood of getting assistance from Her Majesty's Commissioners. I tell you candidly that my view of the question is this, that unless the public generally, and especially the public of this neighbourhood, exert themselves to raise the annual sum of £10,000, it is not possible for us to meet our ordinary obligations, and I think the union between South Kensington and Chiswick ought to be discontinued at the end of the three years. That is a fair notice, and ought to be clearly understood; and I am glad to find from the report of the Council that their concluding sentence puts their position in very clear, unmistakable language. With these observations I beg to move the adoption of the report.

Mr. SHIRLEY HIBBERD called attention to the balance-sheet, and contended that the Fellows had a right to have in their hands a fuller and more complete statement of accounts than that with which they had been furnished. This statement did not include the £5000 lent by Mr. Freake, and there was a certain sum of £1800 of which there was no mention. He should like to ask Mr. Webb, the Treasurer, how it was he had put in the hands of the Fellows such a statement of accounts as rendered it almost impossible for them to go on with the business? The noble Chairman would permit him to say that some few years ago it was determined to hold an exhibition in the provinces, and a Finance Committee representing the Royal Commissioners and also the Council of the Society determined that the funds of the Society could not be made in any way responsible for an exhibition in the provinces. Upon that, finding themselves in a difficulty, the Fellows of the Society provided a fund of their own, portions of which came out of private pockets, sometimes in the shape of guarantees, and sometimes in the shape of earnings from distant places. The last exhibition in Bath left the Society in possession of £2000, and in a position to form a fund solely for the promotion of horticulture, and to be devoted to exhibitions in the provinces. He was reminded by the circular issued by the Council that it was announced that the provincial exhibitions would be resumed. Now, however, they had no money to carry them on. He asked the attention of the meeting to the fact that in the year 1873, when Viscount Bury was chairman of the Council, a sum of £1800 was borrowed from the provincial, and transferred to the general funds of the Society; and in the very same year a sum of £1900 interest on debentures was paid, so that what was realised by the provincial exhibitions was turned to account by expending it on payment of interest on the debentures, which should have been paid out of the surplus profits of the Society. He contended that the Society had no business to touch that money, because it was solely for the use of provincial business, and he would ask the Treasurer to tell the meeting what he knew about this missing £1800, because by this time it ought to have been paid back into the horticultural fund, so as to enable horticulturists to promote some provincial shows with the same prospect of success as they had had before the money was abstracted. He wanted to know where the money was, and to whom they had to look for it.

Mr. WEBB, the Treasurer of the Society, said he thought Mr. Hibberd had answered the question as to the £1900, because he had told the meeting it was spent. He quite admitted the money was improperly taken from the particular fund to which it belonged, but that was done before he was treasurer. There was also a large sum resulting from life-compositions taken, and he regretted it was so, and if it had not been done the Society would have been able to go on without borrowing either from Mr. Freake. According to the charter, they were bound to let that money appear from year to year in the balance-sheets, which rendered them to that extent inaccurate and misleading. There was really no such fund now, although it was brought into the account, and one-fifthteenth of that sum for the year was brought into revenue. It appeared on the face of the accounts that they had a larger sum in revenue than they actually possessed. He much regretted that the balance-sheet had not been made out until, he might say, the present moment, but a fresh statement of accounts would be placed in the hands of the Fellows.

Mr. HIBBERD asked the Secretary if he could furnish the meeting with a copy of the minute which authorised the transfer of the money in question?

The PRESIDENT: You will bear in mind that all these proceedings took place before the existence of the present Council, and they appeared in the accounts. It was, no doubt, a subject of animadversion, but I really cannot see what advantage can arise from this discussion on a statement of accounts which has already appeared. I think Mr. Hibberd has received a very clear and full answer as to this unfortunate sum of money. Certainly no advantage can arise from reopening a question which has so long been at rest.

Mr. GUEDALLA was quite of opinion with Mr. Hibberd, that the accounts should have been better kept.

The PRESIDENT felt that a fuller account ought to be furnished.

Mr. GUEDALLA: We should have a printed statement of accounts. I should like to know how the subscriptions are coming in, as there are many reports on the subject flying about.

The PRESIDENT: In reply to that, I am happy to be able to announce to you that we shall, in the course of the day's proceedings, elect thirty-nine new Fellows.

The TREASURER: And I may add that a great many of those who withdrew from the Society are coming back to us again.

Mr. GUEDALLA said he felt convinced that the course laid down by the noble Lord in the chair was the only one for the Council to pursue, and he should, therefore, gladly second the motion for the adoption of the report of the Council.

Mr. GODSON, Sen., asked the Chairman what arrangements had been made with the Commissioners in the event of the £10,000 being raised?

The PRESIDENT: I am very glad you have asked the question, because it is a very important one, and

the precise answer to it ought to be comprehended by every person present. Supposing the conditions of lease are fulfilled by our raising the revenue of the Society to £10,000 a year, and paying our yearly rent, it will be impossible for her Majesty's Commissioners to put an end to the lease, and it will be our duty to continue our connection with them, and, among others, for this reason, that that is the only chance the debenture-holders have of receiving interest on their £50,000. So long as the Society receives money over and above the cost of maintaining the gardens, that sum should be paid to the debenture-holders; and that is their sole right. The only legal right to the payment of capital arises from two sources. One is, if at the expiration of the lease the Society fulfils all the conditions of the lease, and the Commissioners then choose to extinguish the debt, the Commissioners will be bound to pay half the debenture debt. Well now, that is the one half; the other half is to be obtained by putting aside excess of receipts over the expenditure to be applied to the payment of the interest due to the debenture-holders during the continuance of the lease. A part of this excess is put aside to redeem the capital of the debenture-holders. I will not say that the second part of the explanation I have given will give very much comfort to the minds of the debenture-holders; but if we raise this sum of £10,000, it will be our duty as honest men to keep alive the security of the debenture-holders.

Mr. GODSON: I should like to know, supposing the £10,000 is not raised after the three years, what will be our position then?

Mr. WM. HAUGHTON: It will be from Christmas next to Christmas following. If the income for that period is what is stated, the gardens will be continued.

Mr. GODSON: But there is still one thing with regard to the position in which we stand. Supposing that £10,000 is not raised, what will be the result as to our property? Have we to wait for three years or for two years?

The PRESIDENT: Of course that will depend upon the action of the Commissioners.

Mr. GODSON: That is just what I want to know.

The PRESIDENT: If, at the end of that time, we have not raised the amount of revenue, and that we are, therefore, not in a position to pay our rent, the Commissioners, just as any other landlords, would be in a position to terminate the lease.

Mr. GODSON: In that case, then, we are at their free will, whatever they like to do?

The PRESIDENT: Yes.

Mr. GODSON: Well, then, I say that this is the most extraordinary report which has ever been brought before a meeting. Why, here you start by saying that you have borrowed £5000.

The PRESIDENT: Let me remind you that that is a liability of the Commissioners, and not of the Society.

Mr. GODSON: I must say I am very glad to have that explanation from your Lordship.

Mr. TWEEDY said it appeared to him that the Chiswick gardens had ceased to be of any use to the Society. What he should suggest was, that the Society should sell the Chiswick Gardens. He should very much rather that those gardens should be sold, and the sum of money realised applied to the payment of their debts, than that the gardens should be carried on at an enormous expense. He did not see the use in keeping up these gardens at the expense of the whole establishment.

The PRESIDENT: My old friend proposes to give up these gardens. I would remind him that 47,000 plants have been brought from them to these gardens. He refers to the past times of the Chiswick gardens, when, during some few years, it was a fashionable resort, and when there was a beautiful wood adjoining them, which is now simply a garden devoted to scientific experiments. No doubt a large amount of expense was due to the cost of supplying plants to these gardens. I entirely disagree with my friend as to the sale or the parting with the gardens. I do not know whether my friend saw the undignified entry of the President of this Society into this room, because it looked like the present position of the Society. The leg which was firm and stout I conceive to be, or to represent, the Chiswick Gardens, while the weak and tottering one makes a respectable resemblance of the South Kensington Gardens. The crutches (alluding to those his Lordship used in consequence of his recent accident in the hunting field) represent the Commissioners, who alone interfered between us and bankruptcy. And I may say that if the crutches were taken away, the whole concern, like myself, would very soon fall down.

Mr. H. LIGGINS reminded the meeting that they seemed to forget that in the old times they had not been able to meet their expenses. They were then obliged to do something special to meet their liabilities, and to put themselves in funds to keep up and maintain the Chiswick Gardens; libraries and collections had been sold, simply because there had been a failure of the Royal Horticultural Society. To go back to Chiswick Gardens would be more detrimental to their interests than anything which they could possibly do. He had been always one of those who thought they should cultivate the connection with South Kensington, not so much because they were gardens, as because the connection would give the Society the means of employing a large income. These gardens were in the midst of London, and were for the benefit of those who cared for nothing but for London and its pleasures, which were far more desirable to them than the pursuit of horticulture. However, it was only by the union of the two concerns that the Society could be made a paying one. He hoped some means might be taken to raise the income of the Society so as to enable them to continue their connection with the Royal Commissioners.

Mr. D. WOOSTER said he regretted the stormy crisis through which the Society had passed. He knew that unfortunately the Society was suffering in reputation by the impression which had spread abroad that there existed no security for either capital or interest due to the debenture-holders.

The PRESIDENT: Would Mr. Wooster suggest what possible security this Society can offer for £50,000.

Mr. WOOSTER said there was in the agreement with the Commissioners a clause touching the funding of a certain proportion of the amount paid for life Fellowships for the purpose of promoting scientific objects connected with horticulture, and always providing that the surplus should be in the nature of a guarantee. He only wished to remind his Lordship and the other Fellows of that stipulation. He wished to submit to his Lordship and the meeting that the impression to which he had referred was acting very seriously upon the future prospects of the Society. The original interest payable to the debenture-holders was 5 per cent., but after the expiration of a year the rate was thought to be too much, and then under a letter dated July 21, 1861, a proposition was made to reduce the interest by 1 per cent.; the debenture-holders agreed to that proposition, and he really thought that all these things showed that there was a legal debt due to the debenture-holders by the Society which the Society ought to feel itself bound to pay.

The PRESIDENT: What property have we in our possession for the payment of this debt?

Mr. WOOSTER: I am only saying that the unfortunate impression which is abroad is keeping back the public from joining the Society.

The PRESIDENT: The practical solution of the whole matter would be for new Fellows to come in and pay the debenture-holders out of the increased subscriptions. That is the practical solution. What other solution can be?

Mr. WOOSTER said he would only observe that in the report there was no mention of the non-fulfilment of the circular issued on March 7, 1876, touching a certain series of lectures which were to have been given by the Society.

The PRESIDENT: My answer to that last remark is that the circular was sent to all the various Fellows, and to that circular we got one answer. We, therefore, thought it not right to establish lectures for one auditor.

Mr. GUEDALLA thought that the Council ought to disavow the action taken by Mr. Wilson. Some gentleman sitting at the Council board ought to take notice of this matter.

Mr. WILSON rose to say that he thought they had considered the subject before them almost exclusively from the South Kensington point of view. They were told that the hopes of the Society rested upon the collection in that neighbourhood of £10,000 for one year.

The PRESIDENT: I said that the hopes of the continuance of the Society depended upon that sum being raised.

Mr. WILSON reminded his Lordship that the letter in the *Times* of January 19 was perfectly conclusive. They had always this fact before them, that every society more or less prospered except the Royal Horticultural Society. He did not believe in the old plan of trusting to the neighbourhood of South Kensington as opposed to the plan of appealing at once to the great body of horticulturists throughout the country. If there were 5000 country horticulturists, or horticulturists generally throughout the town and country who would come forward, the Society would be well supported. Whether they took the horticultural view, or combined it with the South Kensington view, they ought to place the Society on a firm basis. From letters which he had received from every part of the country, it appeared that that was the view that was taken.

A FELLOW, who said he was a life member, mentioned that he had been told the Society had always been in difficulties. Now, supposing the state of things which his Lordship had sketched out became an accomplished fact, and that Her Majesty's Commissioners distrained upon the gardens and turned the Society out of them, in what position would they then be likely to be, because, from all the facts he had ascertained, they would have to go back to Chiswick—to the old condition of debt and difficulty.

The PRESIDENT: I quite recognise the fact that the Society has no more genuine friend to it than Mr. Wilson, and that all he has written was meant to extend the usefulness of the Society. I think that if the Society were simply a scientific society and unconnected with South Kensington, we should get a great deal of independent support on that ground. I have heard frequently one reason why people do not join these gardens, and that is, that they would be bound hand and foot to South Kensington, and that the whole object here is to keep up the gardens in a magnificent state. That impression I am told is very strong, and that it cannot be removed without disuniting the two establishments. But I would do nothing to disunite the two, but endeavour to preserve union between them; yet I will say certainly that if disunion did take place a large number of horticulturists would be induced to come forward and join the Society. We must recollect, in the case of Chiswick, that it had a large debt—some £10,000—in spite of many sacrifices. A large scheme was set on foot in 1860, and a great amount of money was spent in scientific proceedings, whilst our debt at South Kensington did not arise from the prosecution of scientific research. I am told that for several consecutive years they had at Chiswick beautiful weather—fine summers, and hence large gatherings, therefore the receipts at the Chiswick gardens were very good. Then came three or four successive years of bad weather, with very large expenditure and next to no receipts, during which a large portion of the debts were incurred. Since these days horticulture has spread enormously. I should not be surprised that there would be 5000 men ready and willing to give £5000 for the purpose of real scientific horticulture; but I think it much more likely to be got from members of the Society where there is a scientific society united for social purposes with South Kensington.

Lord ALFRED CHURCHILL said that, in proposing his scheme, Mr. Wilson had recollected that the Society was tied hand and leg to these gardens until two years expired, or until they raised the subscriptions to a certain amount. He could hardly agree that if they were once freed of these gardens they would get a large amount of horticultural support from the country. He had lately returned from Dublin, and there they maintained a horticultural society, one that was in a most flourishing condition. They had their scientific meetings, they gave away prizes, and did all the scientific work which a horticultural society ought to do. He said to a friend the other day in Dublin that he should like to see the Society's gardens. "Oh," said his friend, "we have got no gardens." They worked on without gardens, and subscribed together for a common purpose. Therefore, if it answered in Dublin it ought to answer in London; but in addition they had got Chiswick Gardens, which were considerably reduced in size through our money being spent so prodigally, so that they could maintain the gardens at a reduced cost. If they once got rid of these gardens at South Kensington their expenses would be reduced considerably, and they could keep the other gardens for scientific purposes. If they could get rid of the incubus of these gardens Mr. Wilson's scheme might work well. At any rate, under present circumstances they must do the best they could, and in view of that they had proposed various modifications in the grades of subscriptions of Fellows.

Mr. H. VEITCH wished to say that his name unfortunately appeared as one of those who gave their sanction to Mr. Wilson's scheme; but he was not prepared to go the length to which Mr. Wilson had gone. He regretted that Mr. Wilson appeared in the Press in the way he had done, because it seemed to him (Mr. Veitch) that Mr. Wilson was trying to coerce the Society into adopting a policy which would be very dangerous to it. He wished, so far, to disavow his intention to adopt Mr. Wilson's plan. Mr. Wilson told them that a great body of people would come from the country to subscribe to the Society, but in the list which Mr. Wilson had recently circulated—that of January 5 last—he found that the whole number of people amounted to only 373 — not a very large number considering the circulation the scheme had had; and out of these 373 he should think about one-third of them were already members or Fellows of the Society. Now that would reduce Mr. Wilson's list very considerably. With regard to the Society itself, it seemed to him that neither the horticulturists pure and simple nor the horticulturists of South Kensington could by themselves keep the Society going. It could only be kept up by all working together. They wanted, along with horticultural attractions, to make the buildings at South Kensington draw people to them. They must bring their fruits and flowers there to be exhibited, for it was their interest to do so. As regarded the gardens themselves they did not actually want them, but they wanted a place for their meetings and for the Council, to which they all could come. On the other hand, if the South Kensingtonians would

come forward and generously support the institution, he thought it would be the best thing for the Horticultural Society to keep up the gardens so that they could be enjoyed. If the people would only come next day (Wednesday) afternoon from the country, he could promise them a very beautiful show, and that they would find, not only a horticultural treat, but a band of music playing for their pleasure and enjoyment. That was what he called a very proper amalgamation. There was one point on which he should like to ask a question. On page 3 of the report, in the last paragraph, it is stated : "The provincial shows stand on a more favourable footing, and the Council have now under consideration where and when the next shall be held." He should be sorry to hear that nothing was to be done as to provincial shows. It did seem hard that when the money had been fairly earned the first fruits of the provincial shows should have been forcibly taken away for other purposes. If they had the money in hand these provincial shows would be held, and, judging by the results of former shows, they would bring in a very fair income. He should like to know what steps had been taken towards holding provincial shows this year—on what footing they were to be, and what account of consideration the Council had given to the subject, which was an important one?

The PRESIDENT said : I am hardly in a position to give a distinct answer to the question. All I can say is we are in communication with one of the principal cities of England, and have a very strong hope that we shall be able to do something successfully, and lay perhaps the foundation of a new future for the Society. I have no doubt if we are successful we might have a guarantee fund which will put us out of all difficulties of a financial character. If some surplus remained, we would have the nucleus of a capital sum, which should enable the Society to have a show—a provincial show—annually. Warned by the past, it is the intention of the Council to invest in trustees any surplus they receive. Let me correct a mistake I involuntarily fell into. I said that at the time the Society joined South Kensington they had a debt of £10,000. Dr. Hogg, who knows much more about the matter than I do, tells me that though the original debt was £10,000, it had been reduced by the sale of the house in Regent Street, and the actual amount of debt remaining was £5000. But, whether it was £5000 or £10,000, it shows that the method of carrying on the Society was not successful. Good finance, which is everything in the management of a kingdom, is as necessary to a society. I am of opinion that all this indirect and unnecessary expenditure ought to cease. It is through the assistance we have received from Mr. Veitch and others that we have been enabled to have our exhibitions, and I am sure the Society cannot be too thankful for the assistance received from Mr. Veitch and other gentlemen.

Mr. ELWES thought there was no reason whatever why there should not be a perfectly fair union between the South Kensington and the horticultural Fellows ; and the South Kensington Fellows should remember that, after all, the Society being a horticultural one, horticultural objects must be the first objects of the Society. The Council of the Zoological Society it was evident such a union was perfectly possible. No Society was more popular, and although some of the members worked in a purely scientific groove, matters were so arranged that the Society has attracted three-fourths of their members who did not care a straw about zoology, but who joined the Society for the purpose of attending the gardens on Sunday. They also opened the gardens at a low figure on Whit Monday and other days, and so attracted a large number of the people of London to them. Although it was impossible for the Horticultural Gardens to have so much general attraction as the Zoological Gardens, if the South Kensingtonians wished them to be kept up they could do it by contributing their fair share, which would enable the Fellows of the Society not only to carry on the gardens as they ought to be carried on, but also to do good horticultural work.

The PRESIDENT then put the motion that the report be adopted, and it was carried with only one dissentient. Thirty-nine new Fellows were elected. The President announced the result of the ballot. Those recommended by the Council were declared elected, as follows : — Members of the Council : Sir Charles Strickland, Mr. H. J. Elwes, and Mr. T. M. Shuttleworth. Office Bearers : President, Lord Aberdare ; Treasurer, Mr. Henry Webb ; Secretary, Dr. Robert Hogg ; Expenses Committee-men, Mr. H. Campion, Mr. Henry Webb, and Mr. William Houghton ; Auditors, Mr. J. Lee, Mr. Henry Little, and Mr. James West.

ALTERATION OF BYE-LAWS.

The PRESIDENT then said the Council had made a last effort to conciliate the inhabitants of the neighbourhood, and so far as they could ascertain by the expression of feeling the proposed alteration of the bye-laws would have a good result. They had just elected the good number of thirty-nine Fellows, and in addition to that fact they had a great many of those who had left the Society returning to it. In that respect the affairs of the Society looked more promising. He thought they should unanimously adopt the new bye-laws, which could not fail to be beneficial in their operation.

Dr. HOGG explained that it was proposed to suspend the payment of the entrance fee, which was provided for by the 14th bye-law. The 19th bye-law provided that no Fellow whose entrance fee was not paid should be entitled to vote at meetings of the Society : it was now proposed to strike out the words "when the entrance fee has not been paid," as a matter of course following on the alteration of the 14th bye-law.

The CHAIRMAN, replying to Mr. Veitch, who asked information respecting the guinea membership, said he had not been able to attend the Council meetings lately, and was therefore unable to say what attention had been given to that subject. He took the view of Lord Alfred Churchill on the matter, that it would be an excellent plan, if this were simply a horticultural society, to have a guinea membership.

Lord ALFRED S. CHURCHILL said the guinea members should have all the privileges of Fellows, except that of voting at the meetings of the Society. It had been felt that it would be open to any person who, say, had strong objections to the Council or to the policy of the Society, to induce people to become guinea members in order to control the action of the other Fellows. The Council thought they should give to guinea members all the privileges of personal admission to the gardens, and to shows, exhibitions, &c ; in fact, all existing privileges except that of voting at the general meeting. He was glad to say two members had been elected according to this plan, and no doubt others would come in.

Lord A. S. CHURCHILL said, in reply to Mr. Godson, that the guinea ticket was not transferable. Any guinea Fellow who desired to exercise his voice in the management of the Society could do so by paying an additional guinea.

The alterations in the bye-laws were then agreed to unanimously.

The CHAIRMAN said that he thought in the present position of the Society the entrance fee would operate in preventing people from joining, and that it was wise therefore to exercise the power of doing away with any entrance fee.

Lord ALFRED S. CHURCHILL spoke of an additional source of income to which they looked forward with hopeful anticipations. Throughout the whole country there was a large number of local horticultural societies, for which were proposed establishing them with the Royal Horticultural Society. Indeed, many of them had been affiliated to the Society for years, and were put in the position of individual subscribers. The Council proposed to give gold or silver medals for distribution in the local shows. That would enable the local societies to distribute as rewards for merit at their shows the medals of the Royal Horticultural Society. He hoped the result of the proposition would be, as he did not doubt it would, to bring to them a large number of the local horticultural societies scattered all over the country, which was most desirable.

Dr. DENNY explained, with reference to refunding the money which was taken, that the Council could not refund it out of the money which was lent them.

Mr. GODSON asked if the Council did not apply that money to pay Veitch ?

The CHAIRMAN : No ; we did not.

Dr. DENNY said the Finance Committee, consisting of three of Her Majesty's Commissioners, objected to any money being spent on provincial shows. He could only believe but that if the matter had been properly put before the Finance Committee the money might have been raised by guarantee ; but he did not believe the committee would allow them to refund the money.

The TREASURER : I may say this, that if I ever get any provincial show money again it shall be properly invested, and not at the dictation of President, Vice-President, or anybody else.

Mr. H. VEITCH : I can promise you that if you get up good provincial shows you will have money to invest.

The proceedings were brought to a close by a vote of thanks to Lord Aberdare.

COMMITTEE MEETINGS.

Feb. 14.—The committee meetings were held today in the large conservatory, and the contributions sent in by Messrs. Veitch & Sons, Mr. William Bull, Mr. B. S. Williams, Messrs. Osborn & Sons, W. H. Michael, Esq., Mr. James, gr. to W. F. Watson, Esq., and others made a very nice little spring show. The plants were staged on a temporary structure running the entire length of the garden side of the conservatory, and the effect produced was certainly a pleasing improvement on the dingy Council-room. The exhibition was, however, almost lost on the neighbourhood, so scanty was the attendance of visitors. There was no meeting of Fellows in the afternoon.

SCIENTIFIC COMMITTEE.—Dr. Hooker, Pres.R.S., C.B., in the chair.

Australian Insects (see p. 85).—Mr. McLachlan stated that he had determined the insect which attacks certain trees at the Cape to be a species of Coccus.

Oak from Fiume.—Rev. M. J. Berkeley exhibited leaves of Q. pubescens ? affected with an Acarus, also specimens of Beech attacked by Cecidomya fagi, specimens of Pyrola uniflora with Æcidium on the leaves, and with unusually prominent styles. The same gentleman also showed a species of Boletus from Transylvania which is soaked in water and used during Lent as a substitute for meat.

Embya.—Mr. McLachlan stated that he he had seen the Embya in the pupa stage, and that the specimen from which the figure in the *Gardeners' Chronicle*, p. 845, vol. vi., was taken had lost its anterior wings.

Crocuses.—Col. Trevor Clarke exhibited a series of specimens, and communicated the following notes thereon :—

"No. 1, varieties of Herbert's group Annulati. All are, I think, to be found in the *Synopsis*, viz., the old sterile Scotch Crocus biflorus of Miller ; another white, or nearly white, perhaps argenteo-striatus ; then the Barton Park form, once called minimus ; another blue tinted kind, with wrinkled petals ; Herbert's cœrulescens, with rich purple sepals outside ; and the two sorts mentioned by Herbert as purpurascens (one nearly white), known sometimes under the name of Weldeni.

"Gay's C. insularis in the three forms, as proposed by Herbert, under the names of insularis, with its variety medius and variety minimus, minimus having been De Candolle's name for the smaller form.

"C. lagenæflora of Herbert, common yellow ; aureus, with its remarkable variety ; lacteus concolor, also a sort received from M. Chappellin, under the name of syriacus. This appears identical with the old sterile sulphureus striatus, or perhaps stellaris.

"C. nivalis (Sieberi of Herbert), and a vernal Crocus unknown to me."

Action of Pollen on the Seed. — Colonel Clarke exhibited a pod of Woodford Marrow Pea, the flower of which was fertilised by pollen of the white-seeded Auvergne. In the centre of the pod were two pure white seeds, those on either side being blue like the pure Woodford. Mr. Laxton has not observed this, and Knight's observations on the subject are obscurely expressed. Colonel Clarke said he knew of but one other instance, that of Matthiola, upon which he read a paper at the Botanic Congress in 1866.

Dr. Masters called attention to Maximowicz's paper translated by Professor Dyer in the *Journal* of the Society, 1872, p. 161.

Quercus humilis.—Mr. Young, Milford Nurseries, sent a plant of this, figured and described at p. 113, vol. i.

Himalomena peltata.—Mr. Bull contributed leaves and flowers of a new species of this Aroideaceous genus, of a very handsome and remarkable character. We intend shortly to publish a figure and description of this species.

Coloured Barley.—Dr. Voelcker exhibited seeds of Barley with a more or less blue tint pervading them, from North-West India. It had been suggested that the disease of horses, known as "kumri" in India, was due to their eating unwholesome Barley, but this was refuted by Mr. Grote, who explained that in Bengal, where the disease is equally prevalent, horses are fed upon grain or pulse. Dr. Masters had not been able to find fungus mycelium in the grain, but suggested that the grains might have been steeped in some salt of copper, but Dr. Voelcker explained that the colouring was organic, and that no trace of copper was to be found. The specimens were referred to Mr. Berkeley for further examination.

Prickly Pear as Forage.—Mr. Grote stated that in some parts of India the Opuntias were used as fodder for cattle, the spines being previously rasped off.

FLORAL COMMITTEE.—Mr. B. S. Williams in the chair. First-class Certificates were awarded to Messrs. Veitch & Sons for Masdevallia Chimæra, figured and described in our columns at p. 41, vol. iii. ; for Amarylliis Princess of Teck, a large smooth flower of a rich glowing crimson colour ; and for Cydonia (Pyrus) japonica flore-alba, an improvement as shown on the old form in cultivation, by reason of its larger and purer white flowers. To Mr. William Bull for a very handsome Cycad — Cycas media latissima ; and for Croton Mortii, a bold, distinct, broad-leaved form, heavily marked with gold. To Mr. Spyers, Orchid grower to Sir Trevor Lawrence, Bart., M.P., for Calanthe vestita rubra oculata gigantea, a very fine spike of which was shown ; and for Odontoglossum Cervantesii decorum, a great improvement on the old O. Cervantesii, both in size of flower, denser markings, and brighter colour. To Mr. C. Edmunds, Hayes, for Cyclamen persicum compactum magnificum, a large and very fine white flower, the petals of which are broader and rounder at the tips than any we have yet seen. Botanical Certificates were voted to Mr. Denning, gr. to Lord Londesborough, for Masdevallia macrura ; to Mr. Spyers, gr. to Sir Trevor Lawrence, for Spathoglottis Lobbii, a species with bright

straw-coloured flowers; and for Catasetum scurra, a very curious plant, with white wax-like flowers, the lip in which has a beard-like fringe. Mr. Denning, gr. to Lord Londesborough, also showed in a freely-flowered condition the plant of the Cobweb Dendrobe—Dendrobium teretifolium—for which he gained a First-class Certificate last year. It is believed to be the only plant in Europe of the kind, and a Cultural Commendation was awarded. A silver-gilt Davis Medal was awarded to Messrs. James Veitch & Sons for a very showy group of plants, which consisted principally of Orchids and hybrid Amaryllis. Of the former there were well-flowered examples of × Cypripedium Sedeni, Lycaste Skinneri and L. Skinneri alba, × Lælia Pilcheriana alba, Odontoglossum gloriosum, Angræcum sesquipedale, with five flowers, Odontoglossum bictoniense, × Cypripedium Harrisianum, Dendrobium Boxallii, Masdevallia polysticta, Dendrochilum glumaceum, Aerides Huttoni, Cattleya Triange, and its pretty variety Penelope, &c. The fine white Eurycles australasicus was well represented by some half-dozen or more plants. The large group of hybrid Amaryllis included of course many flowers which show no improvement on varieties already in cultivation, but it included capital examples of the following named sorts:—Phœbe and Agatha, both certificated last year; Leopoldii, Princess of Wales, Circe, Maia, Model, Phædra, Pandora, Arthur Potts, Aglaia, and Calliope. The same firm also sent Cyclamens, Lily of the Valley, cut Camellias, and forced specimens of the showy Rhododendron Early Gem. A silver Davis Medal was voted to Mr. Bull, for a fine group of ornamental leaved and flowering plants, the former including principally Palms, Crotons, and Cycads, and the latter specimens of Cœlogyne flaccida, Dendrobium speciosum, Odontoglossum cirrhosum, Uropedium Lindeni, Lycaste Skinneri rubella, very fine in size, and richly coloured. A silver Davis Medal was also voted to Mr. Newman, gr. to W. H. Michael, Esq., for a very attractive group of Orchids, which included several freely flowered pieces of Phalænopsis amabilis, grandiflora, and Schilleriana, Colax jugosus, Odontoglossum Roezlii, Zygopetalum crinitum, Dendrobium Wardianum Lowii, Vanda Cathcartii, Dendrobium crassinode Barkerianum, Cœlogyne cristata, Dendrobium chrysotoxum, &c. Mr. E. S. Williams received a vote of thanks for a group of plants, which included some capital Cyclamens, Lælia superbiens, Goodyera discolor, Dendrobium Wardianum, Cypripedium villosum, Lycaste Skinneri, &c., and examples of Primula sinensis fimbriata alba, a very pure white. A silver Davis Medal was voted to Mr. James, gr. to W. F. Watson, Esq., Isleworth, for a splendid group of Cyclamens and Cinerarias, the former being very good indeed, and the latter—well, the finest that have ever come under our notice. Votes of thanks were accorded to Mr. Turner for a group of Camellias, Ivies, &c.; to Mr. Wills, for a showy miscellaneous group; to Messrs. Osborn & Sons, for a small group of Palms; to Mr. Aldous, for a small group of plants; to Mr. R. Dean, for a collection of hardy Primroses; to Mr. Roberts (gr. to W. Terry, Esq.), and Mr. Ollerhead (gr. to Sir Henry Peek), for small groups of Orchids; and to Mr. Clarke, Twickenham, for a collection of Cyclamens. Mr. Ollerhead was the winner of the 1st prize offered by Messrs. Veitch & Sons for an example, cut or otherwise, of Poinsettia pulcherrima plenissima, and which was of very good quality.

FRUIT COMMITTEE.—Henry Webb, Esq., in the chair. The most interesting subject that came under the notice of the committee on this occasion was a very fine collection of Apples and Pears, sent by Mr. Sydney Ford, gr. to W. E. Hubbard, Esq., Leonardslee, Horsham, and which included five sorts of Pears and thirty-four of Apples, including all the best known varieties in season—fine in size, rich in colour, and in a fine state of preservation. The committee recommended the collection to the Council for the award of a bronze Davis Medal. From Sir W. C. Trevelyan came some fruits of the Lime, Citrus acida, grown in his garden at Nettlecombe, Somerset; and from Mr. Harrison Weir, Weirleigh, Kent, came a bunch of Mrs. Pince's Black Muscat Grape. Very good bunches of Black Alicante Grapes were shown by Mr. Atkins, gr. to Colonel Loyd Lindsay, Lockinge Park, Wantage; and Mr. Stevens, gr. to the Duke of Sutherland, Trentham, showed a tree in a pot of the Calville Blanche Apple, on which some ten fine fruits were still hanging. Messrs. Stuart & Mein, Kelso, sent forced examples of their Lily-white Seakale; and Mr. Batters, gr. to Mrs. Willis Fleming, Chilworth Manor, Romsey, sent a good dish of Mushrooms, and another of new Potatos grown in pots—the variety being Snowflake. Some examples of the old Ord's Apple were brought up by Mr. Barron, from Chiswick. The committee also had under consideration the recent correspondence in reference to the Grape exhibited before them on December 6, 1876, by Mr. Bell, of Clive House, Alnwick, and the members expressed a desire to place on record their regret that Mr. Bell should have withheld the facts as to the origin of the Grape, and more particularly to draw attention to the circumstance that in his letter to the committee, which accompanied the Grapes, he stated that the parentage was "a cross with Black Morocco and a seedling raised, I understand, at Wortley," while in his letter of January 25, 1877, in the *Journal of Horticulture*, and in our own columns last week, he affirmed "it is a foundling, the parentage and connection of which none can vouch." On these grounds it was determined that had the committee known, at the time of making the award, the whole facts of the case, they would not have recognised the name of the Clive House Seedling, and which they now cancelled.

FLORISTS' FLOWERS.

TULIP LORE.—When giving some account of the process of raising Tulips from seed on p. 596 of our last volume, such terms were used as "breeder," "breaking," "character," &c., and it has been suggested to me that, though any Tulip grower can follow the advice, and comprehend the terms easily enough, yet the "readers of poor Tulip scent" might be at a loss to understand these terms in their full significance. What is implied in these terms is fully known to Tulip growers; it has lived traditionally among them, and is an example of one of those small facts supposed to be too well known to mention, because so well known among florists, and yet one which really is not known to floriculturists at large.

Except in rare instances, when they shine out in full character at the first time of blooming, seedling Tulips take on a self, or what the Tulip growers term the breeder form. This is but a temporary self-coloured existence, and in course of time they rectify or break into character, some in two, and others at varying times up to the seventh year, or even longer. There is no known principle in vegetable physiology to govern the breaking of breeder Tulips. The late Mr. John Edwards once termed the breaking of Tulips "a splendid mystery," and he was correct in giving it this designation. There are wonders in the physiology of the Tulip not dreamed of in the philosophy of other flowers; and, indeed, it would be difficult to name another plant more suggestive of this than our "glorious florists' Tulip."

The future character of the Tulip is, to a great extent, decided for it in the breeder state; that is, whether it will be a bizarre, bybloemen, or rose—the three classes into which Tulips are divided. A bizarre Tulip, when it has broken into character, has a yellow ground colour, and is either feathered, *i.e.*, the colour pencilled round the edge alone; or flamed, *i.e.*, having a beam of rich colour dashing up the petal centre, and striking the feather at the edge in bold flashes, or being feathered and flamed both, with some colour graduating between black, brown and red. Thus a flower may be feathered only, or feathered and flamed both. A bybloemen Tulip has a white ground colour, and is either feathered or feathered and flamed with some colour graduating between black, purple, and lilac. A rose Tulip has a white ground also, and is either feathered only or feathered and flamed with some colour graduating between crimson, red, scarlet and carmine. In the case of the breeder or self-form, the bizarre has a yellow base and stamens, and petals clouded with a combination of the colours peculiar to it; and the bybloemen and rose breeders white grounds and stamens, and the petals also clouded with their peculiar colours; but the difference between the two consists in the absence of a purple tint in the breeder colour of the rose. So much then for the differences of the Tulip in the breeder and in the broken states.

The raising of seedling Tulips and their cultivation have supplied many most interesting facts, some of which may be set forth for the information of those who have had little or no experience of the Tulip. And in regard to seedlings it may be stated that in the case of of seed taken from the rose Tulip, for instance, say a Tulip that had been carefully crossed with another rose, will give a majority of rose breeders, but there will probably be some twenty per cent. of bybloemen breeders and a few bizarres. This is in illustration of the fact that a Tulip, if carefully crossed with the pollen of another variety of its own section, cannot be depended on to produce wholly flowers belonging to the section. It may also produce a few "selfs." As the term "self" as here employed means a type of flower distinct from the unrectified breeder, a few words of explanation are necessary in respect to it.

There are two classes of selfs among the florist's Tulips; the white and the yellow. The white self represents the ground colour of the bybloemen and the rose, but with the entire absence of any taint of the colours peculiar to them. The yellow self represents in the same manner the ground colour of the bizarre class. The selfs are very seldom raised, but they occasionally come among the seedlings. The late Mr. William Willison, of Whitby, a noted raiser of Tulips, raised several selfs, notably White Perfection; and a very nice yellow also, the name of which I am unable to give. In the old Tulip shows prizes used to be offered for self Tulips, there being classes for the best white and the best yellow self; but the practice is now almost wholly discontinued. David Jackson, of Middleton, an old florist whose floral enthusiasm does not appear to slacken as he increases in age, raised some seedling selfs, among them some very good flowers, using as a seed-parent the old rose Aglaia, well crossed, and he had more than a dozen self yellows among the progeny. I am informed by Mr. Samuel Barlow, of Stake Hill House, Chadderton, Manchester, to whom I am indebted for much useful knowledge in relation to the Tulip, that the white of Aglaia is very yellow on opening, and needs a week's bleaching to get it pure. He is of opinion that there exists a taint of the bizarre parentage in the ancestry of Aglaia.

In selecting rose Tulips to breed from, the parents should both be bright in colour, or a large proportion of bybloemens will follow; and the same remark holds good with respect to bybloemens—the colour of the parents should be as near black as possible, or of a bluish purple colour. Parents having tints of red in the purple are very apt to give reddish purple breeders, and they seldom break into good distinct forms of either bybloemens or roses.

I recently inquired of Mr. Barlow if he had ever crossed a bizarre Tulip with a rose or a bybloemen, and his reply was in the negative; but, he added, "from chance seed I have seen some very 'foxey' flowers." By "foxey" flowers Mr. Barlow means those of a stained, intermediate, or nondescript character, which the most comprehensive-minded florist would scarcely care to admit to his collection. Mr. Barlow adds, "I should never try such crosses, as one has to wait from five to eight years to get blooms from seed, and the results would certainly not repay the labour, time, and patience necessary to get them."

Seedlings from feathered or feathered and flamed flowers will produce both feathered and flamed flowers. Let me here remark that the Tulip grower speaks of a feathered and flamed flower as a flamed flower, even though the feather is present also. And there is another singular fact in connection with the physiology of the Tulip, that it is not uncommon for bulbs to flower one year flamed and another year feathered only. The same bulb will exhibit this apparent incontancy. A Tulip grower may possess a fine strain of a variety which has bloomed in, say, a fathered state for years; and then, without any note of warning, there comes a season when most, if not all the flowers are flamed. I remember Mr. Barlow telling me that Martin's 101 feathered bybloemen bloomed with him for eight or ten years, always perfectly feathered; but two years ago every bloom came finely flamed! Last year at blooming time the flowers were found to have nearly lost their beam; and in a year or two Mr. Barlow quite expects they will all get back to the feather state. On what principle can this extraordinary phenomenon be explained? Mr. Barlow further mentioned that George Hayward bizarre had "served him in the same way," for this beautiful feathered flower, always so much admired for its perfection, after keeping the feathered character for five or six years in succession, was last year all flamed. "Emperor Nicholas, nine years perfectly feathered, last year bloomed perfectly flamed. Hundreds of instances can be given *vice versâ*. I have had many flamed flowers which have turned to feather, but they are not so numerous as those which change from feather to flame." It is impossible to predict of a breeder Tulip that it will break into a

feathered or a flamed flower. If a grower has a stock of any particular breeder, most probably some will break feathered and some flamed. And these again are subject to the changes just stated.

I have already remarked, "There is no known principle in vegetable physiology to govern the breaking of Tulips." The act of breaking may be hastened by growing the bulbs for a year under changed conditions of soil and atmosphere, and then bringing them back and growing them in their original situation. A check in the growth of the plants also serves to promote the breaking of breeders. In 1875, through some hitherto unexplained cause, the beds of Tulips at Mr. Barlow's residence at Chadderton almost entirely failed, and fully three-fourths of his breeders did not bloom, and the bulbs at taking-up time were small, and many of them rootless. During last summer the number of breaks among the breeders was something extraordinary, nearly one-third of those most severely punished the preceding year broke into character. In Mr. Barlow's opinion "the cause of the rectification is connected with the growth of the season in which the flower bloomed for the last time as a breeder," but nothing in the appearance of the flower will indicate that next year it will bloom a feathered or a flamed flower.

I have sought for information as to instances in which the rectified flower has resorted again to the breeder character, and among other scraps of knowledge bearing on this matter Mr. Barlow states, "I have had many instances in which broken flowers have returned again to the breeder state; but these cases are comparatively rare, and the breeder will probably bloom again rectified the following season. I bought Hepworth's President of the late Dr. Hardy when in bloom as a noble flamed bizarre: the following year it flowered with me a perfect breeder (Dr. Hardy had only this one bulb, so you will perceive there was no chance of a mistake); the year following it bloomed with me as fine as I saw it in Dr. Hardy's bed. Since then, out of some twelve or fourteen years it has flowered twice as a breeder, and the remaining years in character. Certain varieties are more liable to this eccentric vagary than others."

It is only those who are privileged to mingle with Tulip fanciers and listen to their gossip about their favourite flower, that can be made acquainted with the rich stores of information connected with it, or come to understand something of the peculiar fascination it has for those whose hearts are aglow with a great love for this gorgeous floral revelation in Nature. The Tulip is indeed "a splendid mystery," and while the men of science are found following Nature with a faithful love, and an unswerving fidelity to a great purpose—which refuses to divide its loyalty with superstition, whatever the bribe, the physiology of the Tulip yet baffles the earnest seekers in botanical science—its "eccentric vagaries," are problems as yet difficult of solution. *R. D.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, FEB. 14, 1877.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.					HYGROMETRICAL DEDUCTIONS FROM GLAISHER'S TABLES 5TH EDITION.		WIND.		RAINFALL.
	Mean Reading at 32° Fahr.	Departure from Mean of 18 years.	Highest.	Lowest.	Range.	Mean of Day's Temperature.	Departure of Mean Temp. from Mean of 60 Years.	Dew Point.	Degree of Humidity. Sat. = 100.	Average Direction.	Force.	
Feb	In.	In.	°	°	°	°	+ or −	°				In
8	29.00	+ 0.22	53.7	24.1	29.5	40.3	+ 7.3	37.0	75	N. NW	0	0.00
9	29.84	+ 0.06	51.5	37.0	17.5	45.5	+ 6.4	40.1	82	S.W., WSW	2	0.00
10	29.75	− 0.07	51.6	42.0	12.0	48.2	+ 9.2	44.9	89	WSW, W.	1	0.03
11	29.69	− .11	51.1	35.5	15.6	43.0	+ 11.0	41.8	74	W.	1	0.07
12	29.56	− 0.23	50.0	33.1	16.9	41.2	+ 9.3	40.1	93	S.: S.W.	1	0.28
13	29.62	− 0.17	51.8	33.2	18.6	42.0	+ 8.1	41.0	93	S.W.	1	0.18
14	29.85	+ 0.05	55.6	41.2	14.4	48.7	+ 9.9	41.6	86	W., S.W.	1	0.20
Mean	29.76	− 0.02	54.5	41.8	12.7	47.7	+ 8.7	43.1	85	S.W.		sum 0.73

Feb. 8.—A fine day, partially cloudy. Mild.
— 9.—A fine day, though very cloudy at times. Mild.
— 10.—A dull cloudy day. A little thin rain between 1 and 3 P.M. Mild.
— 11.—A fine bright day, very mild. Rain fell in early morning
— 12.—Overcast, dull, and wet till 1 P.M.; fine, but cloudy after. Mild.
— 13.—Overcast, dull, and wet day. Mild.
— 14.—A dull, cloudy day. Mild. Heavy rain in early morning.

LONDON: *Barometer.*—During the week ending Saturday, February 10, in the vicinity of London the reading of the barometer at the level of the sea increased from 30.00 inches at the beginning of the week to 30.36 inches by the morning of the 5th, decreased to 30.12 inches by the afternoon of the 7th, increased to 30.22 inches by noon on the 8th, decreased to 29.91 inches by the morning of the 10th, and was 29.93 inches at the end of the week. The mean reading for the week at sea level was 30.16 inches, being 0.17 inch above that of the preceding week, and 0.21 inch above the average.

Temperature.—The highest temperatures of the air ranged from 60° on the 7th to 46° on the 4th; the mean value for the week was 53¼°. The lowest temperatures of the air varied from 32° on the 5th to 46° on the 7th; the mean for the week being 39½°. The mean daily range of temperature in the week was 13¾°, the greatest range in the day being 18¾° on the 5th, and the least 10¾° on the 4th and 6th. The mean daily temperatures of the air were as follows:—4th, 40°.8; 5th, 41°.2; 6th, 48°.9; 7th, 52°.5; 8th, 46°.3; 9th, 45°.5; 10th, 48°.2, being 1°.9, 2°.2, 9°.8, 13°.4, 7°.2, 6°.4, and 9°.2 respectively in excess of the average. The mean temperature of the air for the week was 46°.2, being 7°.2 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 103° on the 8th, and 78° on the 4th and 7th; on the 6th the highest reading was 58°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 28° on the 5th, 29° on the 9th, and 30° on the 4th. The mean value for the week was 36½°.

Wind.—The direction of the wind was W.S.W., and its strength moderate. The weather during the week was fine, but very cloudy and mild.

Rain fell on two days during the week; the amount collected was 0.06 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 60° at Blackheath, and 58° at Sunderland; at Bradford 51½° was the highest temperature. The mean value from all stations was 54½°. The lowest temperature of the air was 30½° at Wolverhampton; at Truro 41° was the lowest temperature. The mean value from all stations was 34½°. The range of temperature in the week was the least at Liverpool, 14½°; and the greatest at Blackheath, 28½°. The mean range of temperature from all stations was 20°.

The mean of the seven high day temperatures was the highest at Truro, 54°, and the lowest at Bradford, 47½°; the general mean from all stations was 50½°. The mean of the seven low night temperatures was also the lowest at Manchester, 36½°, and the highest at Truro, 45°; the mean from all stations was 40½°. The mean daily range of temperature was the greatest at Manchester, 14½°, and the least at Bradford and Liverpool, both 6½°; the mean daily range from all stations was 10°.

The mean temperature of the air for the week from all stations was 45½°, being 12½° above the value for the corresponding week in 1876. The highest was 49°, at Truro, and the lowest 42°, at Wolverhampton.

Rain fell on every day in the week at Truro, and on three or four days at most other stations; at Portsmouth rain fell only on one day. The amounts collected varied from three-quarters of an inch at Manchester and Eccles to about one-tenth of an inch at Portsmouth, Blackheath, Cambridge, Norwich, Leicester, and Nottingham; the average fall from all stations was 0.30 inch.

The weather during the week was very mild, and fine but cloudy.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 53°, both at Edinburgh and Leith, to 50½° at Aberdeen. The mean from all stations was 52°. The lowest temperatures of the air ranged from 33° at Dundee, Paisley, and Perth, to 35° at Leith. The mean value from all stations was 33½°. The mean range of temperature in the week from all stations was 18½°.

The mean temperature of the air for the week from all stations was 42½°, being 9° above the value for the corresponding week in 1876. The highest was 44°, at both Paisley and Leith; and the lowest 40½°, at Aberdeen.

Rain.—The amounts of rain measured at the several stations varied from 3 inches at Greenock to half an inch at Edinburgh, Aberdeen, and Leith. The average fall over the country was an inch and one-tenth.

DUBLIN.—The highest temperature of the air was 56¾°, the lowest 36½°, the range 20¼°, the mean 47½°, and the fall of rain 0.17 inch.

JAMES GLAISHER.

Variorum.

THE POTATO CROP IN AMERICA.—Last year's crop appears, from the reports issued, to have been not only far below the extraordinary yield of 1875, but considerably below an average crop. Among the causes of diminished yield drought was the most widespread and effective. During the season for the formation and growth of the tubers excessively dry weather prevailed, with a few local exceptions, throughout the entire section north of the thirty-sixth parallel and east of the Rocky Mountains, the section in which the Potato crop is mainly grown. The drought was the most severe and protracted in the Middle and Eastern States, except a northern belt including the greater part of Maine. Within this designated area also the beetles east of the Mississippi, and the grasshoppers west, effected some reduction in localities, though not to a serious extent. Another cause of diminished production was an unusual decrease in acreage, especially in States which grow this crop extensively, amounting to 15 per cent. in New York, 31 in New Jersey, 7 in Pennsylvania, 11 in Ohio, and 8 in the entire country. This was occasioned, in part, by the very low prices realised in 1875. Among the Northern States east of the Mississippi, Maine alone wisely planted an undiminished acreage, and her farmers are now being well rewarded by very remunerative prices for a crop which averages only 3 per cent. below that of 1875 in production, while it is 6 per cent. above it in quality. Vermont had the next best crop in the eastern section, falling 13 per cent. below that of 1875, while Connecticut falls 50, and Rhode Island 85. The great failure in the latter State was owing to a drought protracted beyond precedent, helped efficiently in its work of ruin by the beetle. New York, growing one-fifth of the entire crop, and more than twice the quantity of any other State, fell off from 1875 49 per cent. The small crop grown in the southern section approached nearer to the yield of 1875, equalling it in Alabama, and rising 1 per cent. above it in South Carolina. These States and Oregon are the only ones in which the production was not below that of 1875. The entire crop is about 34 per cent. less than the previous one. There is also a very general decline in quality.

TANNING SUBSTANCES.—The last monthly report issued by the American Government Department of Agriculture contains the results of the analyses of the vegetable substances containing sufficient of tannic acid to make them of value for tanning that were collected and prepared for exhibition in the late International Exhibition in Philadelphia. "The list may not comprise all the indigenous products that are of value in this respect, but some of them, at least, have not yet received extended application. The method employed in our estimations was devised by F. Jean, and published in the *Bulletin de la Société Chimique de Paris* (xxv., 511), and depends upon the absorption of iodine by tannic acid." By this method the quantity of tannic acid found in the various samples respectively was as follows:—

	Per cent.
Ground Sumac (mixed), from Winchester, Va.	24.18
Sumac (Rhus Cotinus), Hallsborough, Va.	24.08
Sumac (Rhus glabra), Georgetown, D.C.	26.1
Leaves of Sweet Fern (Comptonia asplenifolia), from near Boston, Mass.	9.42
Leaves of Polygonum amphibium, from Nebraska ..	12.6
Ephedra antisyphilitica, from the tablelands of Arizona and Utah	12.9
Bark of Sweet Gum (Liquidambar styraciflua), from District of Columbia	8.36
Bark of Red Oak (Quercus rubra), from Canton, Ill. ..	5.55
Bark of White Oak (Quercus alba), from Canton, Ill. ..	7.85
Crushed Quercitron bark (Quercus nigra), from Winchester, Va.	6.47
Bark of Quercus coccinea, from Canton, Ill.	7.78
Bark of Quercus macrocarpa, from Canton, Ill.	7.85
Bark of Hemlock (Abies canadensis) Van Ettenville, N.Y.	9.5

Enquiries.

He that questioneth much shall learn much.—BACON.

171. FRUITING OF THE ARBUTUS.—I have an Arbutus, a fine large healthy shrub, which is every season laden with pink blossom, but it never fruits, though three years ago I found one solitary berry on it. Can you give me any reason for this, or tell me how to remedy it? *H. A. B.* [Please send some flowers for examination. EDS.]

Answers to Correspondents.

ABUTILON: *S. Kefford.* Your seedling, a cross between Boule de Neige and Thompsoni, is very handsome, and will be a valuable acquisition. It is a clear yellow, like that of Linum trigynum, and large, the petals being upwards of 1⅞ inch long.

BOOKS: *Ignoramus.* The *Journal* of the Royal Horticultural Society may be obtained from the Secretary, at the Society's Gardens, South Kensington, S.W. "Ignoramus" will find the address on the front page of our last issue.

CHINESE YAMS: *An Old Subscriber.* Next week.

EUCHARIS AMAZONICA: *J. W. A.* A dozen bulbs in the size of pot you name are too many by half to have a chance of attaining full strength. They should have had a pot at least 3 inches in diameter larger, which give at once without disturbing the roots from the ball they are in. The night temperature you keep up is 5° or 6° too low to bloom it through the winter season in a satisfactory way, however strong. Like most other bulbs it flowers freer, especially in the winter, with bottom-heat, although it can be grown satisfactorily without. It will most likely bloom during the spring or summer.

INSECTS: *C. H.* The grubs which have destroyed your Primulas, &c., are those of the common weevil (Otiorhynchus sulcatus). The ground round the roots of the plants must be carefully searched, and if necessary the plants repotted in sifted earth. The insects are large and plain enough to be easily seen.—*G. B.* The Apple shoots are infested with the minute larvæ of an aphis (most probably the American blight). Wash the trees carefully with a mixture of lime, soft soap, soot, and sulphur.—*R. S.* The minute white insects in your hothouse are the mealy-winged Aleyrodes, the young state of which is a flattened scale on the leaves. Repeated fumigation, and washing the leaves with diluted spirit, will stamp out the pest. *I. O. W.*

NAMES OF PLANTS: *L. Hartley.* Professor Reichenbach has named the Orchid Lælia albida Stobartiana, nov. var.—*T. Y.* Garrya elliptica. Propagate by layers.—*W. Tait & Co.* Escallonia montevidensis.—*A Subscriber.* Salvia purpurea.—Of two plants received in a note without a signature, No. 1 is Senecio Petasites; of No. 2 our unknown correspondent is requested to send a better specimen.—*C. H.* Clematis calycina.—*Appleby.* Gnidia pinifoha.—*K. G. W.* 1, The Artillery plant, Pilea serpyllifolia; 2, not recognisable, possibly Callicarpa? 3, Brassavola latifolia.—*Y. A. P.* 1, Crocus chrysanthus, var. fusco-lineatus, Baker; 2, Crocus chrysanthus, we suppose, but cannot be certain without a corm; 3 and 4, C. chrysanthus, var. Imogen-tinctus, Baker. See our number for May 13, last year, p. 622.

POTATOS FOR EXHIBITION: *N. B. V.* White kidneys: Waterloo Kidney, Lapstone, and Excelsior Kidney. White rounds: Porter's Excelsior, Rector of Woodstock, Schoolmaster, and Model. Coloured kidneys: Purple Ashleaf, Garibaldi, and Late American Rose. Coloured rounds: Red Emperor, Scotch Blue, Blanchard, and Vermont Beauty. All the foregoing are of good exhibition size, and symmetrical in shape.

WEEPING POPLAR: *T. O. P.* The tree in question has not been put into commerce.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editor," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

CATALOGUES RECEIVED:—Messrs. Harrison & Sons (Leicester), Catalogue of Choice Seeds for the Farm and Garden.—T. W. Daley (Yeovil, Somerset), Catalogue of Flower, Vegetable, and Farm Seeds, Gladioli, &c.—Messrs. Vilmorin-Andrieux & Co. (4, Quai de la Mégisserie, Paris), Catalogue of Seeds, Trees, Shrubs, &c.—Messrs. Kerr & Fotheringham (Dumfries), General Catalogue of 1877.—H. Cannell's Illustrated Floral Guide for 1877.

COMMUNICATIONS RECEIVED.—H. G. R. (too late).—J. C. (many thanks).—J. S.—W. P.—D. S., Cork.—H. A. E.—J. W. S.—A. B. M.—W. J. M.—T. R.—D. G.—W. W. J. S.—H. E.—F. G.—H. E.—D. T. F.—J. R. H. (we only see a few spawn-threads of some fungus such as are frequently found amongst roots, it is impossible to say what). —W. W.—H. M. S.—E. F., Florence.—J. G. Amsterdam.

Markets.

COVENT GARDEN, February 15.

Business has continued brisk during the past week, and the supply is still moderate, with a slight advance. *James Webber, Wholesale Apple Market.*

VEGETABLES.

	s. d.	s. d.
Artichokes, per bush.	4 0	.. ..
— Eng. Globe, doz.	4 0	.. 0
Asparagus, Fr., bun.	0 0	.. ..
— English, p. bun.	8 0	10 0
— Sprue, per bun.	1 6	.. ..
Beans, French (new),		
¢ per 100	.. 4	0 .. ..
Beet, per doz.	1 0	2 0
Brussels Sprts. bush.	7 0	.. ..
Cabbages, per doz.	1 0	2 0
Carots, per bunch	0 0	.. ..
Cauliflowers, per doz.	2 0	4 0
Celery, per bundle	1 6	2 0
Chilis, per 100	2 0	.. ..
Cucumbers, each	1	6 3 0
Endive, per doz.	1 0	2 0
— Batavian, p. doz.	2 0	3 0
Garlic, per lb.	0 0	.. ..
Herbs, per bunch	0 0	0 4
Horse Radish, p. bun.	4 0	.. ..
Leeks, per bunch	0	2 0 4
Lettuces, per score	1 6	2 0
— Cos, per doz.	1 0	.. ..
— French, per doz.	1 0	1 0
Mint, green, bunch	1 0	.. ..
Mushrooms, per pott.	0 0	1 6
Onions, per bush.	5 0	8 0
— young, per bun.	0	8–0 10
Parsley, per bunch	0 0	.. ..
Peas, green, per lb.	1 6	.. ..
Potatos, new, per lb.	1 0	2 0
Radishes, per bunch	0 1	0 3
— Spanish, doz.	1 0	.. ..
— New Jersey, doz.	2 0	.. ..
Rhubarb, per bundle	0 4	.. ..
Salsafy, per bundle	1 0	.. ..
Seakale, per punnet	1 6	.. 2 6
Shallots, per lb.	.. 0	6 .. ..
Spinach, per bushel	3 0	.. ..
Tomatas, per doz.	2 0	6 0
Turnips, per bundle	0 4	0 6

Potatos.—Kent Regents, £5 to £6; Essex Regents, £4 10s. to £5; Kidneys, £8 per ton.

FRUIT.

	s. d.	s. d.
Apples, per ½-sieve	3 0	8 0
Cobs, per lb.	.. 1	0 1 6
Grapes, per lb.	.. 4	0 10 0
Lemons, per 100	.. 8	0 14 0
Melons, each	1 6	3 0
Oranges, per 100	.. 8	0 12 0
Peaches, per doz.	.. 0	0 0 0
Pears, per doz.	.. 2	0 12 0
Pine-apples, per lb.	1 6	4 0

PLANTS IN POTS.

	s. d.	s. d.
Azaleas, per dozen	24 0	60 0
Begonias, per doz.	6 0	12 0
Bouvardias, do.	.. 12	0 24 0
Ericas, per doz.	.. 9	0 18 0
Coleus, per dozen	3 0	9 0
Cyclamen, per doz.	12 0	30 0
Cyperus, do.	2 0	4 0
Dracæna terminalis	30 0	60 0
— viridis, per doz.	18 0	24 0
Epiphyllum, per doz.	4 0	9 0
Ferns, in var., p. doz.	6 0	30 0
Ficus elastica	2 0	15 0
Heaths, variety, doz.	12 0	18 0
Heliotrope, per doz.	6 0	12 0
Hyacinths, per doz.	8 0	18 0
Lily of Valley, each	2 0	5 0
Mignonette, per doz.	6 0	9 0
Myrtles, do.	3 0	9 0
Palms in variety, each	3 6	21 0
Pelargoniums, scarlet,		
per doz.	.. 6	0 12 0
Primula sinensis, doz.	4 0	9 0
Richardia æthiopica,		
per doz.	.. 12	0 18 0
Solanums, per doz.	6 0	24 0
Tulips, per dozen	1 8	0 12 0
Valotta purpur., doz.	12 0	18 0

CUT FLOWERS.

	s. d.	s. d.
Azaleas, 12 sprays	0 9	3 0
Bouvardias, per bun.	1 0	4 0
Camellias, 12 blooms	2 0	9 0
Carnations, per dozen	1 6	4 0
Cyclamen, per doz.	0 3	0 9
Epiphyllum, 12 sprs.	2 0	3 0
Eucharis, per doz.	6 0	12 0
Euphorbia, 12 sprays	2 0	9 0
Gardenias, per doz.	2 0	8 0
Heliotropes, 12 spr.	0 6	1 0
Hyacth., Rom., 12 sp.	1 0	4 0
Lily of Valley, 12 spr.	1 6	9 0
Mignonette, 12 bun.	6 0	12 0
Narcissus, 12 sprays	2 0	4 0
Pelargoniums, 12 spr.	2 0	4 0
— zonal, 12 sprays	1 0	4 0
Primula, dbl., p. bun.	1 0	2 0
Roses, indoor, p. doz.	3 0	12 0
— Christmas, bun.	0 6	1 6
Stephanotis, 12 spr.	2 0	3 0
Tropæolum, 12 bun.	2 0	6 0
Violets, 12 bun.	1 6	4 0

CORN.

At Mark Lane on Monday the market was extremely dull. Wheat holders were not, as a rule, disposed to make any concession, but sales could only be effected at less money. Barley was slightly cheaper in some instances. Malt was much the same in value. Oats experienced a slow sale, and inferior descriptions were fully 6*d.* per quarter cheaper than last week. Maize had a downward tendency, as also had Beans, Peas, and flour; but the business passing in them was almost too small to allow of any decided reduction being established.—There was no improvement to notice in the amount of business passing on Thursday in cereal produce. The condition of the produce was very poor, and with little or no demand for certain kinds prices cannot be reported firm. Some fine dry samples of Wheat changed hands at the rates of Monday, but the scarcity of supplies prevented a reduction.—Average prices for the week ending Feb. 10:—Wheat, 52*s.* 3*d.*; Barley, 40*s.* 3*d.*; Oats, 25*s.* 4*d.* For the corresponding week last year:—Wheat, 43*s.*; Barley, 33*s.* 7*d.*; Oats 24*s.*

CATTLE.

At the Metropolitan market on Monday the supply of beasts was very small and trade was heavy, the wet weather having considerable effect on sales. The number of sheep was also very small. Everything was excessively dull, and it was very difficult to make a clearance, at reduced rates. Choice calves were scarce and dear. Quotations:—Beasts, 4*s.* 4*d.* to 4*s.* 10*d.* and 5*s.* 4*d.* to 5*s.* 10*d.*; calves, 5*s.* 6*d.* to 7*s.*; sheep, 5*s.* 4*d.* to 6*s.* 2*d.* and 6*s.* 6*d.* to 7*s.* 2*d.*; pigs, 4*s.* 4*d.* to 5*s.* 4*d.*—The beast trade on Thursday was dull, and though supplies were light, prices tended downwards. Sheep met a fair demand, and Monday's figures. Prime calves continued scarce.

HAY.

The Whitechapel report of Tuesday states that the supply of fodder, although short on account of the unsettled weather, was fully equal to the demand, and quotations receded somewhat. Prime Clover, 100*s.* to 128*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 124*s.*; inferior, 70*s.* to 85*s.*; and straw, 40*s.* to 54*s.* per load.—Thursday's market was fully supplied, and the demand moderate. Quotations:—Clover, best, 100*s.* to 135*s.*; inferior, 85*s.* to 95*s.*; hay, best, 100*s.* to 126*s.*; inferior, 65*s.* to 85*s.*; and straw, 40*s.* to 52*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 128*s.* to 136*s.*; inferior, 110*s.* to 120*s.*; superior Clover, 135*s.* to 140*s.*; inferior, 110*s.* to 126*s.*; and straw, 50*s.* to 57*s.* per load.

POTATOS.

The Borough and Spitalfields reports state that trade remains in much the same state as previously noticed. Sound Potatos, of which there is only a moderate supply, are in demand at full quotations, while a dull sale prevails for inferior kinds at irregular prices. Kent Regents, 110*s.* to 130*s.* per ton; Essex ditto, 95*s.* to 110*s.*; Rocks, 70*s.* to 96*s.*; Victorias, 120*s.* to 145*s.*; Flukes, 140*s.* to 170*s.*—The imports into London last week comprised 27,151 bags from Antwerp, 14,386 from Hamburgh, 4863 from Ghent, 1876 from Brussels, 525 bags 066 sacks from Boulogne, 930 bags from Harlingen, 573 from Bremen, 150 from Rotterdam, 370 tons from Rouen, and 95 from Pont l'Abbé.

COALS.

At the market on Monday the trade was unchanged, a steady business being done at last prices. The following are the quotations respecting Wednesday's business:—Holywell Main, 16*s.*; West Hartley, 16*s.* 3*d.*; Walls End—Harton, 15*s.*; Hetton, 17*s.*; Hetton Lyons, 15*s.*; Hawthorns, 15*s.*; Lambton, 16*s.* 6*d.*; Original Hartlepool, 17*s.*; South Hetton, 17*s.*; Vanes, 15*s.*; Hartlepool, 16*s.*; Kelloe, 15*s.* 9*d.*; East Hartlepool, 16*s.* 9*d.*; Tees, 16*s.* 6*d.*

COCOA-NUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand testimonials. Four-bushel bag, 12*s.*, box included; truck-load, loose, free to any Rail, 25*s.*
POTTER OLLER, Spitalfields Market, N.E.

COCOA-NUT FIBRE REFUSE, newly made.—Reduced price, 20 bushels, 6*s.* 6*d.*; 100, 20*s.*; or Truck-load, 40*s.* Delivered free to any rail in London. J. STEVENS AND CO., Fibre Works, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE, FOR POTTING and PROPAGATING.
Cheapest and best advertised. Before purchasing elsewhere write for Sample and Price, &c.
M. H. BENTOTE,
FIBRE MAKER, LAUSANNE ROAD, HUNHEAD, S.E.

Fibrous Peat for Orchids, &c.
BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 4*s.* 6*d.* per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17*s.* per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5*s.* 6*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per sack.
WALKER AND CO., Farnborough Station, Hants.

GARDEN COMPOST, made entirely of Horse Stable Manure, inodorous and dry, for Bulbs, Flower-pots, and all Flowers, delivered free in London, at 22*s.* 6*d.* per load.
MANAGER, 9, Dacre Street, Westminster, S.W.

MANURE, first-class, made from Blood, Bone, &c., of animals, 11*s.* per cwt., £9 per ton. Samples free.
FINEST SECRET PEATS, per sack, ton, or truck.
LOAM, first-class, per bushel, sack, or ton.
SILVER SAND, fine or coarse, per bushel, cwt., or ton.
FRESH SPHAGNUM, 8*s.* 6*d.* per sack.
Before purchasing elsewhere write for Sample and Price.
KUSA MANURE, RAFFIA FIBRE, &c.
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ODAMS' MANURES, FOR ALL CROPS
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GISHURST COMPOUND.—Used by many of the leading Gardeners since 1850, against Red Spider, Thrips, Greenfly, Mealy Bug, Blight, &c., in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has only to be known to be appreciated. Sold Retail by Seedsmen, in Boxes, 1*s.*, 2*s.*, and 10*s.* 6*d.* Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

TOBACCO CLOTH and PAPER.—The cheapest and best article for Smoking Greenhouses and Destroying Fly. Price 1*s.* 2*d.* per lb.; over 10 lb., 1*s.* Tobacco Paper, 1*s.* per lb.; 4*d.* 4*s.* per cwt. P.O.O. payable at 165, Blackfriars Road, S.E.
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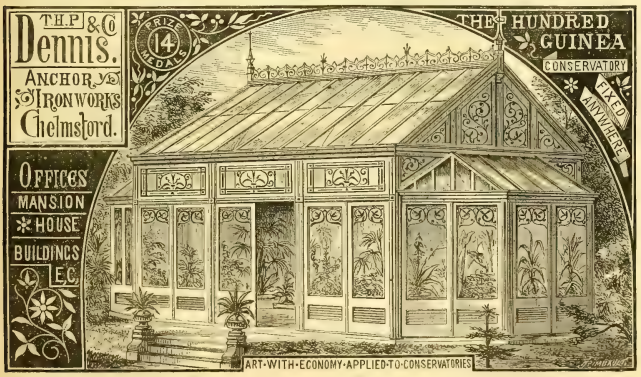
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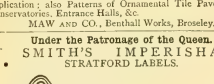
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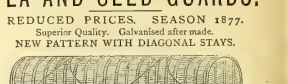
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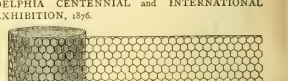
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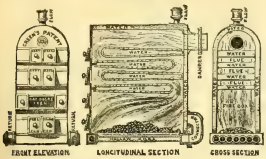
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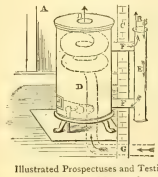


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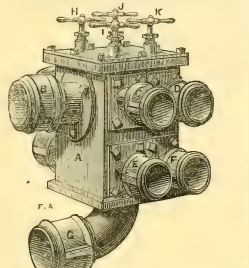
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FOR THE
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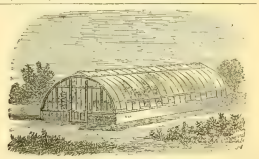


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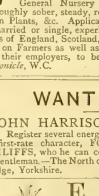
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"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by careful application of the fine properties of well-selected Cocoa, Mr. Epps has provided our breakfast tables with a delicately-flavoured beverage which may save us many heavy doctors' bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly nourished frame."—*Civil Service Gazette.* Sold only in packets, labelled thus:
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The best remedy for ACIDITY of the STOMACH, HEARTBURN, HEADACHE, and INDIGESTION: and the safest aperient for delicate Constitutions, Ladies, Children, and Infants.
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—Dangerous chest complaints.—The enumeration of these diseases is scarcely necessary, as, unfortunately, most Englishmen know them in their cost. Coughs, neglected colds, influenza, bronchitis, asthma, pleurisy, inflammation of the lungs, and even consumption in its early stages, are best treated by rubbing Holloway's Ointment upon the chest, and over the back between the shoulders. It penetrates internally, checks the cold shiverings, relieves the over-gorged lungs, gradually removes the oppression from the chest, and restores the obstructed respiration, hitherto so distressingly disagreeable and highly dangerous. In treating this class of diseases, Holloway's Pills should always be taken while using his Ointment: they purify the blood, promote perspiration, and allay dangerous irritations.

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THE

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Agents:—Messrs. B. K. BLISS AND SONS, Seed Merchants, 34, Barclay Street, New York; Messrs. M. COLE AND CO., Drawer No. 11, Atlanta Post Office, Atlanta, Fulton County, Georgia; and Mr. C. H. MAROT, 814, Chestnut Street, Philadelphia; through whom Subscriptions may be sent.

THE PELARGONIUM SOCIETY'S SHOW of 1877 will be held, by permission of the Council, at the Royal Horticultural Society's Garden, South Kensington, on WEDNESDAY, June 20. The Schedule, comprising twenty-four Classes, and Prizes amounting to £108, can be obtained by application to the Hon. Secretary, THOMAS MOORE, Esq, Botanic Garden, Chelsea, London, S.W.

CRYSTAL PALACE.—ARTIFICIAL FLOWER and FRUIT SHOW, March 3 to 17, 1877. Intending Exhibitors may obtain Schedules on application to GENERAL MANAGER, Crystal Palace.

LEEDS HORTICULTURAL SOCIETY. —The Fourteenth ANNUAL EXHIBITION will be held in the HORTICULTURAL GARDENS, Hyde Park Road, on JUNE 27, 28, and 29. Schedules of Prizes will shortly be ready, and may be obtained of the Secretary,

J. H. CLARK, Printer, Briggate, Leeds.

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JOHN PERKINS AND SON beg to offer the following :—

BEECH, fine transplanted, 2 to 3 feet, 18s. per 1000.
BLACK THORN, 1½ to 2 feet, 10s. per 1000.
Billing Road Nurseries, Northampton.

To the Trade.

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B. S. WILLIAMS begs to announce that his GRAPE VINES this year are unusually fine, and are now ready for distribution.

For Detailed List, see Bulb Catalogue.

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J. HANTELL, Bailiff, Houghton Hall, Rougham, Norfolk.

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All goods of 20s. value and upwards carriage free to any Railway Station in England or Wales. 5 per cent. discount for cash.

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FIR SEED, Scotch, guaranteed true native. Cheap.

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YEWS, English.—Good, strong, well-grown plants, 2½ to 4½ feet high, 75s. to 100s. per 100, package included. Terms Cash.

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Larch—Surplus Stock.

JNO. CARTER, Nurseryman, Keighley, has about 30,000 good, stout, transplanted Larch, 1½ to 2 feet, to offer, and will be glad to furnish sample and price.

LARCH FIRS, Strong, Transplanted.—A Surplus Stock of 20,000, 2 to 3 feet; also about 100,000 3-yr. QUICKS. For price apply to

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Final Sale this Season of Lilium auratum.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Auction Mart, Tokenhouse Yard, E.C., on MONDAY, February 26, at 12 o'Clock precisely, a large quantity of LILIUM AURATUM, AZALEAS, GLADIOLUS, Hardy LILIES, IRIS, FERNS in choice clumps, AMARYLLIS, &c., together with a consignment of New Zealand TREE FERNS, &c.

On view the morning of Sale, Catalogues had at the Mart, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Without Reserve—Barnet, Herts.

IMPORTANT SALE of well-grown NURSERY STOCK, consisting of a fine assortment of specimen Conifers and Evergreen Shrubs, also upon the Variegated Hollies, handsome bushy plants, 2 to 6 feet; several remarkably fine specimen Hybrid Rhododendrons, 2000 Bushy Aucubas, 2 to 3 feet; clean-grown Fruit Trees, together with a choice assortment of Standard and Dwarf Roses, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, on the Premises, the Barnet Nurseries, Barnet, Herts, on TUESDAY, February 27, at 12 o'Clock precisely, by order of Messrs. Cutbush & Son.

May be viewed two days prior to the Sale. Catalogues obtained on the Premises, at the Highgate Nurseries, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

City Auction Rooms, 38 & 39, Gracechurch Street, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Rooms above, on TUESDAY, February 27, at half past 12 o'Clock precisely, a choice collection of English grown double CAMELLIAS, 2 to 3½ feet, beautifully set with bloom-buds in perfect health; choice AZALEA INDICA, selected GREENHOUSE PLANTS, a splendid assortment of 500 Standard and Dwarf ROSES of the best varieties, selected FRUIT TREES, Hardy AMERICAN PLANTS, CONIFERÆ SHRUBS, together with some fine Bulbs of LILIUM AURATUM and LONGIFOLIUM, GLADIOLUS, RANUNCULUS, ANEMONES, also FUCHSIAS, DAHLIAS, &c.

On view the morning of Sale. Catalogues may be had at the Rooms, and of the Auctioneers, &c., 98, Gracechurch Street, E.C., and Leytonstone, E.

Clearance Sale, Lee, Kent, S.E.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. R. Maller to SELL by AUCTION, on the Premises, the Burnt Ash Lane Nurseries, Lee, adjoining the station, on WEDNESDAY, February 28, at 12 o'Clock precisely, the valuable NURSERY STOCK comprising 2000 Pyramid and Standard Fruit Trees, 600 Standard Roses, 1300 Evergreen and Coniferæ Shrubs, 200 fine hybrid Rhododendrons, 1500 Ornamental Flowering and Forest Trees, 1200 choice Ericas, Camellias, and other Greenhouse Plants.

May be viewed prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Heatherside Nursery, Bagshot, Surrey.

GREAT CLEARING RESERVED SALE of well-GROWN NURSERY STOCK, comprising, in addition to a choice assortment of beautiful young Evergreen, Coniferæ, and other Shrubs, a large quantity of handsome Specimen Evergreens, varying from 2 to 10 feet; thousands of well-rooted layers, including Rhododendrons, Hardy Azaleas, Limes, Moss and Provence Roses; together with 15,000 Seedlings, 2000 Hybrid Rhododendrons, 2000 Green Holly, 1 to 2 feet; 10,000 Austrian and other Pines, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, on the Premises, on TUESDAY, March 6, and following days, at 12 o'Clock precisely each day, by order of the Heatherside Nursery Company.

The stock may be viewed at any time prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers, as above.

Edgware, N.W.

MESSRS. POTTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Whitchurch Nursery, Edgware, on TUESDAY, March 13, at 12 o'Clock precisely, by order of the Proprietor, the Land being required for the formation of a Pinetum, the remaining portion of the remarkably well-grown NURSERY STOCK, comprising a considerable number of choice Piceas, Thujas, Thujopsis, Cupressus, &c., a quantity of Rhododendrons, Standard Roses, and other flowering Trees and Shrubs, Fruit Trees, &c., together with a choice assortment of valuable Orchids.

On view the day prior. Catalogues obtained on the Premises, and of the Auctioneers.

Cheltenham.

HIGHLY IMPORTANT UNRESERVED SALE of the unrivalled Collection of Specimen Exhibition STOVE and GREENHOUSE PLANTS, which for many years past have been exhibited at the leading Shows throughout the country with unprecedented success by Mr. James Cypher, who during the last two years has been the winner of 200 First Prizes and of £1025 in prize money, exclusive of a great number of Cups.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. James Cypher (who is giving up exhibiting, in consequence of the work of building and extension) to SELL the above COLLECTION of PLANTS, on the Premises, the Queen's Road Nurseries, Cheltenham, in the BEGINNING of APRIL.

Messrs. P. & M. may add that the plants were never in so promising a condition as they are this season, and that they may be viewed any day prior to the Sale. More particulars will shortly appear.

Important Sale of the very Rare Dendrobium BARBATULUM.

MR. J. C. STEVENS is instructed by Messrs. James Veitch & Sons to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., without reserve, on MONDAY, February 26, Thirty-four Lots of this very rare and beautiful AUSTRALIAN DENDROBIUM, the only plant of which hitherto known in England was exhibited in January, 1876, and again on the 14th inst. from the collection of Lord Londesborough, on each occasion receiving the highest award. This plant is very distinct from any other Dendrobium in cultivation. The leaves are from 6 to 9 inches long, and cylindrical, the flowers white, produced on five to seven flower-spikes; the linear segments resembling those of Oncidium phymatochilum, the lip being curiously curled, and terminated at the apex by a slender tail.

On view the morning of Sale, and Catalogues had.

Imported and Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, February 26, at half-past 12 o'Clock precisely, TWO HUNDRED FINE PLANTS of Odontoglossum crispum (Alexandræ) (Blumii), the majority starting into growth; Odontoglossum gloriosum, O. cirrhosum; established plants of Phalænopsis Schilleriana, P. amabilis, F. Luddemanniana, fine growing plants of Oncidium from Brazil, section of varicosum, of which O. Rogersi is a variety—one plant finely in flower will be on view; also a collection of established and semi-established Orchids in splendid condition, comprising Lælia purpurata, L. cinnabrina, L. præstans, L. flexuosa, Cattleya Schilleriana, C. bulbosa, C. Mossiæ, C. marginata, C. bicolor, Oncidium Marshallianum, and many other choice sorts; two importations of Dendrobium album, D. densiflorum, Cymbidium eburneum, C. Lowianum; fine plants of Sobralia, Cattleya, and a small collection of established Orchids, comprising many rare and valuable sorts.

On view the morning of Sale, and Catalogues had.

The Collection of Established Orchids,

of the late F. G. WILKINS, Esq., of Leyton.

MR. J. C. STEVENS has received instructions from the Rev. J. B. Norman, of Whitchurch Rectory, Edgware, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, March 2, at half-past 12 o'Clock precisely, a selection of fine plants from the Orchid Houses, rendered necessary from the want of room, and consisting of some of the finest plants of different varieties of MASDEVALLIAS that have ever been offered, including DENDROBIUM ARDIANUM, ONCIDIUM SARCODES, ODONTOGLOSSUM VEXILLARIUM, VANDA LOWII, most select varieties of CATTLEYA SKINNERI, CYPRIPEDIUM SUPERBIENS, LÆLIA ANCEPS DAWSONI, and many other rare and beautiful varieties.

Mr. R. can say that he can with every confidence recommend this selection as being of the most choice varieties, and in the very best of health.

On view the morning of Sale, and Catalogues had.

The Unrivalled Collection of Specimen Stove and GREENHOUSE PLANTS of the late F. G. WILKINS, Esq., of Leyton.

MR. J. C. STEVENS has received instructions to offer for SALE by AUCTION, on the Premises, on WEDNESDAY and THURSDAY, March 21 and 22, at half-past 12 o'Clock precisely each day, the magnificent COLLECTION of STOVE and GREENHOUSE PLANTS formed by the late F. G. Wilkins, Esq., of The Poplars, Leyton, comprising Crotons, Dracænas, Palms, Marantas, Ferns, Bougainvilleas, Clerodendrons, Crotons, Anthuriums, Azaleas, Palms, Ferns, Trained Pelargoniums, &c. This collection is without doubt one of the finest in the kingdom, and has been grown and exhibited most successfully by Mr. Ward for the last ten years.

On view the day prior and mornings of Sale, and Catalogues had.

Windlesham, Bagshot, Surrey.

To GENTLEMEN, NURSERYMEN, GARDENERS, and OTHERS.—Important Unreserved Sale of Thriving Young NURSERY STOCK, in excellent condition for Removal.

MESSRS. BERRICK AND SON beg to announce that they have been favoured with instructions from Mr. R. Mason to SELL by AUCTION, on the Premises, as above, on MONDAY, March 5, at 12 o'Clock precisely, the STOCK as below, standing on upwards of 1 acre of land, forming part of Mason's Nursery, the term of which expires on Lady Day next, comprising upwards of 1000 Standard and Standard Roses in great variety, thousands of Portugal and common Laurels, from 2 to 4 feet; Lilacs, from 3 to 6 feet; Berberis Darwinii, Rhododendrons of sorts, Privet, Irish Yews and other Thorns, Tree Box, 4 to 5 feet; English Yew, 2 to 4 feet; Purple Beech, Mountain Ash, Scarlet and English Oak, 8 to 10 feet; Poplars, 12 to 20 feet; Ligustrum ovalifolium, and common Privet, specimen border of Thuja gigantea, Thujopsis borealis, Juniperus chinensis, Cupressus Lawsoniana, Thuja retinospora, and others too numerous to mention, but which will be enumerated in Catalogues. The Nursery is within 2½ miles of Sunningdale Station, on the South-Eastern Railway. The whole of the Lots must be cleared away previous to March 25 next.

May be viewed any time previous to the Sale, and Catalogues had upon the Premises, the Inns in the neighbourhood, and of the Auctioneers, Chertsey, Kingston, and 51, Stamford Street, Blackfriars, London, S.

TO BE DISPOSED OF, near London, a NURSERY, comprising Greenhouses, heated with hot water, Range of Pits, stocked with a choice Collection of Plants, good Dwelling-house, Water laid on, every convenience—on LEASE; very low rental. More Land if required. Immediate possession for £300, remainder at interest. Address Z., 450, Glasshouse Street, Regent Street, London, W.

Notice to Creditors, &c.

Re MR. JOHN HARRISON, Deceased.

NOTICE IS HEREBY GIVEN, that any persons having CLAIMS AGAINST the ESTATE of the late MR. JOHN HARRISON, of the Firm of English Rose Nurseries, Catterick Bridge (late of Darlington), are requested to SEND at once a FULL STATEMENT THEREOF to the undersigned; and all persons INDEBTED to the said ESTATE must PAY the AMOUNTS DUE, to me, without delay, no other person being authorised to receive the same.

The Business will be carried on as usual at the Nurseries at Catterick and Scorton.

WILLIAM HARRISON,
South Grove, Rotherham.

February 23, 1877.

To Purchasers of Large Quantities, Market GARDENERS and OTHERS.

SUTTON AND SONS can offer :—

SUTTON'S IMPROVED EARLY CHAMPION, the best and most productive Early Pea in cultivation.

Sutton's Ringleader — Sutton's Racehorse
Daniel O'Rourke — and other leading kinds.

Lowest price per Bushel or Quarter on application.

SUTTON AND SONS, Seed Growers, Reading.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden.—"Gee's superior Bedfordshire-grown Plants and Seeds have attained much celebrity."—*Vide Bedford Mercury*, July 29, 1876. "The soils of the district offer facilities enjoyed at few places for bringing away plants, &c., and under the skill and perseverance of Mr. E. Gee they are turned to good account."—*Vide Agricultural Gazette*, July 31, 1876. See other opinions of the Press, also a Treatise on the Cabbage, CATALOGUES, lowest prices, &c., on application to FREDERICK GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

PROTHEROE AND MORRIS, HORTICULTURAL MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

CHESTNUT, Spanish, 2 feet, 35*s.*, 18 inches, 30*s.*, 12 inches, 25*s.* : ASH, 2 feet, 21*s.* : ALDER, 3 feet, 30*s.* : LARCH, 18 inches, 25*s.* Stout, well-rooted, transplanted. GEO. CRIPPS, Madhurst.

PRICKLY COMFREY.—The most productive and permanent Forage Plant known; can be cut five times a year; thrives well upon the poorest soils.
C. R. FREEMAN, Economic Seedsman, Norwich.

ALPINE AURICULA, NEGRO.—A fine dark Alpine variety, very dark centre, dark centre, very extensively used at Floors Castle Gardens (see *Florist* for February), 25*s.* per 100.
STUART AND MEIN, Nurserymen, Kelso, N.B.

POTATOS.—Snowflake, 22*s.* per cwt., rail free; Eureka, 20*s.*; Stephen, Bresee's Excelsior, Climax, Peerless, King of the Earlies, &c.
C. R. FREEMAN, Economic Seedsman, Norwich.

GRAPE VINES, strong planting Canes of Black Hamburgh, Pearson's Golden Queen, Muscat of Alexandria, and other leading sorts, 3*s.* 6*d.* each.
EWING AND COMPANY, Eaton, Norwich.

To Bouquet Makers and Floral Decorators.

CHRISTMAS QUINCEY, Spalding, begs to state that he has from 5 to 6 Acres of planted Double SNOWDROPS, now in full bloom, and can supply Flowers in any quantity. Address as above.

OSBORN AND SONS have still to offer a fine healthy Stock of GRAPE VINES for Planting. Prices, 3*l.* 6*d.*, 5*l.*, and 7*l.* 7*s.* each. Also a few strong FRUITING CANES, at 10*s.* 6*d.* each.
The Nurseries, Fulham, London, S.W.

ORANGE TREES, Two, very nice, and One LEMON TREE for Sale. For particulars and price apply to C. HALL, Wentham Park, Slough.

CUCUMBER PLANTS for Sale.—Very strong, in 60, 48, and 32 Pots. The Public may depend on getting supplied with Cucumber Plants till June next by applying to
G. WALKLING, College Park Nursery, Lewisham, S.E.

Cucumber Plants, clean, strong and healthy.

F. W. COOPER can supply the above :
Rollisson's Telegraph, Munro's Duke of Edinburgh, Blue Gown, and Tender and True, at 6*d.* each, or all the varieties grown under his own supervision and guaranteed true. The Trade supplied. Florist, Huntingdon.

BARTO VALLE AND CO., have a few of their double Italian TUBEROSE ROOTS left of this season's importation. They are offered at 2*s.* 6*d.* per dozen.
21, Haymarket, London, S.W.

Verbenas and Lobelias.

JNO. CARTER, Nursery, Keighley, begs to offer VERBENAS and LOBELIAS, of sorts, named, from cutting pots. The plants are good, and well hardened. Price on application.

Hardy Primrose Seed.

L. T. DAVIS offers a fine lot of above, saved from a very superior strain, in great variety of colour, from pure white to deep purple and crimson.
Price on application.
Ogles Grove Nursery, Hillsborough, Co. Down.

Dickson's Improved

MUSHROOM SPAWN.—This is undoubtedly the best Spawn. Circulars, with testimonials, prices, &c., on application to
JAMES DICKSON AND SONS, 108, Eastgate Street, Chester.

Lobelias and Centaureas.

LOBELIA PUMILA MAGNIFICA, from 1 Cuttings, 4*s.* per 100, free by post ; 500 for 18*s.* CENTAUREA GYMNOCARPA, CENTAUREA COMPACTA, and C. GYMNOCARPA PLUMOSA, fine summer-sown plants, established in pots, 3*s.* to 4*s.* per dozen, 20*s.* to 25*s.* per 100.
Mr. MARRIOTT, Melfish Road, Walsall.

LOBELIA, Emperor William, from Mr. Davidson's stock (Stanmore Park).—The undersigned will be prepared to supply the above splendid Lobelia, in quantities, on and after May 1st, at 20*s.* per 100 carriage paid. The whole stock are from cuttings. Price and further particulars in future advertisement.
HENRY DAVIES, Seedsman and Florist, Gt. Stanmore, N.W.

Well furnished Spruce Firs.

ELACK, The Nurseries, Wellingborough, Northamptonshire, offers the above, in sizes, from 1½ foot to 5 feet. Also PINUS AUSTRIACA, from 5 feet to 8 feet; YEWS, English, from 2 feet to 4 feet—all well-grown and well-rooted plants—at low prices per 100, which will be sent on application.
P.S.—A very fine stock of Standard LIMES.

LARCH.—For Sale, a quantity of extra strong, clean and well grown. For price apply to JAMES DICKSON AND SON, 32, Hanover Street, Edinburgh.

120,000 Vesuvius Geraniums for Sale.

F. WOOLIVEN, Langhedge Nurseries, Church Road, Upper Edmonton, London, N., has strong Autumn-stuck Plants of the above to Dispose of, at 8*s.* per 100, packed and forwarded to any London Railway Station grats., on receipt of Post-office Order for number required, payable at the Upper Edmonton Post-office, London, N. Also several thousands of CHRISTINE and Double GERANIUMS at the same price.

NURSERY STOCK.—To be Sold, Cheap :—

PINUS AUSTRIACA, 5 to 6 feet, 9*s.* per dozen, 60*s.* per 100.
MAPLE, Norway, 12 to 14 feet, 7*s.* 6*d.* per dozen.
LIMES, 10 to 12 feet, 15*s.* per dozen.
BEECH, 6 to 8 feet, 35*s.* per 100.
BIRCH, 12 to 14 feet, 3*s.* per dozen.
OAK, English, 5 to 7 feet, 8*s.* per 100.
Terms cash.
HY. MINCHIN, The Nurseries, Hook Norton, Oxon.

CHOICE TUBERS and ROOTS.—Twelve tuberous BEGONIAS, including Frœbelli, rosæflora, intermedia, Sedeni, Veitchii, &c., for 21*s.*, very fine bulbs. Twelve CALADIUMS, splendid tubers, fit for exhibition, ready to start, 21*s.* A few collections of these latter at 60*s.* per dozen, consisting of bulbs averaging 10 inches in circumference.
JOHN H. LEY, Royal Nursery, Croydon.

HEPATICA TRILOBA CŒRULEA.—Extra splendid stock, very well furnished with 1 to 2 to 6 flowers each, 18*s.* per 100, or 80*s.* per 1000. Samples Post-free on application.
J. VANDER SWAELMEN, The Lily Nursery, Gendbrugge, Ghent, Belgium.

LARGE TREE BOX and EVERGREEN HOLLY.—Handsome, bushy, and well-rooted, will transplant with good bulls of earth, 5, 6, 7, and 8 feet high. Tree Box lives under trees better than any other Evergreen tree. An inspection invited. Price on application to T. JACKSON AND SON, Nurseries, Kingston, Surrey.

Cabbage Plants, Cabbage Plants.

MESSRS. VIRGO AND SON, of Wonersh Nursery, Guildford, Surrey, can now supply, in large or small quantities, the following sorts, viz., EARLY BATTERSEA, EARLY ENFIELD MARKET, and NONPAREIL, 4*s.* per 1000 ; and ROBINSON'S DRUMHEAD, at 3*s.* 6*d.* per 1000 ; delivered free on rail.

Large Evergreen Trees for Screens.

WILLIAM MAULE AND SONS offer Norway SPRUCE and CEDRUS DEODARA, 10 to 15 feet high, well-rooted—fine bushy stuff, 5*s.* each, the latter 10*s.* 6*d.* The Nurseries, Bristol.

Centaurea candidissima or ragusina.

WOOD AND INGRAM offer fine summer-town plants of the above, thoroughly established in thumb-pots, at 3*s.* per 100. Package 3*s.* per 100, or 12 6*d.* for 50, not less than which will be sold at the price.
The Nurseries, Huntingdon.

To the Trade.

H. AND F. SHARPE'S Special Priced LIST of HOME-GROWN GARDEN and AGRICULTURAL SEEDS of 1876 growth, is now ready, and may be had on application.
Seed Growing Establishment, Wisbech.

NEW DRACÆNAS.—Twelve of the finest in cultivation for 21*s.*, well established young plants, growing freely. If potted on they will do for exhibition in the autumn.—D. Baptiste, D.Youngii, D. Imperialis, &c., included. Packages gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

To the Trade.

STANDARD and DWARF ROSES of the leading sorts—splendid Plants, no better in the Trade, well-ripened wood—about 15,000 Standards and 5000 Dwarfs, guaranteed worth the money, for lowest prices apply to
GRANT AND CO., Park Nursery, Portadown, Ireland.

RHODODENDRONS.
3-yr. Seedlings, 6 to 10 | 4-yr. Seedlings (fine), 8 to 10 inches, transplanted ; | inches, transplanted ;
12 to 18 inches, transplanted.
For prices, which are low, apply to
HENRY FARNSWORTH, Matlock Bank, Derbyshire.

RALPH ROBSON, Nurseryman, Hexham, has to offer the following :—
LARCH, Native, 1-yr. seedling, fine.
,, 2-yr., 2-yr., 15 to 18 inches, fine.
ASH, 2-yr., 2 to 3 feet, fine
POPLAR, Black Italian, 2 to 3 feet, fine.
GOOSEBERRY BUSHES, Lancashire varieties.
FRUIT TREES, standard and dwarf-trained, of all kinds.
All the above are fine clean stuff, and well grown. Prices on application.

CRANSTON AND COMPANY have to offer :—
PEARS, Pyramid, on Quince, extra strong bearing trees, 3 to 4, 4 to 5, and 5 to 6 feet, all the leading kinds.
PEARS, Dwarf-trained, for Espaliers and Walls, well furnished, all the best late kinds.
PEACHES, NECTARINES, and PLUMS, Dwarf-trained.
PEACHES, Standard, beautiful, double worked.
CHERRIES, Standard, 5 to 6 feet stems.
APPLES, Standard, for the Garden and Orchard.
,, Cider, Standard, twenty to thirty of the best Herefordshire kinds.
Descriptive LISTS, with Prices, on application.
King's Acre Nurseries, near Hereford.

Camellias in Bloom.

WM. PAUL AND SON (Successors to the late A. PAUL & SON, established 1806), Paul's Nurseries, Waltham Cross, N., respectfully invite inspection of their Collection of Camellias, now finely in bloom.
Visitors by Railway can enter the Nurseries from the platform, "Waltham" Station, Great Eastern Railway.

To Planters of Forest Trees and Others.

THE HEATHERSIDE NURSERIES COMPANY (LIMITED) have decided on clearing the following Surplus Stock, and will accept half the current prices :—

100,000 PINES, Weymouth, 3 to 7 feet.
100,000 FIR, Scotch, 9 to 15 inches.
200,000 QUICK, 2-yr. bedded, 1 to 1½ foot.
10,000 OAKS, Scarlet, 5 to 8 feet.
20,000 PINES, Austrian, 3 to 5 feet.
50,000 PINUS RIGIDA, 3 to 6 feet.
10,000 LAURELS, common, 2 to 2 feet.
10,000 CHESTNUTS, Horse, 5 to 9 feet.
And many thousand others.

For prices and particulars apply to
THOMAS THORNTON, Manager, Heatherside Nurseries, Bagshot, Surrey.

Superb Ridge Cucumber.

CUCUMBER, Foster's X.L. Superb Ridge. —This variety is remarkably fine handy, long, dark green Cucumber, and one that can be recommended with the greatest confidence. It is very prolific, and keeps its colour to the last; all who have seen it growing are satisfied that it cannot be surpassed, and those who have tried its flavour are convinced of its excellent quality ; length, 12 to 18 inches. Price 6*d.* and 1*s.* per packet ; price to the Trade on application.
EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

Shallot Seed.

DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild : with ordinary treatment bulbs have been grown 10 and even 12 inches in circumference—by far the best medium-sized growing Jersey Shallot. Treatment same as Onions. Price 1*s.* per packet. May be had of all Seedsmen in sealed packets, and Wholesale of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C., or
B. R. DAVIS, Nursery and Seed Warehouse, Yeovil.

SPECIMEN AZALEAS (Winter flowers).—An abundance of splendid flowers can be had in a week or two, or at any time purchasing a few Specimen Azaleas now opening flower. The plants are from 2 to 3 feet over, perfect shape, some hundreds of flowers and buds, which will last for months at this time of the year. All are well valuable sorts. 21*s.*, 31*s.* 6*d.*, and 42*s.* each, according to size and sorts. Lighter plants only are for Sale, they are all worth double the money. Packages gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

To the Trade.—Seed Potatos.

H. AND F. SHARPE will be pleased to send their SPECIAL CATALOGUE of SEED POTATOS to those of the Trade who have not yet received one. It comprises all the principal English and American varieties worthy of cultivation ; they are all grown from the finest selected stocks, and the prices will be found very moderate. Seed Growing Establishment, Wisbech.

GREEN TREE BOX.—The hardiest evergreen, exclusive of the Coniferæ, thrives in almost any soil, unwholesome smoke excepted. Is very valuable, and, on account of its being applied in increasing quantities to new uses, is rapidly rising in price. A few acres of Box trees planted now will prove a comparatively large trees be worth an almost fabulous amount of money. Very bushy and extra well rooted plants can be supplied.
1½ to 2 feet, 42*s.* per dozen, 25*s.* per 100, £10 per 1000.
2 to 2½ feet, 6*s.* per dozen, 35*s.* per 100, £15 per 1000.
2½ to 3 feet, 9*s.* per dozen, 60*s.* per 100, £25 per 1000.
CATALOGUES of ROSES, FRUIT TREES, and General NURSERY STOCK, free.
EWING AND COMPANY, Eaton, Norwich.

Seed Potatos.

CHARLES TURNER can supply healthy sets of the following :—

Early White Perfection,	Schoolmaster,
Early White Don,	Snowflake,
Early Handsworth,	Princess of Lorne,
Early Reliance,	Fortyfold,
Early Vermont,	Wyatt's and Rivers' Ashleaf.

Prices CATALOGUE on application.
The Royal Nurseries, Slough.

Now Ready,

CHARLES TURNER'S Descriptive CATALOGUE of SEEDS. Post-free on application.

The Finest Dwarf Marrow Pea is

TURNER'S MACLEAN. See CATALOGUE, now ready.

New Early Prolific Pea,

ALLAN'S CHAMPION. Full description in CATALOGUE, now ready.

Schoolmaster.

FINEST ROUND POTATO. Description, with testimonials, in CATALOGUE, now ready.
CHARLES TURNER, The Royal Nurseries, Slough.

CHARLES LEE AND SON (Successors to Messrs. John & Charles Lee), of the Royal Vineyard Nursery, Hammersmith, W., beg to announce that, in consequence of the Retirement of Mr. John Lee from the business, they have TAKEN OVER the ENTIRE NURSERY and SEED TRADE so successfully carried on by the above firm for the late Firm, and they trust the same liberal patronage so long given to Messrs. John & Charles Lee will be continued to the New Firm.
Charles Lee & Son pledge themselves to devote all their energy to raising First-class Stock in every department, which the large resources at their command will enable them to supply with considerable advantage to the Public both as regards quality and price. With a view to a more extensive production of Stove and Greenhouse Plants of the best quality they intend to almost entirely rebuild their extensive ranges of Glass on a new site, a portion of the old Nursery being taken up for building purposes. All orders to be addressed to
CHARLES LEE AND SON, Royal Vineyard Nursery, Hammersmith, W., where the general business of the Nursery and Seed Trade will be carried on ; or to
Mr. DIXON, Feltham Nursery ; Mr. CANNON, Ealing Nursery ; Mr. WEBB, Arboretum, and Mr. MARSLEN, Wood Lane, Isleworth.

Vines, Vines, Vines.

HUGH DORAN AND SON (late Copeland & Doran), MARKET GARDENERS, can supply strong, well-ripened Canes of all the leading varieties, guaranteed true to name, at reasonable prices. Lists on application. PINE PLANTS, STRAWBERRY PLANTS, &c. The Trade supplied. Stretford, near Manchester.

Vines, Vines, Vines.—The Planting Season.

THE COWAN PATENTS' COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Canes of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.
F. MAHAN GREEN, Secretary.

Genuine Garden Seeds.

WM. CUTBUSH AND SON have for many years held some of the finest Stocks of SEEDS in the Trade, and they believe that no house can possibly supply better quality. CATALOGUES post-free on application.
HIGHGATE, LONDON, N. ; and HARTS.

LADY HENNIKER APPLE GRAFTS. 6 for 1*s.*, 60 for 6*d.*, 120 for 8*d.*, 100 for 15*s.* A splendid Kitchen or Dessert Apple, weighs 18 oz., bears freely on one-year's wood. Pyramids 3*s.* 6*d.*; Standards 5*s.* each.
EWING AND COMPANY, Eaton, Norwich.

VERBENAS, VERBENAS, VERBENAS. —Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6*s.* per 100, 50*s.* per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, for 5*s.* Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

AUSTIN AND MCASLAN, GLASGOW.
Established 1727.
GARDEN and IMPLEMENT (64 pages) CATALOGUE Free on application.

TWELVE BEAUTIFUL ORCHIDS, 42*s.*, established plants of fine sorts, as Cattleya citrina, Lælia autumnalis, Lælia albida, Odontoglossum, Dendrobium, and upwards of fifty other sorts. They have all made fine growth this season.
JOHN H. LEY, Royal Nursery, Croydon.

Roses, Fruit Trees, Evergreens, &c.

WILLIAM FLETCHER'S CATALOGUE is now ready, and may be had post-free on application. The Nursery Stock this season is very fine, healthy, and well-rooted. Early orders are respectfully solicited.
Ottershaw Nurseries, Chertsey, Surrey.

Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS (by THOMAS RIVERS) is now ready ; also CATALOGUE of Select ROSES. Post-free on application.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Verbenas, Verbenas, Verbenas.

WILLIAM BADMAN offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, at 12*s.* per 100 ; or turned out of pots, 10*s.* per 100. Good rooted Cuttings, 6*s.* per 100, 50*s.* per 1000, package included. Terms Cash.
Cemetery Nursery, Gravesend, S.E.

To the Trade.

MESSRS. LEVAVASSEUR AND SON, of NURSERYMEN, Ussy, Calvados, France, have an immense Stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanted. Priced CATALOGUES may be had of
Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

STEPHANOTIS FLORIBUNDA.—Strong specimen plants of a very free-flowering variety, 10*s.* 6*d.* each ; smaller, but fine half specimens, which will produce abundance of flower early, the buds just appearing on some, 7*s.* 6*d.* each, 63*s.* per dozen ; in 48-pots (flowered last summer), 30*s.* per dozen. This offer is for six weeks only, to make room, the plants being worth double the money.
JOHN H. LEY, Royal Nursery, Croydon.

EWING AND COMPANY'S LIST of NEW ROSES for 1877 is now ready, and may be had gratis. Additional Houses have this season been built specially to extend the Propogation and Growth of NEW and RARE ROSES, and they are making vigorous, strong growth, and will be unusually large and fine.
Their GENERAL LISTS of Roses, Fruit Trees, Ornamental Trees for Avenues, Conifers, Evergreens, Clematis, &c. (104 pages), with full descriptions, gratis
The Royal Norfolk Nurseries, Eaton, near Norwich.

The Best Late Broccoli.

BROCCOLI, Christie's Self-protecting Late White.—Pronounced by all who have seen it as the finest self-protecting Broccoli in cultivation. Price per packet, 1*s.* 6*d.* A limited quantity to offer to the Trade, price on application.
EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

Notice.

EDMUND PHILIP DIXON'S CATALOGUE of NEW and CHOICE SEEDS is now ready, and will be forwarded gratis and post-free on application.
EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

Pelargoniums, Pelargoniums.

JAMES HOLDER AND SON have a fine healthy Stock of the above to offer, at the following low prices for Cash, viz., 35*s.* per 100, distinct sorts, bumper mid package included ; also extra strong plants, in 32-pots, 18*s.* per dozen, in 48-pots, 9*s.* per dozen, 60*s.* per 100, basket and packing extra. Crown Nursery, Reading.

SEEDS—SEEDS—ALL KINDS.—Before ordering your Seeds, send for Illustrated CATALOGUE, which contains full Directions,
How, When and What to Sow.
PENGILLEY AND POOL (successors to the Heatherside Nurseries Company), 59, Queen Victoria Street, London, E.C.

RICHARD SMITH
WORCESTER

RICHARD SMITH'S LIST of Evergreen and Deciduous Shrubs, Rhododendrons, Standard Ornamental Trees, Climbing and Twining Plants, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and General Remarks.

RICHARD SMITH'S LIST of Roses, containing all the best of the new and old varieties, arranged in their several sections, and fully described as to their Shapes, Colours, and Adaptations; with ample instructions as to their Treatment and Prices.

RICHARD SMITH'S LIST of Herbaceous and Alpine Plants, with their Scientific and English Names, Height, Colour, Time of Flowering, Price, &c.

RICHARD SMITH'S LIST of all the Evergreen Fir Tribe suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country, and Size there, Situation, Soil and other information, with Copious Index of their Synonyms. Free by post for six stamps

RICHARD SMITH
WORCESTER

Vegetable & Flower Seeds
Seed-Potatos, Tools &c
Best quality. Carriage free
Priced Catalogue-post free
James Dickson & Sons
Seed Growers &c
108 Eastgate St Chester.

CRANSTON'S NURSERIES,
KING'S ACRE, near HEREFORD.
ESTABLISHED 1785.
SPECIALITIES.
ROSES, FRUIT TREES, CONIFERS.
Descriptive Priced Lists on application.

AVENUE TREES.
PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 8 inches at 4 feet from the ground.
LIMES, 12 to 20 feet high, and girthing 6 to 10 inches at 4 feet from the ground.
POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 6 inches at 4 feet from the ground.

ANTHONY WATERER
Has to offer many thousands of the above. They may be seen growing at Knap Hill. They are straight, handsome, and well rooted, and altogether the finest Trees of the kind to be found in any nursery in Europe.
KNAP HILL NURSERY, WOKING, SURREY.

WM. PAUL & SON,
(Successors to the late A. Paul & Son, Established 1806.)
ROSE GROWERS,
TREE, PLANT, BULB, AND SEED MERCHANTS,
WALTHAM CROSS, HERTS,
Adjoining the "Waltham" Station, Great Eastern Railway.
Inspection of Stock invited.
Priced Descriptive Catalogues free by post.

E. G. HENDERSON & SON
Offer the following in Seed, of quality the best that can be had, at per packet:—
CALCEOLARIA—the variety of colours, size, and shape of the flowers is the result of many years' continual improvement; 2s. 6d. and 5s.
CINERARIA—the shape and brilliancy of colour in these flowers is of great importance; 2s. 6d. and 5s.
PRIMULA SINENSIS, crimson, scarlet, and white (better cannot be had), separate or mixed, 2s. 6d. and 5s.
" " double-flowered, true from seed, 2s. 6d. and 5s.
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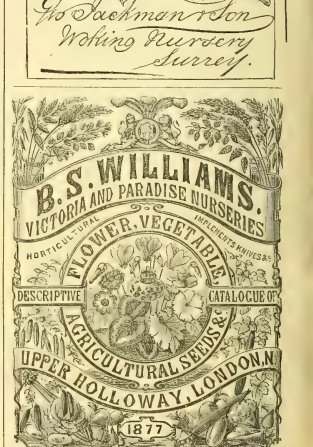
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New Roses for 1877.

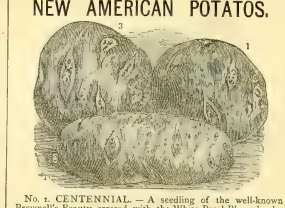
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Extra fine plants ready in March.
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HARDY AQUATICS at the lowest prices.

NEW AMERICAN POTATOS.



No. 1. CENTENNIAL.—A seedling of the well-known Brownell's Beauty crossed with the White Pearl Blue; haulm stout, vigorous, of medium height; tubers medium and of uniform size; shape round, somewhat flattened, symmetrical and handsome; colour deep red; flesh fine grain, white and mealy; very productive, and of fine quality.

No. 2. BROWNELL'S SUPERIOR.—Of the same parentage as the preceding. Its tubers are medium to large, kidney-shaped, of a peculiar dark copper colour, very uniform and handsome in appearance; skin fine and smooth; eyes few and small; the haulm is strong and healthy; the tubers are thickly clustered around the stalks. It is a second early variety, keeps well, and is enormously productive, 673 lb. having been grown from 1 lb. of seed with ordinary farm culture. A Certificate of Merit was awarded this variety at the International Potato Show.

No. 3. IMPROVED PEARL BLUE.—A cross between the well-known Jersey Pearl Blue and the Excelsior. It partakes of some of the characteristics of each of its parents, having the haulm of the Excelsior, while its tubers resemble the Pearl Blue, though better formed; while in quality it equals that old standard sort, it is far more productive and matures earlier.

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Remittances can be made in Post-office Stamps or Postal Money Order on New York or London, payable to B. K. Bliss and Son.

The above varieties can also be obtained of Messrs. HOOPER AND CO., Covent Garden, W.C.; of CARTER, DUNNETT, AND BEALE, London, W.C.; CHRISTMAS QUINCEY, Peterborough.

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GROS GUILLAUME GRAPE

(Roberts' Variety).

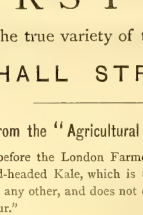
The largest Black Grape in Cultivation.

Eyes or Scions from fine, strong, well-ripened wood, 20s. 6d. each
Ditto ditto ditto second size ... ... 7s. 6d. ,,

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SEED AND NURSERY ESTABLISHMENT,
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E. G. HENDERSON AND SON offer splendid Fruiting Canes of all leading kinds. Planting Canes, 3s. 6d., 5s., and 7s. 6d. each; Golden Queen, Venn's Black Muscat, and Waltham Cross, 42s. and 60s. per dozen. Trade supplied.
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HOLLY, common, 9 to 12 and 12 to 18 inches; variegated, 1 to 2½ and 2½ to 4 feet, well rooted.
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LAUREL, laifolia, the finest of all the common vars., 12 to 18 inches, 1½ to 2 feet, and 2 to 2½ feet.
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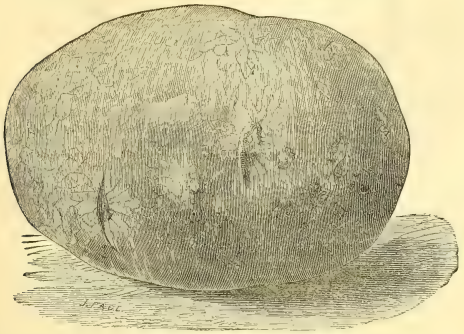
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Extract from the "Agricultural Gazette" of March 13, 1876.

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HOOPER'S COVENT GARDEN PERFECTION.

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Mr. Shirley Hibberd, after two years' trial, thus speaks of it :—"I believe it to be distinct. It is of *remarkably fine quality, the very model of a Gentleman's Potato.*" It will bear close cutting in planting.

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Second Early Red American variety—very fine; by the raiser of Brownell's Beauty, upon which it claims to be an improvement. Price, 3*s.* 6*d.* per lb., 7 lb. 21*s.*

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Large Red Kidney, of extraordinary productiveness. In our trial last year we had a produce of 240 lb. from 4 lb. Price, 2*s.* 6*d.* per lb., 7 lb. 15*s.*

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Flat White Potato. Wonderful for size. Our crop from 3¼ lb. planted was 167 lb. Price, 2*s.* 6*d.* per lb., 7 lb. 15*s.*

LADY WEBSTER (McKinlay).
A little beauty, red streaks about the eyes. Very high class variety, fine quality. Price, 3*s.* per lb.

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A thoroughly good novelty, of which a few were sent out last year—red, rough skin; good cropper. Price, 1*s.* 6*d.* per lb., 7 lb. 9*s.*, peck, 15*s.* 6*d.*

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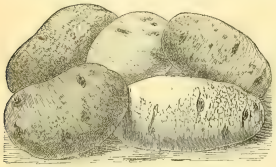
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Our Stocks of POTATOS are warranted True to Name and Free from Disease, all being carefully selected at the time of growth, and afterwards passed through the hands at least three or four times before being sent out, and all inferior, misshapen and forked tubers carefully discarded.

To improve the culture and encourage the diffusion of really good varieties, we have determined to offer at the lowest possible rates COLLECTIONS OF POTATOS FOR EXHIBITION PURPOSES, and trust our efforts in this direction will meet a want so much felt by our Customers and the gardening community generally. The selection in all cases must be left to us; it will be very carefully made, and only those of known excellence and superior qualities included.

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	1 lb. each.		7 lb. each.		14 lb. each.
	s. d.		s. d.		s. d.
12 varieties	3 6	..	17 6	..	34 0
18 ,,	5 0	..	25 0	..	48 0
24 ,,	7 6	..	32 6	..	63 0
36 ,,	10 6	..	50 0	..	95 0

All carefully labelled and packed.

The above are nett prices for cash, with no charge for packing.

Seed Orders of the value of 20s. and upwards, including Potatos, carriage free to any Railway Station in England or Wales.

Price Lists on application.

Special Quotations given for large quantities.

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MESSRS. J. VEITCH & SONS

Have the pleasure to announce that they have made arrangements with Dr. Denny for the distribution in April next of his fine new Zonal Pelargoniums, remarkable for the size of their trusses, the brilliant colouring and perfect shape of their flowers, and for the persistency of their petals, which are of great substance, the trusses thence continuing in perfection for a long period.

They are especially adapted for pot culture for the conservatory, where their richly-coloured flowers and fine trusses will be found a welcome, as well as a useful addition to our decorative resources, and for which purpose James Veitch & Sons beg to recommend them, particularly for the winter months.

HEATHER BELL.

A magnificent florists' flower, of a distinct bluish tinted or lilac-pink colour, with a white blotch on upper petals; the petals are of good substance and overlapping, and the pips expand to slight convexity. The trusses, which are large and globular, stand erect over a neat zonate dark green foliage. Owing to the persistency of the petals (in this respect unlike other varieties of the pink section), the trusses retain their perfection of shape and beauty for a long period. It is extremely floriferous, and in a dry warm house produces its fine flowers in perfection throughout the winter months. Habit dwarf and branching. This variety undoubtedly possesses the nearest approach to perfection as regards florists' qualities yet attained in the pink section, and for pot culture is unrivalled. It is believed it will make an excellent bedder, but its bedding qualities have not yet been fully tested. Price 10s. 6d. each.

AMAZON.

A deep brilliant scarlet with a rich velvety lustre, of the finest florists' form; petals of great substance, with smooth edge, and very large, so as to considerably overlap each other; trusses large and well formed. Habit robust, and of free growth, suited for pot culture, or for being trained to trellis-work or pillars in a conservatory. It is not adapted for bedding purposes. This variety received the award of the Large Silver Flora Medal of the Royal Horticultural Society for the perfection of its florists' qualities. Price 7s. 6d. each.

IRENE.

Flowers of a deeper shade of purple-magenta than any previously raised by Dr. Denny, being a very considerable advance in colour upon Imogen, as well as in the quality of its flowers. The petals and pips are of fine shape and open, with slight convexity. Trusses of good size, and produced in the greatest abundance. A dwarf and compact-habited plant, with a deep green zonate foliage. This variety, with proper treatment, will flower throughout the winter months, and during that season its flowers show a deeper shade of purple and greater brilliancy of colour than at any other period of the year. Price 7s. 6d. each.

CLEOPATRA.

Flowers of a brilliant shade of carmine-magenta, a large pip which expands to perfect flatness; trusses of fine form, and produced in abundance; habit robust and free. For pot culture Cleopatra is a distinct and conspicuously beautiful variety. Price 7s. 6d. each.

NYANZA.

Flowers of a fine soft scarlet, of large size, great substance, and well formed; truss of good size; habit free, robust, and dwarf. Price 5s. each.

EGERIA.

Flowers of a deep purplish magenta-crimson, and of good form; trusses large, and owing to great persistency of petal retain their perfection of shape and beauty for an unusually long period. Habit dwarf and good. Price 5s. each.

GLOBOSA MAJOR.

A deep maroon-crimson flower of the nosegay or decorative type, producing trusses of immense size and of perfect globular form, which, owing to the persistency of the petals, is retained for a long period. For conservatory decoration this variety is unrivalled for brilliant effect. Price 5s. each.

Price for the above Set of Seven, one plant of each, 42s.

DISTINGUÉ.

A double blush white, producing large trusses of a semi-nosegay character, which stand erect over a dark brilliant green foliage; habit robust, dwarf and compact. Price 7s. 6d. each.

EDELWEISS.

A nearly pure white double variety, with large petals and finely-formed trusps, trusses of good size and very freely produced; handsome dark green zonate foliage; habit free, but dwarf and compact. A great advance upon Aline Sisley. Price 7s. 6d. each.

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RHODODENDRONS, 100,000, fine bushy plants, thinly grown and well-rooted.

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,, HYBRIDS, from all the choicest named varieties, 1 foot, bushy, 20s. per 100; 1 to 1½ foot, 30s. per 100; 1½ to 2 feet, 40s. per 100.

,, PONTICUM, 10 to 12 inches, 50s. per 1000; 12 to 15 inches, 10s. per 100; 15 to 18 inches, 15s. per 100; 18 to 21 inches, 40s. per 100; 2 to 3 feet, 50s. per 100; 3 to 3½ feet, bushy, 80s. per 100.

YEWS, English, clean, well-grown plants, 6 to 9 inches, 40s. per 1000; 9 to 12 inches, 50s. per 1000; 1 to 1½ foot, 30s. per 100.

CUPRESSUS LAWSONIANA, fine Ornamental tree for Lawns or Wood Planting as shelter for Game, also for Garden Fencing, 2 to 3 feet, 30s. per 100; 3 to 4 feet, 50s. per 100.

ASH, Mountain, 2½ to 3½ feet, 25s. per 1000.

BOX, Tree, 1 to 1½ foot, 12s. 6d. per 100; 1½ to 2 feet, 20s. per 100; 2 to 3 feet, 30s. per 100.

CURRANTS, quantity of extra strong Black Grape, 10s. per 100.

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FLOWER AND VEGETABLE SEEDS FOR 1877.

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GLOXINIA, Finest Drooping Varieties	1 6
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PRIMULA, Williams' Superb Strain, Red, White, or Mixed .. .. .. 5s., 3s. 6d., 2s. 6d., and	1 6
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WALLFLOWER, Harbinger, Autumn and Winter flowering	1 0

Packets of Flower Seeds, excepting heavy kinds, Free by Post.



VEGETABLE SEEDS.

	Per packet.—s. d.
BEANS, Williams' Early Prolific Dwarf French—per qt.	3 0
BRUSSELS SPROUTS, Welch's Giant, one of the finest in cultivation .. .. per packet	1 0
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MELON, Osmaston Manor Hybrid	2 6
,, Laura's Beauty, (New)	2 6
,, Surprise (New)	2 6
ONION, Williams' Magnum Bonum	1 6
PEA, Williams' Emperor of the Marrows .. per quart	2 6
TOMATO, The 100 Days .. .. .. per packet	1 6

*** *All seeds amounting to 20s. will be delivered free of carriage to any Railway Station in England.*

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VICTORIA & PARADISE NURSERIES
UPPER HOLLOWAY, LONDON, N.

SATURDAY, FEBRUARY 24, 1877.

WALKS AND ROADS.

NOTHING adds so much to the comfort of a garden or estate as good sound walks and roads, and yet how seldom do we see or experience such, although plenty of material may be ready to hand, or easily obtainable in the immediate neighbourhood to put them into that very desirable condition. The principal thing in the formation of walks and roads, like that of building a house or other structure, is to have a good solid foundation, without which they are never afterwards in a satisfactory condition, whatever amount of labour may be expended on them with the view of rendering them so, unless they are entirely remade. Many commit the grave mistake of using gravel just as it is obtained from the pit, in which state, however good, it is seldom that a comfortable walk can be made. It frequently happens that gravel so raised is simply placed on the natural soil after a few inches of the top has been dug out, the result of which is, that after a little wear, wet, or frost, the bottom ooses through, or the worms cast it up, when it at once causes a discoloration of the surface, and forms a bed for a prolific crop of weeds that soon take possession and luxuriate in such a congenial home. Besides all this, the gravel having no proper foundation to rest on, the walk or road becomes soft and rotten at a time when most needed for use. At no season has this been more forcibly brought home to us than during the present winter, when the country has been almost inundated with water.

In cases where either walks or roads are in an unsatisfactory state, the best way is to break them up at once, and set about remaking them in a proper manner. As before observed, the foundation is the principal thing, and the next is proper and efficient drainage to carry off the surface-water, which should never be allowed to lie on the gravel or percolate through to the rough bed below. The depth to which the walk or road should be dug out will depend entirely on the nature of the soil, the amount and kind of traffic that is likely to take place over it, and the general purposes for which it may be required. If the roads are simply wanted for carriage use or for other light vehicles to pass over them, from 8 inches to a foot of good sound stuff will be amply sufficient. The lower part of this should consist of broken burrs from brick-kilns, slags from iron-foundries, rough stones, or any hard material of that character that is most readily accessible. This should be spread uniformly over the bottom, and the interstices filled up with fine chalk or good binding gravel, that it may not lie loose and hollow, for when this is the case the top can never be firm, but will shift about under the pressure of any vehicle or heavy weight that may pass over it. Having laid a solid foundation as above advised, the next thing is to ram it firmly, so as to get it well together, and that done, add for the next 3 inches a layer of hard angular stones, such as may be obtained by sifting coarse gravel, in doing which sufficient of the fine should be left to bind the whole firmly together. The quantity required for that purpose will vary according to the character of the gravel made use of, but may roughly be set down at one-fourth. If the fine part should be at all of a sandy nature, and not possess good binding qualities, fine chalk should be substituted in-

stead, or, failing this, a slight portion of pulverised marl or clay may be used. The great thing is, to have materials that will bind firmly together so as to be impervious to wet, and that will not become loose and detached in dry weather, as all gravels of a sandy description do.

To finish the road off with a nice smooth surface, the top should consist of a similar kind of stone, varying in size from an acorn down to that of a pea. This assortment can easily be arranged at the sifting by passing the material through suitable screens or sieves, first of all taking away the excess of fine the stuff may contain, when the separation of the other may be readily carried out. It is very important that the top layer of the road should be of the very best binding material that can be obtained. Chalk near the surface could not be made use of without its appearance being objectionable on account of its colour, otherwise there is nothing more suitable or better adapted for mixing with stone for roadmaking purposes than that is. The binding qualities of gravel may always be judged of, and its value estimated, by the appearance it presents in the pit before being dug, for if found solid and firm, and adhering closely together, it will get in the same state again when laid down after having a heavy roller passed over it a few times.

In forming the road the centre should be laid higher than the sides, but not so much so as to throw all the traffic in one part, otherwise ruts will occur or the middle will be kicked up and disfigured. The water being thus thrown to the sides, provision should be made to conduct it away either by gratings and drains or by laying the gravel sufficiently high to throw it over the sides, where, unless the soil is unusually close and heavy, it will soon soak away.

GARDEN WALKS.

For ordinary walks in pleasure grounds and gardens, a less depth than is requisite for a carriage road will answer every purpose, and as the same remarks relating to their formation are applicable to these also, it is useless going over the same ground again. It may be well however to observe that to give them a smoother and more finished appearance, the top inch or so should consist of very fine stones and binding material that when rolled will become compact.

To render such walks always dry and comfortable, it is very requisite that they should have a good main drain under the middle, with side branches at suitable intervals to conduct the surface-water into it. These side drains should be placed at from 30 to 50 feet apart according to the width of the walk, and each terminate in a small cesspool made to catch the silt or washing that may be carried in after heavy storms, by which means it will be intercepted before reaching the main and thus blocking the water-way. Over each cesspool a neat iron grating will be required, none of which need exceed 6 inches square, and as they are made to set without any stone curb around them, they are not at all conspicuous objects, or the least objectionable in appearance. Those now sold for the purpose have cast-iron frames with a narrow inner groove for the grating to rest on, so that it can be lifted out and the cesspool cleared of any deposit without disturbing the frame. By making use of these much needless expense is saved, and the objectionable appearance of stone or other settings that would otherwise be required is entirely avoided.

To get the newly made walks in a solid firm state as quickly as possible after their formation, they should be thoroughly rolled when wet till they show that they are becoming soft and will not bear the weight of the roller any longer, when they should be left to settle for a time, and then be rolled again, after which they will become thoroughly consolidated, and in a sound condition for ever after with very little attention beyond keeping them free from weeds.

SALTING FOR WEEDS.

Weeds may be destroyed by scattering a small quantity of salt regularly over the walk, but this should only be done when the weather is fine, or it may be washed to the sides and do much damage to the verges. By treating walks to a slight dressing of salt every spring and autumn, they may be kept free of weeds at a minimum of the amount of labour and cost that would be required to pull them up, and not only this, but it has such an effect in killing all mossy conferva as to render the gravel always bright and new looking, nearly equalling in that respect any fresh raised from the pit and newly laid down. It may be remarked, however, that it does not do to use salt where the edgings are of Box, as that is sure to suffer injury, and perhaps be killed altogether, but grass verges will stand it well if not sown too close to soak to the roots, or get washed to them, should rain by chance occur immediately afterwards. Many other remedies have been recommended to extirpate weeds from walks, such as the use of some of the mineral acids, but there is nothing so cheap and simple, or that can be so readily and safely applied, as salt, which can be had in most places at from £1 to £1 10s. per ton.

GARDEN EDGINGS.

The value of salt as a labour-saving medium brings us to the question of what is the most suitable edging to use that salt may be applied as occasion requires without risk of destroying or disfiguring the same. For kitchen gardens, where utility is more considered than mere ornament, there is no doubt that brick would be the most serviceable, and if a suitable selection were made to get such as are of a hard nature and thoroughly burned, they would last for many years in good condition. Indeed there is no limit to the endurance of some makes of these, and notably so with those from Staffordshire that are much in use at railway stations, and which are almost as hard as iron, so that there need be no fear of breakages, as they are impervious to wet, and frost has not the slightest effect on them. If these could only be obtained with the edges on one side of the brick rounded off and left with a recess at each end, for a dab of cement to be put when laying them, so as to keep them firmly together and hold them in their proper position, it would leave little to be desired, and it is to be hoped that makers will take the hint and mould them in this form. Edging tiles have been so disappointing hitherto, from the way they get displaced and the manner they are shivered about by frost or become disfigured by breakages, that most people have abandoned their use, but with such as these they would only be too glad to revert to them again, instead of employing Box, which is always a harbour for slugs, which are a plague in most gardens.

Were it not for this, and the gappy state into which it frequently gets, through the carelessness of labourers, there is no edging perhaps that has a better appearance than Box; indeed except for the time and attention necessary to keep it in order, and other drawbacks already noticed, it has everything to recommend it. In cases where this is decided on, and it is desired to have it of a healthy green colour and in first-rate order, special preparations should be made that it may have suitable soil, one of the principal ingredients in which should be some calcareous matter, such as pulverised mortar rubbish or fine chalk. Either of these mixed up with the border where the Box is to be laid in will ensure its well-doing; and another important thing in its management is to clip it at the right time, which is about the middle or end of May, according as the season may be early or late. Box clipped at that time makes just sufficient growth to give it a close compact appearance, which it retains till it starts afresh the following spring.

In suitable soils, such as are loamy and rather inclined to adhesiveness, Gentiana acaulis may be used with most excellent effect, indeed there is no place where the beauty of this plant is seen to such advantage or produces such a striking effect as when grown in long lines as an edging. In order to get it to do really well, and produce its lovely blue flowers in the free way it is capable of doing, its roots must have a cool moist bottom afforded them, which can best be secured by making use of any very large pebbles or flints that may be ready to hand for the purpose. These should be so arranged as to afford room for a tuft of Gentian to be planted between each, which can be done by nearly burying up the stones at from 3 to 6 inches apart, when the plants will spread and unite over them, and form such a mass of colour most beautiful to behold, and which cannot be secured in anything like the same state of perfection in any other way. The roots so favoured enjoy much the same conditions they do when growing on their native Alps, where, from the constant melting of the snow, they are kept cool and moist, while the tops of the plants are exposed to the cheering sun, under the influence of which they expand their blooms. *J. S.*

NOTES FROM A LANCASHIRE GARDEN.

February 14.—Let me take advantage of this quiet moment in a garden's life, and speak of the year that has passed, and the year that lies before us. There may be little indeed of interest in the present, but at least the "pleasures of memory" and the "pleasures of hope" are ours; and yet, except when all the earth is frost-bound, we are sure to have some flowers to cheer the darker days. Here is the "hardy Laurustinus" of Mrs. Barbauld's hymn; here clusters of golden Aconites peep up under the bare branches of a Chestnut; here tufts of Snowdrops pierce through the grass upon the lawn; here the yellow winter Jasmine stretches out sprays all laden with bloom, and looks in upon us through the great hall window. Then in the hall itself we have had Primulas and Roman Hyacinths, and the spring bulbs are now taking their place.

What an open winter it has been, but how incessant has been the rain. Day after day the men have had to leave off work, and spend their time in cutting up wood in the log-house. I have been relaying part of my lawn, and the task has been terribly delayed, but it is done at last. We have also been altering some of the garden beds. We have cut out the large Arbutus from the border where it was, and it now stands alone, with a gravel walk round it. The Buddleia, too, is now the centre of a round bed, with clumps of Iris growing underneath it.

This last year was a very bad one for us. The spring was cold and treacherous—the summer was broiling—the autumn was rainy and ungenial. And yet, while I complain of the summer, I recall delightful summer evenings, when the house was too hot, and we sat upon the terrace after dinner with the claret and dessert; the air was all perfume, and the light lingered long in the east over the church steeple, 3 miles away. The big dog and the children were at our feet, and as the night fell there was no sound but of our own voices to break the silence and the peace.

But one night, a little later on, a strange noise alarmed our gardener. It was the jarring of the nightjar, an unusual bird with us, and I don't think he quite knew what to make of it. However, our poor visitor was shot, and is now stuffed, with a cockchafer in his mouth, and stands under a glass-case in the dining-room.

In the porch a swallow had built her nest, and it was pretty to watch her as she skimmed round and round in anxious flight till we had left the place. I look upon it as good luck to have a swallow building on the house. We all remember how Banquo says, when he notices their "pendent beds" on Macbeth's castle that—

"Where they most breed and haunt, I have observed,
The air is delicate."

But all poets love the swallow. Can any of us, who has once read it, forget *Les Hirondelles* of Bèranger, and how the French captive among the Moors questions the swallows about his country, his home, his friends, which they perhaps have seen? Then is there not Tennyson's delightful—

"O swallow, swallow, flying, flying south,"

and bearing the message that—

"Dark and true and tender is the north."

Even American poets sing of the swallow, and Lowell has one particularly happy line when he describes—

"The thin-winged swallow *skating* on the air."

But I must get back to the garden and the flowers. The Desfontainea spinosa flowered twice with me—once in July, and once at the beginning of October. It is the greatest addition to the garden I have made for a long time. Now, too, I have got another curious Holly-leaved shrub, the Osmanthus ilicifolius, and with this I hope to be equally successful. Other flowering shrubs I have also been adding to the shrubberies, and to the clumps in the outer garden. I cannot bear to see a lawn cut up into little twisted knots of Verbenas and Pelargoniums, but colour is wanted and flowering shrubs with a few herbaceous plants seem to me to give all that is necessary. So I have been planting among the Lilacs, Syringas, Brooms, Azaleas, Rhododendrons, and Laburnums, several varieties of Spiræa, and many other beautiful things which scarcely any one takes the trouble to grow, and of which I will tell you more hereafter.

Our fruit this last year was miserable. We had some Figs and Apples, and that was really almost all, when once the summer fruit was over. Our vegetables are generally pretty good, and we grow besides the more ordinary sorts, white Haricot Beans, Scorzonera, Salsify (the "Oyster plant" as it is sometimes called), and Water Cress.

A word now about our spring beds. We shall have one entire bed of Crown Imperials, which ought to look handsome, and two of Ranunculus, one mixed, and one of the brightest scarlet. The other beds will be for the most part much as I have described them in former years.

This open winter has given us more Violets than we ever had before, but they are certainly not the "Violets *dim*," of which Shakspeare speaks, but deep, richly coloured blossoms. The Wallflowers, too, have scented the air on the few sunny days we have had, and I now see the Rhododendron dauricum and the Daphne Mezereum just bursting out.

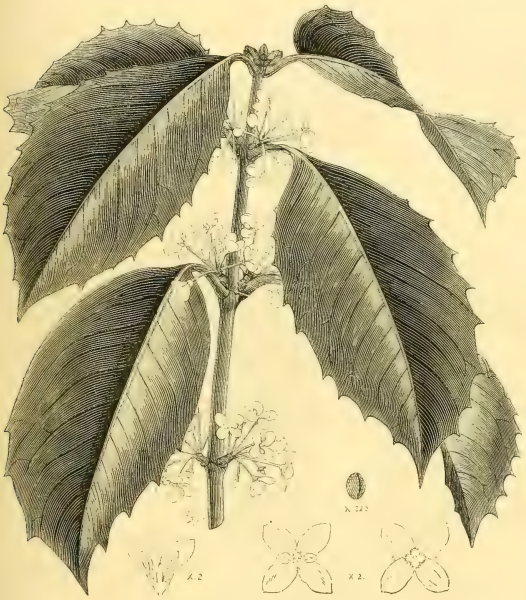


FIG. 37.—OSMANTHUS AQUIFOLIUM.

The Crocuses are late, but their yellow cups are peering here and there above the soil. The Christmas Roses have been beautiful, as they always are, and I have planted in one of the shrubbery borders some other varieties of Hellebore, all well worth growing.

The rooks have been noisy among the Elms, for is not to-day the sacred festival of St. Valentine? They and the other birds will now begin to pair and build, and all the sights and sounds of spring will come to us once again. *H.*

NOTE ON OSMANTHUS.

Some time since we published a woodcut of a very useful and now well-known evergreen Japanese shrub, under the name of Osmanthus Aquifolium (fig. 37). No sooner had we done so than the propriety of our procedure was challenged by various nurserymen and amateurs. Knowing that our correspondents rightly represented the general opinion of cultivators on the subject, we advert to the question again to show how the case really stands.

The original name was Olea Aquifolium of Siebold and Zuccarini. In due time the flowers were found to be different from those of Olea, and the plant therefore became Osmanthus Aquifolium. This plant in its native country (Japan and China) is so variable in the shape of its leaves, as the specimens in the Kew herbarium testify, and as M. Franchet and Savatier tell us that it is impossible even to distinguish varieties, as on the same branch leaves of very varied form may be met with. Miquel had observed and recorded the same fact. Such being the case, we were justified in applying the name Osmanthus Aquifolium to the plant commonly known in gardens as Olea ilicifolia.

Then comes the question, What is Osmanthus ilicifolius of the nurseries? To this we answer, after examination of the fresh flowers of both forms, as well as of the books and dried specimens, that the so-called O. ilicifolius is the same as O. Aquifolium. On the wild plant it is easy to pick leaves of both so-called species from the same bough. Seeing, however, that in British gardens the two plants maintain their distinctive characters, and do not as yet manifest any such sportive tendency as we have mentioned, we suggest that for garden purposes two names be made use of. The broad-leaved less deeply cut variety, commonly known as Olea ilicifolia (fig. 37), we propose should bear the original and correct name of O. Aquifolium. The more deeply cut form we propose should still be called (as it is now) Osmanthus ilicifolius (fig. 38). Botanists will with greater propriety call it Osmanthus Aquifolium variety ilicifolius, though, after what has been before said, it is doubtful whether they would think it worth while to keep up such a variety.



FIG. 38.—OSMANTHUS ILICIFOLIUS (FLATTENED BY PRESSURE)

THE KITCHEN GARDEN.

The management of the kitchen garden is a branch of practical gardening which does not receive from gardeners generally the attention it deserves, and, with your permission, I would beg to address myself mainly to my younger brethren in the profession, because it is from their ranks that the head gardeners of the future must be chosen.

At the present time the want of a knowledge of the culinary garden is undoubtedly an ugly fact in connection with the rising generation of gardeners. This no doubt arises from one of two causes—either from want of opportunity, or a disinclination on the part of young men to undergo the laborious drudgery of cultivating the soil.

Journeymen gardeners who can very creditably stake a Heath, turn a large Azalea bush into a shapely pyramid, or neatly train a Peach tree to the wires, are frequently met with, but, whilst these things are all very desirable in their way, how seldom do you find a young gardener who can make an Onion-bed in a workmanlike manner; and I hold that no man has a right to call himself a gardener until he is capable of making a neat and trim Onion-bed.

Again, how rarely do we meet with a young gardener having any knowledge of the different varieties of either hardy fruits or vegetables; and I ask how many are there who can name at sight, say half a dozen sorts of Gooseberries or Strawberries?

* Read at the Darlington Gardeners' Institute on the evening of February 15.

How many could at sight name three varieties of Peas or of Broccoli?

This is, I think, a state of things which we ought all to try and remedy without further delay, as I can conceive nothing so humiliating to a head gardener as his being obliged to acquire a knowledge of kitchen gardening from those under him; and what can lower him so much in the estimation of his men as an inability to show them how to properly handle the spade or rake—arts which cannot well be learnt in after life?

I would sincerely urge those who have not had the good fortune to be well trained in the kitchen garden during their apprenticeship to lose no time in placing themselves under some good practical gardener, where kitchen gardening is well done, even if this step should involve pecuniary loss and a sacrifice of personal comfort.

When a gardener enters upon his first responsible situation he should make it one of his first duties to take stock of the kitchen garden, and, having ascertained as soon as possible the requirements, likes, and dislikes of the family, he should arrange his crops for the following season, allotting as nearly as he can to each vegetable the proportion likely to be at his disposal, and taking care to avoid a glut or a famine at any time. The following is the plan I adopt:—On some fine day in autumn I go round, pocket-book in hand, and on one page I draw a rough plan of the garden, on which I affix a number to each border and quarter. I then number the succeeding pages to correspond, and proceed to allot the next year's crops to each plot, arranging what is to be dug or trenched, or heavily or lightly manured.

The south borders I consider most valuable, inasmuch as the earliest vegetables are always most highly appreciated, for which reason these borders should always be divided into several parts, of which the first would be occupied by early Peas, sown about the second week in November, and which I consider a good crop to precede Strawberries for the following year. Allow me to remark in passing that notwithstanding all the high trumpet soundings about Alpha, Ringleader, Emerald Gem, Blue Peter, or William the First, I have not found one to surpass the old Dillistone's Early for the first dish.

The adjoining piece of ground I give to early Potatos, always taking care to have them well sprouted before planting, and for the first dish I have not yet met with any to beat the old Ashleaf Kidney, of which however there are many spurious stocks representing so-called improved Ashleaved Kidneys. The true sort is easily known, as, when commencing their growth, they have smooth yellow sprouts with green points, whilst the bulk of the others have purple sprouts.

In the remaining portions of the south borders places should be found for winter Onions, early Carrots, Turnips, Cauliflowers, Broad and Kidney Beans, Radishes, Lettuces, &c., and, when these come off, the land is usually in good condition for late crops of French Beans, Spinach, Turnips, salading, &c.

The east and west borders are always useful for a variety of crops successional to those grown under more favourable circumstances, whilst the north border is valuable for late Strawberries, Turnips, salading, Parsley, herbs, and many other things. I may remark that it is better not to occupy fruit tree borders with tall vegetables or anything likely to injure the trees on the walls.

Turning now to the main portion of the garden, we shall have to determine how the quarters are to be cropped. In the first place a good space must be set apart for Potatos, and in my experience I have always found that, in addition to manure, Potatos are much benefited by a little fresh lime being applied to the land at planting time, as, besides the good done to the land, the quality of the Potatos is much improved. If the land has been recently trenched, and is in good condition after the second early Potatos, fine crops of late Broccoli, Savoys, or winter greens may be got, and these in turn may be advantageously succeeded by Celery. The year following the main crop of Peas will do very well where the Celery has been, taking care to have the Peas where the Celery trenches were, as in this way the manure serves for two crops.

The part of the garden allotted to Carrots, Beet, Parsnips, and Onions ought always to be trenched at least two spits deep some time during the preceding autumn, and well manured for the crop of Onions.

The best time to sow spring Onions is so soon as you can trample on the ground without the soil sticking to your boots. I have for a number of years found wood ashes very beneficial to Onions, Carrots, Beet, and Turnips. When the seed is sown I have the drills filled up with the ashes; the back of the rake is then drawn over the whole, and in due time the seed sprouts strongly through the loose surface, which never cakes, no matter how many showers there may have been in the *interim*; and, moreover, I never knew Onions, when treated as I have described, to be badly attacked with the grub so common in old gardens. Onions make a very good crop to precede Cabbages, as they are got off the ground early in the autumn, and the Cabbage plants get a good hold of the soil before winter sets in.

You will observe I have not said anything about such vegetables as Asparagus, Globe Artichoke, Sea-kale, or Rhubarb, which are so often found in back, out-of-the-way places; these I consider most valuable vegetables, and they will well repay any extra labour bestowed upon them. Before making a new plantation of these be sure to have the land well manured and deeply trenched, then, with ordinary attention afterwards, success is almost certain.

Such are a few general observations on the management of the culinary garden, and, in conclusion, I would beg to be allowed earnestly to impress on all young head gardeners to look well after the rotation of crops; to keep the garden clean and tidy; to strive at all times to have a variety of vegetables ready for the pot; and not to allow the salad-bowl to be neglected. *J. McIndoe, The Gardens, Hutton Hall, Guisborough, Yorkshire.*

New Garden Plants.

ECHINOCACTUS CYLINDRACEUS.

For the opportunity of figuring this fine species (fig. 39) we are indebted to the courtesy of J. T. Peacock, Esq., Sudbury House, Hammersmith. At one time it was supposed to be specifically identical with E. viridescens, recently figured by us (p. 172), but Dr. Engelmann now considers the two as distinct. In the new *Botany of California*, vol. i., p. 245, the plant is thus described:—

"Heads middle-sized, or large oval, or cylindrical; often proliferous at the base, with 21—27 obtuse, somewhat tuberculate ribs, and a woolly, spineless, depressed top; reddish spines, all stout and annulated, recurved or flexuous, 12—18 exterior, the lowest usually hooked, and four very stout central ones; yellowish flowers, 2 inches long, with 40—50 rounded fringed sepals on the ovary, and about twenty-five fringed petals. Stigmas and fruits as in E. viridescens." (E. cylindraceus, Engelm. *Cact. Mex. Bound.* 25, t. 30; E. viridescens var. B. cylindraceus, Engelm. in *Amer. Journ. Science*, 2 ser., 14, 338.)

The plant is a native of the desert of Colorado, and is distinguished from E. viridescens by its taller growth, more numerous ribs, larger and more numerous spines, and larger flowers and fruits.

GRAMMATOPHYLLUM RŒMPLERIANUM, *n. sp.**

Unexpected pleasures are the best ones. Would you have believed in a new large-flowered Grammatophyllum, with a lip resembling that of Phajus tuberculosus, but without its basilar fu? The flowers are larger than those of the large-flowered Grammatophyllum Ellisii, Lindl., scarcely smaller than those of the three heroes of the beautiful genus, macranthum, speciosum, Wallisii. There it is, the newest sailor from Madagascar, if I rightly understand, *en route* for Mr. Stevens' enormous room. The texture of the flowers, so far I may judge of it from dry specimens, is unusually strong and firm. Sepals oblong; petals ovate; lip trifid, the side laciniæ broad, angled, the middle laciniæ protracted, narrower, emarginate. There are two grand obtuse-angled lamellæ, and a small one between before the base of column; three smaller angular lamellæ before the end of the lip, and both connected with emerging lines. "Colours?" Don't ask too much. The flower looks as if it had been white or light yellow, but I can take no responsibility. But what I see most decidedly is some purplish hue on the tip of the lip. I obtained the flowers from my excellent correspondent, Mr. Luddemann, 18, Boulevart d'Italie, Paris, the famous Orchid grower, who once directed Mr. Pescatore's Orchidic Eden. They have been obtained by Mr. Rœmpler, of Nancy, who is said to have made a curious importation from that mysterious island, Madagascar. *H. G. Rchb. f.*

* *Grammatophyllum Rœmplerianum.* — Grandiflorum; sepalis oblongo-ligulatis obtuse acutis, tepalis multo latioribus; labello subæquilongo, prope Phaji tuberculosi; laciniis lateralibus angulatis, lacinia media porrecta ligulata emarginata, carinis angulatis magnis gemmis in basi mediis, interjectis carina minori, carinis angulatis minoribus ternis ante apicem, omnibus lineis amplis incrassatis conjunctis. Videtur hujus generis planta certissime nova. Moneo me unicum pollinarium incompletum vidisse. Madagascar.

PARAGUAY TEA, OR MATÉ.

I WAS delighted to see in your issue of December 30, 1876, that among the novelties presented at the Centennial Exposition at Philadelphia was the Maté, a decoction of the leaves of the Maté tree (Ilex paraguayensis), and that a pamphlet had been written on its claims, which pamphlet had been translated into four of the European languages, viz., Portuguese, French, English, and German. The quantity exported is said to be over 36,000,000 lb. annually. The home consumption in Parana is said to be about 9,000,000 lb. annually, and that of Rio Grande do Sul about four times as much. It is claimed for the Maté that it is very nourishing, and it is spoken of as being taken three times a day, and that it has become the favourite beverage of a large portion of the people of South America. It costs about 5*d.* per pound in Rio Janeiro, and 6*d.* lb. is estimated as a supply for one individual for a whole year; but the author of the report wisely adds that it requires intelligent experiment and observation to develope the real qualities of the plant. This account is just such as a commercial man would give of the wares he offered along with the canister containing the goods, but leaves out of the question the whole art of preparing the same for market. The preparation of the Maté was at one time a Government monopoly in Paraguay, and the roasting process was said to be a very unhealthy occupation. The use of the Maté or Paraguay Tea originated in the "black drink" of the Indians. It was manufactured by the Jesuit Fathers, and from all that can be gathered from authentic sources there were three species of Hollies used—namely, the Ilex paraguayensis, I. Dahoon, and I. dipyrena. Now, this last species grows freely in England. I grew it in Devon, and in its leaf and character it so resembles our own Ilex Aquifolium that it requires some skill to tell them apart. The Paraguay species differs widely from the others in size of the leaf mainly in general appearance; but when I roasted the few leaves I had of this species it yielded the same characters as the other, and it is evident that the tea-roasters of Paraguay could make good tea out of all the three Hollies of the country. Be that as it may, I am delighted to see such evidence of the great importance of an article which I have taken so much pains to bring to the front, and Dr. Antonia Joaquin de Macedo Soares deserves the thanks of the whole European family for exhibiting the Maté in its true colours. There is little doubt that if our native Holly grew in the Argentine Republic, its foliage would be roasted, and find its way into the tea canister. We might even try the experiment at home; there can be no quackery where 70,000,000 lb. are got annually for home and foreign supplies. *Alex. Forsyth.*

DUPPLIN CASTLE,

THE seat of the Right Honourable the Earl of Kinnoull (see fig. 40, p. 245), one of the most beautifully situated mansions in Scotland, stands about 4 miles west from Perth, and about the same distance from the Bridge of Earn, and commands magnificent views of nearly the whole basin of the Earn. The Castle was accidentally burnt down in 1827, and the present one, which is in the Elizabethan style of architecture, and is most tastefully and elaborately furnished, was rebuilt at a cost of £30,000. Dupplin Castle was visited by Her Majesty Queen Victoria and Prince Albert in September, 1842, in their progress to the Highlands. This neighbourhood was the scene of an engagement on August 18, 1332, between Edward Baliol and the Earl of Mar, which ended in the complete overthrow of the latter. There are some monuments of antiquity in this quarter, but whether they have been erected as memorials of this disastrous battle, or claim an earlier era, is uncertain. There is also here a stone cross of curious workmanship, quite entire.

At the south of the Castle, and close up to it, is a very neat flower garden devoted to the usual beddingout plants, with figures cut in the grass. Here there are four very unique bronze vases of large size. At the south side of this garden there is a wall 4 feet high, covered with Ivy. To the right there is a handsome balustrade stair, where neat bronze vases of smaller size than the above have been placed at intervals along the top. This stair leads down to the lower flower garden. Here the walk curves gently to the left round the top of a deep dell, at the bottom of which there is a fine run of water; and in front of the Castle there is a pretty waterfall of good height, which adds much to the appearance of the place. The banks of this beautiful dell have been most judiciously planted with Rhododendrons, Ferns, Roses, Bays, and Yews, with here

and there a fine Cupressus Lawsoniana and Cedrus Deodara. To the east again there is what is called the Horse-shoe Dell, which forms part of the above, and is planted very much in the same manner. This fine glen is seen in nearly all its extent from the windows of the Castle, and when the Rhododendrons, &c., are in flower the effect is most charming. At the top of the dell, and stretching away to the south and east, there is also a flower garden. In this department there are large clumps of Rhododendrons, each figure consisting wholly of one variety, edged round with hardy mixed Azaleas. As those plants have not as yet attained a very large size, there are some open spaces here and there in the figures. Advantage has been taken of these to sow the single scarlet Poppy, and when in flower the effect at a distance is very striking indeed. Here there are a few very fine specimens of Swedish Junipers, Irish Yews, &c., and in the centre of the garden there is a small stream of water, which is crossed by a very neat rustic bridge. The banks of this stream, which slope down to the water, have been planted with large clumps of Bays and common Yews, all neatly and evenly cut back to within 2 feet of the ground. Here there are a few very fine specimens of Araucarias, averaging 40 feet in height; and also large figure-beds of Rhododendrons, each figure planted with one sort only, and bordered with Azaleas. The same style is carried out here as in the first-mentioned. There are a few very fine trees at stated distances of Silver Fir, Weeping Birch, Cedrus Deodara, Thujopsis borealis, T. gigantea, and an immense specimen of Portugal Laurel.

This garden is intersected through its entire length by a gravel walk 7 feet wide, which at the south-east corner turns round sharply to the left, and leads straight on to the dell above-mentioned. At this point a complete clearance has been made of nearly everything lofty that would obstruct the view from the Castle. Looking north by east, the prospect is almost unrivalled. The eye takes in nearly the whole of the lower valley of Strathearn, with the beautiful River Earn winding its way in gentle curves towards the sea. About 4 miles distant is seen the finely-wooded and picturesque Hill of Moncreiff, with Moncreiff House, the seat of Sir Thomas Moncreiff, Bart., on its southern base—a fine place, surrounded by many both natural and artificial beauties. In the distance the view is bounded by the hills in Fifeshire, some 20 miles off, and, nearly opposite, the thriving town of Dundee. Turning west, the whole range of the Ochil Hills is seen. On their northern slopes there are the prettily situated little towns of Newburgh and Abernethy. The latter is supposed to have been an ancient Pictish capital. Here there is a very fine specimen of a round tower, in good preservation, 74 feet in height, and built about the middle of the twelfth century. On again, there is the picturesque Pass of Glenfarg and Freeland, the seat of Colonel Wood, with its grand old Lime trees, and a little further off is Condie, the seat of Lawrence Oliphant, Esq. One cannot fail to be struck with the beautiful appearance of this district. A little further on stands Ardassie, the seat of the late Donald Lindsay, Esq., with its beautiful deep dell, full of openings, where one gets sweet glimpses of rural scenery. A little further west stands Invermay, celebrated in song. Here there is a finely sculptured stone, of a very ancient date. Two miles further off is Duncrub, the residence of Lord Rollo, and looking still to the west, a good distance off, are seen the woods and mansion of Ardoch, the seat of G. Home Drummond, Esq. Here there is a Roman camp, a celebrated remnant of antiquity, considered the most perfect of its kind in the kingdom. The whole measures 1060 feet by 900 feet, and was capable of containing over 20,000 men. To the north in the distance from this point is seen the pretty village of Crieff, with the hills all about Drummond Castle, &c.



Fig. 39.—Echinocactus cylindraceus.

About 6 miles east from Crieff are the ruins of Inchaffray Abbey. It was the Abbot of Inchaffray that said mass in sight of the Scottish army at Bannockburn, and exhorted them to be valiant in combat for their rights and liberty; and to the east again there is Methven Castle, the seat of W. Smythe, Esq. Within the grounds of this mansion there is an old Oak, called the Pepperwell Oak, with a trunk 18 feet in circumference. A little to the north of the above place is Lynedoch House, and near to it, in a secluded spot called Dronach-haugh, at the foot of a

beautiful bank or cave of the same name, on the River Almond, is the grave of Bessie Bell and Mary Gray, celebrated in pathetic song. Bessie Bell, according to tradition, was the daughter of the Laird of Kinvaid, and Mary Gray of the Laird of Lynedoch, mutually attached in strong and tender friendship. They lived together at Lynedoch when the plague broke out in 1645, and to avoid it they retired to a romantic spot called Burnbraes, on the estate of Lynedoch, and there in a bower or temporary dwelling lived in complete seclusion. A young gentleman of Perth visited them in their solitude for the purpose, it is said, of supplying them with food, but unhappily he communicated to them the very pestilence from which they had fled. Falling victims to the disease, they were, according to the usage of the period, refused sepulture in the ordinary burying grounds, and they sleep together, as they had latterly lived, amid a scene of solitude and romance—

"They thocht to lie in Methven kirkyaird,
Amang their noble kin,
But they maun lie on Lynedoch brae
To beek forenent the sun."

The late Lord Lynedoch put an iron railing round their grave, and planted several Yew trees beside it.

From this district fine views are had of the highland mountain ranges of Ben-y-gloe, 3704 feet, the lofty hills that form the northern part of the great Athole forest, and the finely wooded slopes all about Dunkeld. To the east from Lynedoch House stands the ancient Castle of Ruthven, the scene of the memorable incident known in Scottish history as the Raid of Ruthven. Here tradition has it that an extraordinary exploit of a young lady has added to the notoriety of this Castle, and has given the name of "The Maiden's Leap" to the space between its two towers, which, though now united by late buildings, were originally separate. The lady was a daughter of the first Earl of Gowrie, and her exploit consisted in leaping in a fit of terror from the leads of the one tower to the battlements of the other, a space of 9 feet 4 inches, and over a chasm of 60 feet. In the middle distance, about 2 miles off, is Scone Palace, surrounded by fine healthy plantations of large extent, with the River Tay sweeping round its western base; and 2 miles to the south is the fair city of Perth, with its beautiful surroundings. A short distance to the east stands Kinfauns Castle, the residence of Lady Grey. Such are some of the environs of this grand old place.

Returning to Dupplin, and entering by the north lodge, there is here an avenue of good breadth nearly a mile in length, which runs on in almost a straight line for two-thirds of its length, when it turns sharply to the right, and leads on with a gentle curve to the left till the Castle is reached. To the right from the lodge, and leading on to the south, there is a fine row of grand old Beeches, while here and there between these trees Scotch Fir has been planted as underwood, which adds very much to the appearance of the place during winter. In this avenue an octagon is passed through, at the east end of which, and extending on to the lodge, there is a row of very healthy Araucaria imbricata, from 15 to 20 feet in height. Between these, and a little in front, are clumps of Rhododendrons recently planted, which cannot fail in time to produce a good effect. In front of the Castle, and stretching away to the north-west in a straight line, there is an avenue 20 feet broad, passing through a thriving plantation, with many trees in it of very large size, and in it about 600 yards from the Castle up this avenue, and to the left, there is the Pinetum, occupying a large space, and finely sheltered. Here I found the ground intersected in all directions with grass walks 20 feet broad. I have noted a few of the plants, with their heights, that struck me as being particularly fine:—

	Feet.		Feet.
Taxodium sempervirens	48	Thuja Lobbii	22
Picea nobilis	35	Cedrus Deodara	40
,, grandis	25	Abies Douglasii	60
,, Nordmanniana ..	32	Wellingtonia gigantea ..	33
,, cephalonica	40	Cryptomeria japonica ..	30
Thuja Warreana	22	Cupressus Lawsoniana ..	25

I may here mention that in this department the Earl of Kinnoull personally takes great interest, and Lady Kinnoull has been long known as an ardent lover of flowers, and for her fine taste in gardening matters. She at her own expense some years ago set agoing what is termed a Parish Flower Show, where prizes are given to the cottagers for the best-cropped kitchen gardens, and neatest and best arranged flower-plots in front of their houses, which has been the means of doing much good among those whom it was intended to benefit. May such kindness and generosity be always appreciated as it deserves. In Lady Kinnoull the old and infirm have a true friend.

To the west of the above there is the parsonage, a very neat, substantial building; and a little to the south there is what is termed the western approach, in the midst of which, about midway between the entrance and the Castle, there is a circular piece of grass, kept short, of about 3 acres in extent, where the avenues sweep round on both sides. Round this circle there is a row of immense Beeches, with clean stems, and trunks branchless to a great height. From the Castle the road leads down to the kitchen garden, by a grass walk some 10 feet broad, through a deep well wooded glen. Here there is a line of Spanish Chestnuts of very large size and great age; and to the left, on the steep hillside, there are some wonderful specimens of Cupressus Lawsoniana, Yews, &c. Just outside this plantation, and before entering the kitchen garden, there is a space of ground in short grass, sloping sharply to the south. Here there is an Araucaria imbricata some 40 feet in height, considered one of the most perfect specimens of its kind in the country. A little from the above there is a Cryptomeria japonica 30 feet in height, and bushy in proportion; a grand plant.

The Kitchen Garden.

Entering the kitchen garden from the west there is first a greenhouse, 100 feet by 17 feet, filled with a miscellaneous collection of plants, particularly the following Camellias:—imbricata, 11 feet by 5½ feet; Triumphans, 10 feet by 4 feet; Mathotiana, 7 feet by 3 feet; Lady Hume's Blush, 4 feet by 4 feet; Frankfortensis, 8 feet by 4 feet; Jubilee, 5½ feet by 3 feet, with a host of others of smaller size, also many large plants of Rhododendrons in tubs. The next is a small house, 13 feet by 9½ feet. This is chiefly planted with Tea Roses, which are found very useful for cutting purposes during the season. The next is a Fig-house, 55 feet by 10 feet, planted chiefly with Lee's Perpetual, good healthy plants, bearing a fine crop all over the house. The next is a Rose-house, 13 feet by 10 feet, planted with Roses Lamarque and Climbing Devoniensis, both sorts very fine; next a Peach-house, 90 feet by 10 feet; Grosse Mignonne, Noblesse, and Chancellor are the only three sorts in this house—good trees, and very fine crop. The next is a Nectarine-house, 45 feet by 9½ feet, the trees in it not yet in a bearing state; and next come a Plum-house, newly erected, 40 feet by 9½ feet, a vinery, 60 feet by 9½ feet, and a Peach-house, 30 feet by 9½ feet; the last two are in course of erection. To the extreme east of the garden there is the Melon-ground, &c. In it the first house is a Cucumber-house, 40 feet by 9 feet. The second is a Gardenia-house, of the same dimensions; the plants in this house are remarkably well managed, and flower most abundantly. In front of the last-mentioned house there are two brick pits, 80 feet by 6 feet, and to the south, in a lower division, there is a new span-roofed house, running south and north, 21 feet by 11 feet. There are other two houses of the same dimensions as the last, in course of erection. These three houses are to be entirely devoted to plant culture. In front of them there is another range of brick pits, 70 feet by 6 feet, used for growing on young soft-wooded plants, &c.

Returning to the kitchen garden, there are in the centre three divisions of houses, running east and west, on three different elevations, divided by a span-roofed verandah, 66 feet by 11 feet. This house is planted its entire length with climbers of the finer sorts, and on its different stages there are some excellent plants of Camellias, among which are the following:—alba plena, 10 feet by 4 feet; Colvillii, 10½ feet by 5 feet; Marchioness of Exeter, 6 feet by 4½ feet; and many others that might be enumerated. All the houses are entered from this verandah, right and left, with a handsome stairway leading down to each division. Entering from the north end, the first to the right is a Gardenia-house, 46 feet by 10 feet, filled with plants of good size, and remarkably healthy. To the left is the rosery, 48 feet by 10 feet, filled with finely-established plants. The second division to the right is an Orchid-house, 36 feet by 15 feet. In this house I found a very select collection of the above, among which the following were very superior:—Lælia anceps, Dendrobium Dalhousianum, D. nobile, 100 pots of Calanthe vestita, throwing up grand flower-spikes; Cattleya crispa superba, Phajus grandifolius and P. Wallichii, Coelogyne cristata, Dendrobium Wardianum, D. Devonianum, D. densiflorum, and D. thyrsiflorum, Vanda suavis, &c. To the left is a plant stove, 36 feet by 15 feet, filled with a very select collection, but the growth of large plants is not encouraged, as many in this department are required for table decoration.

Entering from this by a few steps down, there is an intermediate house, 28 feet by 10 feet, principally filled with cool Orchids. The next is a general forcing pit, 36 feet by 6 feet, with a small stove leading off from it, used as a nursery for new and rare plants as occasion requires. To the right is a Fern pit, 36 feet by 6 feet, containing a choice collection in fine condition. Leading off from this to the west is a miscellaneous intermediate house, 28 feet by 11 feet, with a small stove adjoining, principally filled with choice exotic Ferns. Descending to the lower division, to the left is the potting shed, 48 feet by 15 feet, and to the right is the stokehole, above which is a greenhouse, 27 feet by 14 feet, principally used for wintering Pelargoniums, and resting bulbous plants when past flowering. At the extreme south end of the verandah are three lean-to vineries. The centre one is a Black Hamburgh house, 46 feet by 16 feet; a most excellent crop all over the house. To the left is a late house, 31 feet by 16 feet, planted principally with Black Alicante, Lady Downe's and Gros Colman, very fine crops. To the right is a Muscat-house, 31 feet by 16 feet, excellent crop. I may mention that the whole of these divisions are heated by one of Crombie's boilers, which does its work most efficiently.

The kitchen garden here is over 8 acres in extent, and all sorts of crops are had in abundance. Over 200 Apple trees on Paradise stocks have been planted in it lately, most of which have done well, and carried fine crops last season. To the north of the garden there is the young men's dwelling—a most substantial two-storeyed erection, most comfortably fitted up, to the west of which, on a steep, sloping bank, there are a few extraordinary specimens of Cupressus Lawsoniana, perfect models both in shape and size. To the south of the garden, on a gentle eminence, stands the gardener's house, a handsome modern erection of two storeys, which for situation, comfort, and convenience is just what a gardener's house ought to be.

In concluding this cursory notice I have to compliment Mr. Browning, his Lordship's head gardener here, who is well-known as a thorough enthusiast in his profession, on the neat condition and high state of culture that I found everything in, and which gives ample evidence of his being a skilful and painstaking gardener. *John Downie, West Coates Nursery, Edinburgh.*

Garden Operations.

PLANT HOUSES.

Plant Stove.—If the stove is a good light house, and the plants are in a vigorous healthy state and well elevated up to the glass, the temperature may now very shortly be increased, letting it be in the day-time 80° or 85°, on very bright days, higher will do no harm so early as this in the season. I would rather let the thermometer run up as high as 90° than give air, more particularly at the roof, the external air being so different to what the plants at this time require. A lower temperature than above recommended must be maintained till later on, where the house and plants are not such as here spoken of. Stop the fires sufficiently soon in the morning, when there is a probability of the day being bright, to prevent the house getting too hot. All potting here should be got on with as quickly as possible, and brought to a conclusion as soon as circumstances will permit. The syringe may be used more freely now that the days are lengthening; but it is necessary to exercise judgment in this matter as too much syringing is not good for plants that have delicate roots, and do not like any excess of moisture to them. All training and climbing subjects must be well and regularly attended to in training their shoots, so as to never let them get entangled. If this occurs, the points are sure to be injured more or less in separating them. Where all the stove plants are grown in one house, those that require shading should be put at one end, leaving such as do not need it at the other. It sometimes happens that much mischief is done through the plants that want protection from the sun not receiving it early enough. It will be well to get the shading ready, so as to prevent this happening. The space devoted to the roots of stove climbers is often very small, and as those that are planted out are principally of a vigorous, free-growing description, the soil is very liable to become too poor to enable them to either flower or grow as they ought to do. It is a good plan every

year to remove as much of the surface soil as it is possible to get away without much disturbance of the roots, replacing it with good new material. Ardisia crenulata and crenulata alba are extremely useful decorative plants. They may be increased either by seeds or cuttings. The seeds ought to be sown in shallow pans filled with sandy peat, just covered with sand and put in a brisk heat. As soon as the young plants are big enough put them singly into small pots. If last year's seedlings have not been potted on no time should be lost in giving them a shift; do not, however, let them have too much root-room, as, like all other plants intended for the same purpose, they are much the best in as small pots as they will succeed in. Achimenes started some time since should be put into the baskets or pots they are to bloom in. When grown in pots they are the most useful for ordinary decorative purposes of a comparatively small size. Do not put too many bulbs into a little pot, and when the growths get 4 inches long stop the points; this will cause them to break out, and be bushy and dwarf. Baskets for Achimenes ought to be small or medium-sized, unless the houses they are intended for are very large. They are the best made of galvanised wire, and they should be made sufficiently close to keep in the lining of sphagnum which has to be put to prevent the soil coming out.

If Sarracenias are not yet potted, they should be attended to without delay, it is absolutely necessary to renew the soil entirely every year, or else it gets into a sour, bad state, and kills the roots. The soil ought to consist of equal parts of good fibrous peat, from which the earthy portion has been got away, and chopped sphagnum, with which mix a fifth of crocks broken small and sorted. Nepenthes likewise should now be seen to. If they need it, give them larger pots, but be very careful not to let them have too much root-room. The roots of these plants are of the tenderest description, and always look as if they were dead. There is no potting be no attempt at getting the old soil away, or reducing the ball. This being the case, it will be readily understood that the material they are put in should be such as will last long; a mixture similar to that recommended for Sarracenias will answer well for Nepenthes. The reason many do not succeed in growing them in a satisfactory way is that they keep them too dark, too close, and too far away from the light. They ought to be hung up close to the glass, and, as they need more head-room, they can, of course, be lowered. They look the best in baskets, but these are not the best for them, as their roots get injured when they protrude through. The pots can, however, be plunged in baskets, thus having the advantage in appearance, without its being at the expense of the well-being of the plants. Both Nepenthes and Sarracenias ought to be watered every day whilst they are growing. The Nepenthes also will be benefited by syringing in the afternoons. *T. Baines.*

FLOWER GARDEN, ETC.

Shrubby Calceolarias which have been struck in frames or boxes may soon be removed to a sheltered place to remain until planted out; previous to removal the lights had better be taken off daily (weather permitting) and the plants get all the air possible in order to harden them for the change. Have protecting material at hand in the event of frost, when the plants can be covered as required. After the plants get well established they had better be looked over and all their tops pinched out, which will make them grow bushy. The cuttings of the Calceolarias were struck can then be filled with Lobelias, Pyrethrums, Verbenas and such things. Stocks and Asters may be sown in boxes or pans, and set in a moist warm place where they will soon come up strong, but take care they are not kept too long in a confined place to draw up weakly; if they are to be pricked off and receive attention. Where heat cannot be applied, keep the plants as dry as possible in cold weather, and where watering must be done let it be looked over in the morning, so that all superfluous moisture may be expelled before night. Herbaceous borders will soon require attention, as the mild weather has brought forward the plants before their usual time. The plants may be divided and reduced in size as required, any blanks made up, and fresh labels added where worn out. New borders may be made by trenching and preparing the ground; after being properly levelled the tallest growing kinds should be arranged along the back row and the dwarfer ones brought to the front. Such borders may be old-fashioned, but when well arranged according to height and colour are very interesting in certain places. The planting of trees and shrubs had better be brought to a close as early as possible; where the soil is stiff and retentive planting may be longer continued than in a dry situation with light porous soil. Lawns and pleasure grounds never looked fresher and better at this time of the year, not a leaf injured by frost. Laurustinus are now in full beauty, and at a distance looking like Thorns in May. The grass has sustained no check this season, and if frost does not come soon, the mowing machine must be had in readiness; have the lawns well swept, rolled, and made ready for mowing. *T. Blair, Skrubland Park.*

FRUIT HOUSES.

VINES.—To have Lady Downe's, Mrs. Pince's Black Muscat, and other late kinds of Grapes, thoroughly ripe and in the best condition for keeping without shrinking for some months after removal to the Grape-room, the buds in late houses should be fairly moving by the first week in March; and as thoroughly ripened wood and roots have a great deal to do with abundant shows and free setting, a little extra attention to firing and early closing, up to the stoning period, will be well repaid by the time so gained being devoted to the colouring and finishing of the fruit, which should be complete by the first week in September, when the outside borders may be covered with a good layer of dry Fern and shutters over it to throw off heavy rains. Assuming that all inside borders have been top-dressed and brought into a growing state by the liberal application of tepid liquid manure, houses which have been started may range from 55° at night to 65° by day, with a rise of 5° more when closed with sun-heat. Syringe three times a day and keep vigorous young rods in a horizontal position until all the buds have started into growth. Attend to disbudding and tying early in succession-houses. Remove all surplus branches from free setting kinds, turn the points of the bunches of Muscats up to the light and increase the temperature to 70° at night with a rise of 15° by day when in bloom. If artificial fertilisation is resorted to, foreign pollen should be applied with a camel-hair pencil; this process may be more tedious, but it is safer than drawing the hand down the bunches, particularly when the body is warm, as the perspiration sometimes causes a small spot to appear on the apex of the berries when ripe. Pot Vines carrying full crops of fruit will require liberal supplies of liquid manure to 10° warmer than the temperature of the house in which they are growing. If plunged in fermenting material the quality of the fruit will be greatly improved if the roots are allowed to run into the bed. *W. C.*

MELONS.—Although nearly all the early Melons are grown under the influence of hot-water, there are a great number of gardeners who still have to depend upon fermenting material, either in pits or under frames, for their first crop. Where fermentation alone is depended upon for the production of a steady heat, great care should be devoted to the quality and preparation of the materials, otherwise the heat is liable to come to a stand just when an extra spurt would be acceptable. The best materials for the bed are good stable dung which has been turned; the droppings for the Mushroom-house, and Oak leaves collected in a dry state and kept under cover until wanted for use. These should be thoroughly mixed together in a heap on a dry bottom, protected from heavy rain, and turned twice in the course of a fortnight, to prevent burning. Select a light, airy situation on a dry bottom on which to build the bed. If only just large enough to receive the frame so much the better, as new linings can be brought into nearer proximity to the roots when the fruit is finishing. Make 5 feet high at back, tread firmly, put on the frame at once, keep close until the heat rises, when the soil may be introduced. If the bed is likely to get very hot 6-inch drain pipes may be laid across under each hill, which should be small at first, very firm, and rest upon sods of stiff loam turned grass-side downwards. Nothing is gained by turning the plants out too early; the cultivators will therefore do well to have vigorous young stocks ready for planting when the heat in the bed has declined a little below 90°. Guard against injury from rank steam by keeping the lights tilted night and day until danger is past. *W. Coleman.*

FIGS.—A temperature of about 60° at night and 65° in the daytime should be maintained in houses where the fruit is swelling, unless very unpropitious weather abounds, when it would in those houses which are not efficiently heated be advisable to be content with a few degrees less, particularly at night, than to have resort to excessive hard firing continuously. In the case of these subjects and in all others of this nature take advantage of every glimpse of daylight to accelerate forcing operations. See, therefore, that the fires are pushed on early in the morning, so that the standard heat for the day is attained by the advent of daylight. At the present time the condition of the earlier started trees will be such as to require some stimulating agent in a mild form mixed with the water, which should be given at about the same temperature as the house; and this important matter should have undeviating attention, both as regards trees in pots or otherwise. Continue to give the needful attention to pinching out the points of the shoots which are to be stopped as before advised, and at the earliest opportunity it can be effected, allowing the terminals on trees which are planted out a good run when the space in the house will admit it. Keep the atmosphere in the house sweet and agreeable to vegetation by means of sprinkling and syringing, applying the latter with considerable force over any leaves which may be infested with red-spider. Bring to a close at once the necessary operations of cleaning and training of the trees, &c., in late houses. As Fig trees are so readily obtained from suckers, other means of propagation is not in private establishments often requisite, excepting in the case of new varieties. Those shoots of from 3 to 6 inches long which can be got with a heel of last year's wood to them are the best for the purpose. Eyes will also strike very freely if they be placed in a warm house or pit, and be plunged in a brisk bottom-heat, in both cases employing sandy soil and well drained pots. *G. T. Miles, Wycombe Abbey.*

HARDY FRUIT GARDEN.

PROTECTION OF FRUIT BLOSSOMS, &C.—As a natural consequence of the extraordinary mildness of the weather up to the present time all kinds of hardy fruits are at least a fortnight or three weeks forwarder than they usually are at this season; and unless means be at once taken to retard the opening of the blossoms of Apricots, Peaches, and Nectarines, and to guard them against frost, should such an event occur, the chances of a crop will be very slight indeed. So long as the branches are nailed or kept close to the wall in any other way, every gleam of sunshine by warming the bricks immediately behind them gives a great impetus to their growth. The best that can be done at present is to unfasten the trees from the wall and so place the branches together that they can be cut off from the sun by putting mats or a few Laurel or other evergreen branches in front of them during bright weather, the effect of which will be to cause a current of air behind, whereby the expansion of the buds will be retarded many days. Where, however, appliances exist to run canvas blinds in front of them, there will be no necessity to detach them from the wall, as these may be let down to ward off the sun till the flowers expand, when they will be in position to protect them by night.

PRUNING.—In the advanced state both Peaches and Apricots are now in, pruning should be no longer deferred, and in the case of the latter attention ought principally to be directed to keeping the spurs as short and close home as possible. This may be done by shortening back all such as are well situated, leaving just sufficient flower-bud for a crop, and by cutting entirely out any that are gnarled and project far away from the tree, as these are useless, owing to the great distance they are from the wall, from which they derive little or no benefit as regards protection, and only prevent other healthy young shoots starting out to occupy their places. In the cultivation of the Apricot I find that the best way of pruning and managing the trees to secure a crop of fruit is to adopt a compromise between the spur system and that of laying in young wood of the previous year, after the manner of Peaches; this I do wherever space can be found, as it frequently occurs that when the blossoms on the spurs are cut off by frost those nestling close to the warm bricks escape injury, such a difference is there in the degree of heat in the two places. Of course these young shoots, to furnish vacant spaces, have to be thought of and left when the summer disbudding and stopping takes place, and little can be done in the matter now beyond turning to account any that may be so situated as to be available for the purpose. As regards Peaches and Nectarines, the skilful pruner will look well to furnishing the trees with medium-sized wood, and to see that this is equally and regularly distributed over the entire surface, having special regard to the bottom, where, unless well managed, they are sure to run bare. Nothing injures either a Peach or Nectarine so much as allowing them to make those gross, watery shoots that draw the principal portion of sap to themselves, to the detriment of the plant. If any of these were overlooked at the time when they should have been removed, cut them away at once, unless absolutely required to fill in any bare, unfurnished part of the wall that cannot be covered by such as is of a more useful character. Unless the trees are infested with scale, the labour and time spent in painting them over with the many mixtures in use is completely thrown away, and when such strong insecticides as Gishurst Compound gets into hands that are not particular as to the quantity used, much harm frequently results. Spider and green-fly, the most troublesome insects that infest Peach trees, lurk in the joints and nail-holes in the walls or deposit their eggs there, and time may be more unprofitably spent than in giving the bricks a wash over with soft soap, glue, and sulphur mixed up as a wash, which will effectually seal them in without causing the walls to present an unsightly appearance. Bullfinches and sparrows will now be getting troublesome on standard Plum, Damson and Gooseberry bushes, the latter of which may be readily protected by syringing over them freshly slaked lime made to the consistency of whitewash. *J. Sheppard, Woolverstone.*

THE
Gardeners' Chronicle.

SATURDAY, FEBRUARY 24, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Feb. 26	Sale of Orchids at Stevens' Rooms.
WEDNESDAY,	Feb. 28	Sale of Camellias, Shrubs, Roses, &c., at Stevens' Rooms. Linnean Society: Meeting at 8 P.M.
THURSDAY,	Mar. 1	Sale of Mr. Wilkins' Collection of Orchids at Stevens' Rooms (two days).
SATURDAY,	Mar. 3	Crystal Palace: Exhibition of Artificial Flowers and Fruit.

WE have received the programme for the horticultural and agricultural departments of the Universal INTERNATIONAL EXHIBITION at PARIS in 1878, from which we extract the following particulars. The Exhibition will be open from May 1 to October 31. A garden will be formed in the Champs de Mars, in which will be erected hothouses, greenhouses, tents, &c. Every description of horticultural produce may be exhibited, and all classes of plant growers, whatever their nationality, are invited to compete for prizes (*recompenses*). Twelve series of exhibitions will be held in regular succession, each lasting a fortnight. Every exhibitor will have to allow his plants to remain for the whole fortnight, and to take care of them for that period. Fruit and forest trees, ornamental shrubs, and the like must be planted before March 15, 1878, and if possible in the spring of 1877, and will remain throughout the whole period. Soil and other requisites will be provided by the Commissioners. All plants must be duly labelled, and in the case of seedlings the name proposed must be enclosed in a sealed envelope, which will not be opened if the plant does not receive an award.

For the first series, May 1 to 15, 1878, the principal subjects invited are Azaleas, eight classes; Conifers, fourteen classes; new plants, new seedlings, &c., thirteen classes; stove plants, eighteen classes, including foliage plants, four classes; Orchids, one class; Cacti, ten classes; Selaginellas, three classes; greenhouse plants, thirty-five classes, including Heaths, Ferns, Wallflowers, Cinerarias, Agaves, Aloes, Yuccas, Rhododendrons, Epacris; hardy plants, nineteen classes; forced shrubs, eight classes; Pæonies, sixteen classes; Clematis, Tulips, Stocks, vegetables, &c.

The second series, May 16 to 31, includes classes for Rhododendrons, trained fruit trees, Orchids, Ferns, Azaleas, Calceolarias, Clematis, hardy shrubs, herbaceous plants, Roses, vegetables, &c.

The third series, June 1 to 15, comprises Orchids, eight classes; Pelargoniums, eight classes; stove, greenhouse, and hardy plants, including Roses, &c.

The fourth series, June 16 to 30, will be devoted to Palms, Cycads, and Pandanads, with Roses, Pelargoniums, various stove and greenhouse plants, herbaceous and alpine plants, &c.

The fifth series, July 1 to 15, is to be devoted to Pelargoniums and Gloxinias, Orchids, Nepenthes, economic plants, Begonias, Sarracenias, hardy plants, Roses, &c.

The sixth series, July 16 to 31, comprises stove plants, herbaceous plants, Hollyhocks, Gladioli, Phlox, fruits, &c.

The seventh series, August 1 to 15, is principally devoted to Fuchsias, Gladioli and Hollyhocks, together with climbing plants, Heaths, Dahlias, Lilies, Tropæolums, fruits, &c.

The eighth series, August 16 to 31, includes Aroids and Tree Ferns, seventeen classes; Orchids, Achimenes, Fuchsias, Dahlias, Phlox, &c.

The ninth series, September 1 to 16, is to be mainly devoted to Dahlias and Asters, with classes for Crotons, Allamandas, Veronicas, with other classes for fruits and deciduous trees.

For the tenth series, September 16 to 30, the competition requested is for Aralias, Dracænas, stove plants, Fuchsias, Pelargoniums, Dahlias, Gladiolus, cut Roses, hardy Bamboos, annuals, &c.

The eleventh series, October 1 to 15, is specially devoted to fruits of all kinds, together with Orchids, Chrysanthemums, &c.

The twelfth series, October 16 to 31, is to be particularly set apart for vegetables of all kinds, together with forest trees, seeds, and Chrysanthemums.

On each occasion vegetables and fruits may be shown according to the season. It will thus be seen that special classes are framed for the main groups of plants, so timed as to suit the period when they may be expected to be in greatest perfection; but, in addition, subordinate classes are allotted to them at various other exhibitions, so as to secure early and late varieties, as well as the main crop, if we may so speak. Nothing is said as to the nature of the *recompenses* to be allotted.

In due time we suppose our Government will cause the programme to be translated for the benefit of British exhibitors.

The Botanical Society of France is, we learn, engaged in organising a Botanical Congress during the Exhibition, and doubtless other arrangements in which horticulturists are interested will be hereafter made public.

—— A CORRESPONDENT writes to ask if the FLOW OF SAP IN TREES is influenced by the age of the MOON?—

"Two or three years ago I was much interested by seeing in your journal that a distinguished vegetable physiologist was making experiments on this subject, and was nearly convinced of the truth of a theory that the flow of sap in trees was greatest at the full, and least at new moon. I then drew attention to the circumstance that the architects of ancient Rome believed them to be so, and that in their contracts for timber works they specified that the timber should be cut in winter, and at the wane of the moon, the reason for this being that there was then least sap in the wood. Can any one tell me whether any additional confirmation of this theory has been obtained? *C. W. D.*"

—— We have received from Mr. JAMES MENZIES, gr. to W. R. FRYER, Esq., South Lytchett, Poole, Dorset, a sample of CAMELLIA BLOOMS, cut on the morning of February 17 from plants growing in the open air at that place. Mr. MENZIES states that, owing to the mildness of the season, the trees have been more or less in flower all the winter, and are mostly now in full bloom, and will last up to the middle of May. The flowers, about three dozen in number, and of various colours, are of fine size and very bright. With such a climate and such a display as the Camellias at South Lytchett now afford, no wonder that that place is called the Sans Souci of England.

—— Mr. CANNELL sends us cut flowers of FUCHSIA SPLENDENS, which he states is in very fine condition with him just now. We are surprised that this beautiful and very distinct Fuchsia is not more frequently seen.

—— The complimentary DINNER to Mr. JOHN LEE, on the occasion of the retirement of that gentleman from the firm with which he has been so long connected, came off with great success on the 15th inst. The dinner was presided over by Dr. HOGG. It was well served by the manager of the Horticultural Club, to members of which and their friends it was limited; the tables were decorated by Mr. WILLS, and the dessert enriched by the contributions of Mr. KILLICK. Mr. LEE acknowleged in heartfelt and touching terms the compliment paid him, and gave an interesting sketch of the history of this old-established firm, embracing much of general interest concerning horticulture in general. If the firm of LEE had done no more than introduce the Fuchsia, they would have earned the gratitude of all flower-lovers.

—— *Nature* states that Mr. DARWIN has received as a testimonial, on the occasion of his sixty-ninth birthday, an album, a magnificent folio, bound in velvet and silver, containing the photographs of 154 men of science in Germany. The list contains some of the best-known and most highly-honoured names in Europe. He has likewise received on the same occasion from Holland an album with the photographs of 217 distinguished Professors and lovers of science in that country. A German correspondent informs us that the German album bears on the handsome title-page the inscription—"Dem Reformator der Naturgeschichte, CHARLES DARWIN."

—— It is proposed by the horticultural friends of Mr. JOSEPH DALE, of the Middle Temple Gardens, to present him with a suitable testimonial in recognition of his services as a promoter of the culture of the Chrysanthemum in towns. Mr. DALE first introduced the Chrysanthemum into the Temple Gardens, so far back as 1841, and it has flourished there ever since, furnishing annually an abundance of proof of what may be done with flowers, and with the Chrysanthemum in particular, in the heart of a smoky city. Those of our readers who may be willing to assist in such a desirable proceeding should communicate with Mr. J. S. HODSON, Gray's Inn Chambers, High Holborn, W.C.

—— An interesting question with reference to the fertilisation of EURYALE FEROX has presented itself. The plant is usually propagated by seeds, the offspring of the flower's own pollen on its ovules. This, then, is a case of self-fertilisation, which might be expected to be productive, in the long run at least, of more unfavourable results as to the number of seeds, vigour of plants, &c., than appears to be the case. In order to arrive at some conclusions on this matter it is requisite to know definitely whether the plants in British gardens are the offspring of recently introduced Indian seeds, or whether they are the lineal descendants of the plant originally introduced in 1809.

—— Under the heading "Industrial Celebrities" the *British Trade Journal*, in its last issue, has given a portrait and biographical notice of Mr. MARTIN HOPE SUTTON, as the head and virtual constructor of the well-known firm of "SUTTONS." The memoir is one of great interest, as affording one more illustration of what may be done by determined industry and well-directed zeal.

—— Our AMERICAN cousins are determined that we shall not lack POTATOS for cultivation, even though the beetle should presently come over and eat them all up. Three new kinds are offered for sale this year, at doubtless fairly remunerative prices, but it is evident that the rage that once existed for new American kinds has nearly died out. Superior is a large, handsome, bright red tuber, the haulm robust, and the plant generally a good cropper. Success is a large, even, coarse-looking form of Snowflake, and probably does not excel that popular variety. In "Centennial" we find our cousins outbidding us in names, as in the face of such an unusual anniversary the "International" must hide its diminished head. Centennial has yet to be grown to test its qualities, but it is to be desired that with such an appellation we may have also a variety worthy of it.

—— For the INTERNATIONAL HORTICULTURAL EXHIBITION, to be held at OPORTO on the 29th and 30th of June and the 1st and 2d of July next, Messrs. VEITCH, WILLS, and WILLIAMS are agents in this country. Steamers leave for Oporto once a week, the agents being Messrs. COVELLEY & WESTRAY, 73, Great Tower Street. A reduction of 75 per cent. will be granted for plants sent to the Exhibition; and tickets for exhibitors to go and return will be issued at £8. The cost of unloading and placing in the exhibition will be defrayed by the Society. The Secretary is DUARTE DE OLIVEIRA.

—— The POLYANTHUS is just now one of the most refreshing of spring flowers. In regard to its time of flowering it may be said to precede its congener, the Auricula, by a few weeks, and especially is this true of the fine fancy varieties. Even in the open ground, without shelter of any kind, the plants have been in flower for nearly two months past; they are now gay from autumn trusses, and the spring trusses are also on the move, and before the former have faded the

latter will be unfolding their blossoms. What a flush of hues these Polyanthuses afford? In this respect they are superior to the old gold-laced varieties, which, while displaying much refinement of beauty in their marking, afford but little variation of character. As in the case of the Auricula, so in the case of the Polyanthus, the florist top-dresses his plants in February or early in March, and adopts the same practice as that followed with the Auricula. Top-dressing is required more especially in the case of well-established plants in pots, but it is certain to benefit all the plants, as in spring young roots are thrown out near the surface. At this season of the year the Polyanthus is particularly liable to be infested with green-fly, which cluster on the under-sides of the leaves and about the young growths in the hearts of the plants. An occasional washing with Fowler's Gardeners' Insecticide will keep the plants clean and healthy. These remarks apply to plants cultivated in pots, and when it is remembered that four years old, and about 18 inches high. At the beginning of last year it was a handsome tree 36 feet high, with the branches covering an area 55 feet in circumference. The girth of trunk close to the ground was 8 feet; at 5 feet above the ground 4 feet, and at 10 feet above the ground no less than 3 feet. The Duchess of KENT's Wellingtonia was planted in 1858, two years later. This is not so compact in habit as the other, but already at the beginning of last year it had reached the height of 51 feet, and the circumference of the branches close to the ground was 56 feet. The trunk measured 9 feet in girth at the base, 5 at 5 feet from the ground, and 4 at 10 feet above the ground. The foregoing particulars are borrowed from the Berlin *Monatsschrift des Vereines sur Beförderung des Gartenbaues*.

—— At a recent meeting of the Horticultural Society of Berlin, Dr. KARL KOCH exhibited a series of twenty-four diagrams, intended to illustrate a course of instruction on FRUIT TREE CULTURE. They were designed by C. MADER, of Baden, a pomologist of experience, and published by the Landwirthschafts-und Gartenbau-Verein. Dr. KOCH strongly recommended them as being admirably adapted to the requirements of general schools, as well as agricultural and horticultural establishments.

—— On the same occasion Dr. KOCH called attention to a NEW SPIRÆA, received from BAUMANN under the name of S. splendens. It comes near the dwarf forms of S. callosa, and is described as of dwarf, bushy habit, with a profusion of peach-coloured flowers. It is also stated that it will bear forcing, and flowers nearly all the year round. The same plant, it was mentioned, is also grown under the names of S. callosa rosea, S. hydrangæfolia, and S. paniculata grandiflora.

—— We recently mentioned the project of an ARBORETUM AND SHRUBBERY for educational purposes in the vicinity of BERLIN. The Horticultural Society of that city has taken up the subject with spirit, and it is to be hoped that its efforts will be rewarded with success. From Mr. C. BOLLE we have received a copy of an article entitled "A Word in Favour of the Dendrological Garden," addressed to all lovers of trees. The writer very ably discusses the advantages that might accrue from a good collection of named trees and shrubs suitable for the climate of the district, and points out the utter ignorance of the general public in all that concerns, not alone the trees of other countries, but often also of those indigenous in the country. In such an establishment as the promoters wish to found, the aim should be not so much to form a large collection as to thoroughly cultivate a selection that will flourish in the climate, both of useful and purely ornamental species. Each subject should have sufficient space to attain its full development and assert its own merits. Mr. BOLLE concludes by expressing the hope that Dr. K. KOCH,



FIG. 40.—DUPPLIN CASTLE, THE SEAT OF THE EARL OF KINNOULL (SEE P. 240).

the peculiar beauty of the Polyanthus is heightened by growing it with the greatest care in an even genial temperature, it is easy to appreciate the force of the directions given by the old florists for applying extra covering to the frames in time of frost.

—— The RATE OF GROWTH OF THE WELLINGTONIA and other North American Coniferæ, under favourable circumstances, in this country encourages the belief that in sheltered situations they will attain dimensions greatly exceeding those of any of our indigenous trees, though probably even in plantations of considerable extent it is doubtful whether they will reach anything approaching the size of the largest of their species in their native mountain sides and valleys. In the January number of the organ of the Berlin Horticultural Society the size is given of the Wellingtonia planted by the Crown Princess of PRUSSIA in Windsor Park, on the occasion of her confirmation, as also of another planted by the late Duchess of KENT. The first was planted in March, 1856, and it was then

who has long laboured in the cause, and was the originator of the movement, may be appointed the director.

—— In our article on SCHOOL GARDENS IN SWEDEN in last week's issue we should perhaps have referred to an abstract of an article "On the Position of the School Garden Question in Austria," which appeared in the *Gardeners' Chronicle*, vol. vi., new series, p. 136. Some statistics and other interesting information bearing upon the subject will be found in the place to which we refer. The statement that there were 2000 school gardens in existence in Sweden in 1871, seems somewhat at variance with more recent information, but these figures were taken from the original article in the *Neue Freie Presse*.

—— From the Berlin *Monatsschrift des Vereines zur Beförderung des Gartenbaues*, we learn that a prize of £10 is offered for a short practical guide to the MANAGEMENT OF THE KITCHEN GARDEN, for

the use of teachers in country schools. The object is to disseminate the knowledge of a good system of planting and keeping cottage gardens, so that the owners may obtain a maximum of pleasure and profit from them, and the country generally present a more smiling appearance. It is hoped that the guide will enable teachers to cultivate their gardens in a superior manner, and thus make them good examples for the instruction of others.

—— A fine specimen of AGAVE ELLEMEETIANA is now FLOWERING in the Succulent-house AT KEW. The spike reaches a height of 11 feet above the base of the plant, and is about 8 feet in length. The flowers are expanded for a space of 2 feet at the same time, and from the yellow anthers, which reach from side to side about 9 inches, have a very ornamental appearance. It belongs to the group with soft unarmed leaves; the edges are quite smooth, and the surface of a distinct glaucous green, quite unlike any other species. This specimen has about twenty-five leaves, the largest of which are 2½ feet long and 6½ inches wide, lanceolate-spathulate in form. It is shortly caulescent, and is said not necessarily to die after flowering. It was figured in the *Refugium Botanicum* from a specimen grown by Mr. W. W. SAUNDERS.

—— We have the *Index Seminum Horti Monspeliensis* for the present year before us. It includes about 2000 species, and is specially rich in herbaceous plants, including some 360 Composite, 200 Gramineæ, &c. The seeds of shrubs and trees offered are almost exclusively those of quite common species. Lists of desiderata should be sent in before March 1.

—— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, Feb. 26, when a paper will be read by Mr. J. LUCAS, F.G.S., entitled "Hydrogeology; one of the Developments of Modern Practical Geology." The chair to be taken at 8 o'clock.

—— At a recent meeting of the Society of Arts Sir JOHN LUBBOCK gave a lecture on the subject of certain relations between PLANTS and INSECTS. With reference to the attractions which plants offered to insects capable of fertilising them, and to their means of defence against insects incapable of doing so, Sir JOHN LUBBOCK asked why it was that ants, whose fondness for honey was well-known, did not anticipate the visits of bees to honey flowers. Ants were kept off such plants by *chevaux de frise* of hairs, and by slippery and glutinous surfaces. The hairs on the stem of a honey plant would be found to point downwards, and there would be a prickly beard surrounding the flower, so that an ant could only with great difficulty reach the honey; and if it succeeded in passing the *chevaux de frise*, it would rob the plant without fertilising it, whereas a flying insect could hardly settle to sip the honey without touching the stigma. The stickiness of some plants was a similar precaution against ants, and some of the Lettuce species only exuded a sticky fluid when touched, so that the walking of an ant would stimulate the exudation, and the insect would be unable to proceed, and would come to a miserable death. Where the protection of the plant consisted in a slippery surface the flowers were often pendulous, as in the Snowdrop and the Cyclamen, and an ant could walk all over the leaves, but in trying to reach the flower it would fall over. The so-called sleep of plants was governed, he considered, by the habits of the insects which visited and fertilised them. He could not at first understand what advantage a certain plant derived from opening its flowers about six o'clock in the morning and shutting them about ten; but it occurred to him as an explanation that bees and wasps got up early, but that ants did not come out until the dew was off the ground. The second part of the lecture, on the action of plants on insects, related chiefly to the colouring of caterpillars. Why were caterpillars first of all pale green, and why did they then gain longitudinal and diagonal lines, become brown, and have eye-spots? These questions were answered by the lecturer in a series of suggestions based on observation. First of all, the small caterpillar was light green because, obviously, that was the colour of the leaves on which it fed, and thus the creature was concealed. When the caterpillar grew large, it was important that there should be lines to divert the eye from the outline of the body, and the longitudinal lines resembled those of grasses and narrow-leaved plants. Caterpillars that fed on broad-leaved plants did not have longitudinal but diagonal lines. Longitudinal and diagonal lines were not found on the same segment, for the crossing of these lines would not agree with any leaves in Nature. White lines were edged with violet, producing the effect of shadow, in the case of caterpillars which fed on the under-side of leaves, near the midrib. Caterpillars that fed upon large trees and could not very well come down to hide by day, retained their original green colour, but others which fed on small plants were brown, approximating to the colour of the ground on which they lay in hiding during the day. Some brown caterpillars placed themselves at an angle when feeding, and looked like a bit of dead wood. The eye-spots resembled light shining through a thick foliage; and in the case of some caterpillars which derived no protection from this cause it was found that their marking gave them a snake-like appearance which frightened birds. *Daily News.*

—— The Astronomer-Royal, having undertaken to register the hours of SUNSHINE in comparison with the number of hours the sun is above the horizon, some interesting results have been obtained. Thus last week the sun was above the horizon 69.3 hours, but his light was intercepted, and he only shone on London 9.3 hours; four days not at all; Sunday, 5.3 hours; Friday, 3½ hours, and Saturday half an hour.

Home Correspondence.

Fertilisation of Plants.—In the last number of the *Gardeners' Chronicle* (p. 203) Mr. Henslow quotes my words, that "the seeds from which the self-fertilised plants of the third generation (of Petunia) were raised were not well ripened." The word *self-fertilised* is a misprint for *crossed*, as he would have seen if he had looked to the full account of my experiments given at p. 191, where I say, "The sole conjecture which I can form is that the *crossed* seeds had not been sufficiently ripened, &c." But I have no right to expect a critic to take so much trouble, and I am much obliged to him for having led me to detect this unfortunate misprint. Mr. Henslow then goes on to say that "Mr. Darwin also accounts for the greater growth of the eighth generation of Ipomœa from their having been raised from unhealthy seeds." He ought, I think, to have added that the greater growth of the self-fertilised plants was confined to the early part of their lives, and that they were ultimately beaten in height by the crossed plants in the ratio of one hundred to eighty-five. It was this anomalous manner of growth which led me to compare these plants with those of Iberis which were raised from seeds not well ripened. I have long been convinced that controversy is a mere waste of time; I will, therefore, not make any other remarks on Mr. Henslow's criticisms, though I think that I could answer them satisfactorily. I hope that any reader who is interested in the subject will look to Mr. Henslow's interpretation of my statements without consulting my book. *Charles Darwin, February* 19.

Utricularia montana seeding.—It may interest some of your readers to know that last spring Utricularia montana seeded with me very freely. The plant was very strong, and there were several pods on every spike, the flowers in consequence lasted but a very short time, leading me to regret the profuse seeding. My Orchid grower, Spyers, sowed the seed when ripe in pans of moss mixed with a little fibrous peat, and we now have hundreds of young plants. I may mention that the correct name of the new Dendrobe shown by me at the meeting of the Floral Committee of the Royal Horticultural Society on January 17 is D. Findleyanum, not Lindleyanum. *T. L.*

Royal Horticultural Society.—Will you permit me to make a few remarks on what passed at the meeting on the 13th. Mr. Elwes, who, as a horticulturist of standing, will add strength to the Council, needed after the loss of the well-known name of Boscawen, instances the Zoological Society as a case in point. The comparison with the Royal Horticultural Society having once occurred to me, I worked it out, when many points of difference occurred; these seemed the principal. The "Zoo" has a show every day; it has no serious competitors in the country; its objects of exhibition have motion as well as life, and these are always the most attractive; and last, but most important, it has its own special friends. As long as there are children, and travellers, and foreigners, it will have its own numerous visitors, in addition to the general public. Mr. Veitch's speech, I admit, fairly puzzled me. Believing that he has influence with the owners of gardens, I spoke to him among the first about the guinea Fellowship. He seemed to adopt the idea warmly, and until his speech at the meeting I never had a hint that he had changed his mind; and what added to the puzzle, he, after the meeting, said publicly that he still fully believed in guinea Fellowships. It is difficult to work with uncertain supporters. Now to the more important part of my letter. I am constantly being asked—"What are we to do now the Society offers guinea memberships?" My advice is, for the present hold yourselves in reserve, and do nothing. You agreed to become guinea Fellows when the Society was free—the Society is not free, and we will not yet be received as Fellows, but only as members without a vote. I have, however, sent a proposal to the President, which would, I think, fairly meet the circumstances. Immediately on receiving the decision I will make it known. *George F. Wilson, Heatherbank, Weybridge.*

—— The next meeting of the committees will be held on March 7, and, looking at the advanced nature of the season, it is probable that a very charming display of plants will be found. What steps does the Council propose to take to ensure the attendance of Fellows and others, and thus give to their enterprising exhibitors the only reward at present available in repayment for considerable outlay of expense and trouble? If things are not improved in that respect, the disgust which grows out of neglect will soon follow. I venture the suggestion that the Council should have 5000 neat circular announcements of the meeting, or future meetings, printed and circulated amongst all London fellows, and at the houses of the local residents. The show might also be open at 11 o'clock, as, there being no competition, it is a waste of time for the committees to absorb the entire show for two of the best hours of the day. *Exhibitor.*

—— I perceive by the reports of the Royal Horticultural Society's annual meeting (*vide* p. 219) that the remarks I made upon the subject of the Provincial Show Fund either were not distinctly heard by the reporters, owing to the confusion caused by the breaking up of the meeting, or I failed to make myself clearly understood. The first paragraph of the report given corrects the substance of what I said, but the second bears a directly opposite construction to what I meant to say; I should therefore be obliged by your permitting me to state that what I wished to convey to the meeting was, that I did not believe, if the matter were properly put before the Finance Committee, that that body could well refuse to allow the borrowed money to be refunded out of the Society's current account. It will be remembered that, in instituting the Society's provincial shows, the Finance Committee refused to allow any of the Society's money to be spent for that purpose, and that the first show was carried out through the exertions and personal guarantee of a few spirited horticulturists outside of and on the Council, but with the understanding that the profits (if any) resulting should be allowed to constitute a distinct fund for similar undertakings in future. This arrangement was subsequently confirmed by the action of the Finance Committee. I therefore maintain that the money borrowed by a former treasurer (Mr. Dobree) from this fund is as much a debt due to the Society as that which was borrowed, to meet the exigencies of the Society, of Her Majesty's Commissioners, and which has been repaid. *John Denny.*

Corsican Crocuses.—I have long had misgivings as to the identity of the highland and lowland Croci of Corsica, which since the time of De Candolle, Herbert, and Gay, have been generally lumped together as one species under the synonyms Crocus, D.C., and insularis, Gay. The larger mountain plant has, however, been well known to all collectors in the island. Dean Herbert separated it as a variety under the name of major, and Vanucci in 1838 described it as Crocus corsicus, without distinguishing it from the smaller plant of the coast, which all of Gay's MS. figures appear to have been taken. I would here correct an error that crept into some notes on Corsica, that appeared in the *Gardeners' Chronicle* in 1870, p. 768, in which I recorded Crocus versicolor (for which I had mistaken Vanucci's C. corsicus) as occurring abundantly on Monte Rotundo. I have not till to-day had an opportunity of comparing the two plants in a living state. They are notably distinct, and as widely separated in essential specific characters as any other species of the versicolor group of Croci. Their geographical distribution is suggestive, for whilst the smaller plant, with a yellow stigma much exceeding the anthers, is as far as I am aware restricted to low levels near the sea, the large mountain form is not found lower than 2200 feet, and occurs profusely on Monte Rotundo up to 6000 feet. It is fully as large as Crocus versicolor, though a little shorter and much broader in the limb, which is generally of a paler purple than that of the coast plant found about Ajaccio, and in nearly the whole of my specimens the anthers overtop the stigma, which is bright orange-scarlet instead of yellow. I know of no habitat for either the large or small forms between the coast line and

2200 feet. I believe the two plants are specifically distinct, and would suggest that Vanucci's name of "corsicus" be retained for the mountain plant, to separate it from De Candolle's minimus. As I have distributed both plants under the name of minimus, I would state that the bulbs from the mountains above Corte, and from the range between Bastia and St. Florence (1875), are of the larger species (Crocus corsicus of Vanucci), and those from Portiglioio, near Ajaccio, distributed last year, are the typical Crocus minimus, a good figure of which will be found in the *Botanical Magazine* (plate 6176). The yellow stigma overtopping the anthers is clearly rendered in the figure. *George Maw, F.L.S., Benthall Hall, Broseley.*

Lobelia Emperor William.—I can fully endorse all the praise bestowed on this excellent Lobelia by Mr. Davidson (p. 215). As a variety for carpet bedding it has few, if any, equals, being of dwarf robust growth, with large brilliant flowers, which it continues to produse in great abundance throughout the summer and autumn months. This the panula section does not do; even when well supplied with water during hot, dry weather, it often ceases to flower during August and September, at a time when Alternantheras and other carpet-bedding plants are at their best, thus leaving a blank in the beds which very much detracts from the effect of the whole arrangement. Emperor William only requires to be better known to become a general favourite. *T. Dinsmore, The Cedars, Harrow Weald.*

Action of Pollen on the Seed of Peas.—I notice in your last issue (at p. 219) that Colonel Trevor Clarke exhibited before the Scientific Committee of the Royal Horticultural Society a pod of Woodford Marrow Pea, the flower of which was fertilised with the white-seeded Auvergne, the result being the production of blue and white Peas in the same pod. Colonel Clarke considered it a novelty, and said that Mr. Laxton had not observed it; but I beg to say that when my father was gardener to Mr. Laxton they often observed it—in fact, that was one way in which he obtained his new varieties. Sometimes the blue Peas revert to white ones, and *vice versâ*. My father and Mr. Laxton have also noticed round and wrinkled Peas in the same pod. *W. E., Waltham Cross.*

Brassica Napus (see *ante*, p. 148).—I beg to make a few remarks on the note added by the Editors to my account of a hereditary deformity in Brassica Napus (*Gardeners' Chronicle*, Feb. 3, 1877, p. 148*). The Editors say:—"The specimen in question resembles those figured in the *Gardeners' Chronicle* in 1874, p. 1066, from specimens brought before the Scientific Committee of the Royal Horticultural Society in the same year by Mr. Wilson Saunders." And in fig. 24 a woodcut of "adventitious buds on underground stem of Brussels Sprout" is represented, apparently nothing of tuberous deformities, but only as far as the drawing is clear enough to enable me to judge, adventitious leaf-buds, directly breaking forth from the tap-root. The similarity consists, therefore, only in the presence of adventitious buds in both cases, but as regards the essential point, that in Brassica Napus these break forth from the monstrous tubers, and not from the roots themselves, whilst in the Brussels Sprout they originate from the root directly, the two cases are wholly different. The Editors say furthermore:—"As the tuber is of cauline rather than radical nature, the production of adventitious buds is not so surprising." I add that it would not be at all surprising if the monstrous tubers were of radical nature, as a great quantity of roots, such as those of some kinds of Poplar, of Horseradish, Cirsium arvense, Convolvulus arvensis, &c., of which I gave a list in *Schriften der Physik.-ökonom. Gesellschaft zu Konigsberg*, 1873, p. 109, make leaf-buds. The thing surprising is this, that these adventitious buds spring from the monstrous tubers, which is, as far as I know, observed for the first time. Monstrous tubers on roots, although perhaps originating from different causes, are not of a very rare occurrence, as on those of the Alder, of Cycadeæ, of a great quantity of Leguminosæ, of Beetroot, and even of Brassica Napus, &c., but on none has an adventitious leaf-bud ever been observed. The reasons why I consider those monstrous tubers of Brassica Napus as deformed roots are—1stly, because all those tubers, most of which have no adventitious buds, are wholly destitute of any sort of leaf, even of the minutest scale: as far as I know no organ of cauline nature exists without leaves, except sometimes the embryo (Bertholletia excelsa, Garciniaceæ, Orobancheæ, &c.); 2dly, because the terminal bud is wanting, and even if buds are present all are adventitious, as far as I have seen; 3dly, because those tubers seem to have an analogy to the monstrous tubers of the Alder and Cycadeæ, which are doubtlessly deformed roots on account of their mode of development, their root-sheath and anatomical structure (Cf. Schacht, *Flora of Regensburg*, 1853, 261). Treviranus (*Botan. Zeitung*, 1853, p. 353) considered the tuberous swellings of the Leguminosæ as of cauline nature, chiefly on the analogy with flowering and fruiting underground buds which some Leguminosæ have—a reason which proves this analogy is not existing. But as the Editors seem to think these tubers are cauline, may I ask them to state, for the benefit of science, the reason for their view? *Professor R. Caspary.* [In writing from memory some errors crept into our commentary. In Mr. Saunders' specimens the buds came from the roots of sprouting Broccoli, without the intervention of any such tubers as Professor Caspary describes. These tubers, like the buds in the other case, are apparently of root-origin. Is it not sometimes the caulicle which becomes tuberous? Adventitious buds sometimes spring from the caulicle, which is a stem-organ, though generally without leaves other than the cotyledons. EDS.]

Cœlogyne cristata.—Foremost among many things well done by Mr. Beesley (who took charge of the gardens after the retirement of my old friend, Mr. Drewett), at The Denbies, Dorking, I noticed a few days ago a fine lot of the lovely Cœlogyne cristata in various sizes; the plants were in the most vigorous health and totally covered with fine racemes, and in their lovely white flowers they are quite equal in point of cultivation and for quantity of flowers to the grand plants grown by Mr. R. S. Yates. *T. Wills, Onslow Crescent, Feb.* 20.

Gardeners' Royal Benevolent Institution.—I am one of those who think that the present system of canvassing for votes for pensioners on the funds of this institution should be discontinued, as all the needful information is furnished to every subscriber by the Secretary. In the second part of Mr. Grieve's excellent letter there is just one little error which he in common with a good many others has fallen into, and that is, he ignores the fact that subscribers for fifteen years are placed upon the list without the trouble of election. I quite agree with his remarks on the smallness of the pensions, and I know that there are hundreds of gardeners who think as I do—that subscribers for fifteen years should be placed upon the same footing, except the trouble of being elected. The non-provident man has equal shares with those who have toiled hard to pay their subscriptions; this is one cause I know which keeps many gardeners from subscribing. Allow me to suggest also that it would be much fairer to subscribers, if the funds are short, to give pensions to subscribers of £20 or £25, and allow the non-subscribers to remain as they now are. *James Clarke, The Gardens, Cothelstone, Somerset.* [At present, subscribers of fifteen years are placed on the funds—if there is room for them—without election. Would it not remove many of the objections to the present system, if subscribers of ten years and of five years respectively were at the elections credited with a proportionate number of votes by the committee? Thus for five years one-third the average number required to secure election might be given, and for ten years two-thirds, while the fifteen years subscribers would be saved the trouble of election. EDS.]

Winter-flowering Eupatoriums.—How many species are in ordinary cultivation for decorative purposes? I find all the following names floating about, but they seem to belong to not more than a couple of species. Which are the recognised names, and which are the synonyms, or how is it? The names are adenophorum, ageratoides, corymbosum, fragrans, glabrum, glandulosum, ligustrinum, Morrisii, odoratum, riparium, roseum, and Weimannianum. *G.*

Rhododendron Nobleanum.—I was much surprised on going through the pleasure-grounds at The Denbies, near Dorking, a few days ago, to see huge bushes of this bright-coloured Rhododendron covered with finely-developed flower-trusses, the flowers being as fine as any I ever remember to have seen of this variety under the most favourable circumstances. The plants were flowering freely in all positions, and have been in blossom for the last two or three weeks. *T. Wills, Onslow Crescent.*

Orchid Collecting.—The remark at p. 81 "that the civil war now desolating Colombia will have some compensation in affording a fallow time to the Orchids, which otherwise would run a fair chance of extirpation, if there be not some of them extirpated already," reminds me of a passage in the last letter I received from Mr. Wallis, in which he strongly condemns the doings of the collectors of the present day. Not satisfied with taking 300 or 500 specimens of a fine Orchid, they must needs scour the whole country, and leave nothing for many miles around. At least 15,000 of the beautiful Odontoglossum cirrhosum, some 5000 O. Hallii, some 6000 Oncidium macranthum, &c., have lately been sent over to England, and Mr. Wallis says that the environs of Quito and Cuenca have been perfectly plundered in even the remotest corner, and that no collector will henceforward there find any of these beautiful Orchids, the natural treasure of these districts, as not even the smallest bits escaped in the general slaughter. Fishermen spare the young fishes, and hunters do not kill indiscriminately, but these modern collectors spare nothing. This is no longer collecting, it is wanton robbery, and I wonder that public opinion is not stronger against it. Professor Reichenbach has often, in his own original way, given unmistakable hints in this direction, and has even dealt a blow now and then with no reluctant hand, but to no purpose as it seems. No fallow time will help these poor Orchids, where everything is gone already; only a general and strongly expressed indignation about such selfish and, moreover, most impolitic behaviour can bring back a more reasonable and more honourable way of collecting. Let collectors take by all means as many of a good Orchid as the market reasonably can bear, but no more. Most likely they themselves, or at all events their employers, ought to be very glad if they can some years later get a fresh supply from the same locality. *E. Orgies, Botanic Garden, Zurich.*

West's Patent Trellis.—In reply to Mr. Simpson's letter on the above, which appeared in the last impression of the *Gardeners' Chronicle*, I beg to state, in contradiction to "the worst objection," that in the case of the trellis being fitted in a span-roof house it need not be 1 inch shorter; the reason it appeared so in my diagram was to make it more distinguishable, and that in a lean-to vinery 18 inches to 2 feet at the outside is lost, which is amply compensated for by the advantages gained as the training space is lost where the Vine bears least. With reference to the trellis getting out of order I can only say that it has been in use for upwards of three years in the patentee's vinery and has never done so yet, and no such complaints have been received from others who have the trellis in use. *W. McGrath Compton, Hibernia Wharf, London Bridge, S.E.*

"Royal" Nurseries.—Is it allowed to any one in England, whoever and whatever he may be, to style his place "Nurseries as "Royal," and to use the royal arms? If so, I think it is a great mistake, as many people are undoubtedly misled by certain individuals using largely the above qualification of "Royal," which ought not to be employed except on sound grounds. The continental market-gardeners and others have been more than once deceived by selling to certain English firms (sometimes very small people indeed) on the credit of their "Royal" place. I think the title of a "Royal" nursery ought not to be advertised or used in any way without the consent of the high patronage to which it alludes. Is it not a shame to see people neither whose establishment nor any personal merit or capability could ever command the highly respectable title of a "Royal" nursery, paying one day perhaps 1*s. 6d.* or 2*s.* in the pound, and advertising next day again under the dazzling puff of a "Royal Nursery"? Such practices should not be permitted; it hurts the feelings of all honest men. *T. N. V.* [A general association of the trade seems wanted for many purposes, among others to put an end to misleading advertisements of all kinds. EDS.]

Fruit Blossom.—In all my experience I have never seen such profusion of blossoms as exist on some trees here about this spring, and this has more particular reference to the young wood of the past season's formation. I send you examples of Pear shoots, whereon you will perceive, though but young wood of last year's growth, almost every wood-bud has developed into a fine plump fruit-truss. Plums are similarly fertile, whilst the same characteristic in some degree or other prevails generally. Filberts and Hazel-nuts are wonderfully loaded with the pretty crimson-pointed female blossoms, and Peach trees, &c., have clusters of blooms at every bud. In passing through Kent this week I saw several Damsons in full bloom, and many Pears with blooms expanding, or a week or two earlier than they are here in Essex. *William Earley, Ilford, E.*

How to Renew a Vine Border without Losing a Crop.—In reply to "E. P.," of Jersey, p. 117, I may state that if he follows the directions here given he can renew his Vine borders and not lose a crop. I may here premise that I don't pretend to say I can do the border all at once, and save the crop. I do it in one year, but at twice, in the following manner. In my case the Vines had been planted nearly thirty years, and were showing signs of distress. I began in March to take away some of the old soil around the stems of the Vines, replacing with fresh rich soil to encourage fresh roots, which were emitted freely. Then in August following, when the Grapes were

* By mistake, Brassica Rapa, instead of Brassica Napus, is put under the woodcut, fig. 25.

cut, and the leaves yet green, I prepared to renew the one half of the border. To make it plain, we shall number the Vines, one, two, three, four, &c. Having the soil ready, rather dry, I had a line set from the stem of No. 1 Vine to the front of the border, and a mark made along the line, which was then shifted to No. 2 Vine, and a similar mark made parallel to the first line. The soil is now to be dug up between the two marks, taking roots and soil clean out till you get within 6 feet of the stems of the Vines. Then take forks and fork out the remainder of the soil from among the roots, shovelling it away as you go on. Have a mat on each side to place the roots under as you fork them out. The sides of the trench are to be cut down on each side with the spade, not perpendicularly, but a little inwards, or undermined a little: the reason for this will be seen by-and-by. If the border wants any draining, have broken stones ready to place in the bottom of the trench, when all is cleared out. After the broken stones are put in cover with turves, the grass side downwards; now wheel in the soil, levelling and ramming it carefully, more especially at the sides and end of the trench next the front wall. Fill up to within 8 inches of the top. Spread out the roots from each Vine, regularly over the surface. There will, no doubt, be some dead or rotten roots to cut away. Shorten the strong roots to different lengths, cutting from the under-side. Cover the roots carefully, give some water, and the work is done. You then begin with No. 3 and 4 Vines, do the half of each, as in the first instance. Then you go to 5 and 6, and so on till you get to the far end of the house. This will complete the first part of the process. I put some short grass, the mowings of the lawn, to raise a little heat in the border, and keep it moist. The artificial heat, however, is not essential, as the soil is naturally warm at that season of the year. In the November following the renewal of my border the roots were running in the fresh soil very freely. You have now to commence next year with, one half of the roots of each Vine in the old border, and the other half of each Vine having vigorous roots in the new border, a considerable improvement on the old border. In August the following year you have to do the intermediate spaces, in the same way as was done in the first instance, by clearing out the soil to within 6 feet of the stems of the Vines, then forking out the roots, and cleaning the bottom of the border. You will get quite beneath the stems of the Vines this time, and, in putting in the soil, the advantage will be seen of previously undermining the sides of the border. The soil now put in will act as a wedge, and leave no crevices, if well rammed in. Be careful in firming the soil among the roots under the stems of the Vines, so that no vacancies are left. The above plan was a great success with me, and I have no doubt it will be equally successful with "E. P." if he has the work carefully done. Given the soil and labour, who need have bad Vine borders? "E. P." probably spurs his Vines, and very likely the spurs have got long; get young shoots from the bottom, cutting out the old spurs as the shoots grow up. In my own case I had young shoots from the bottom, cutting out the old spurs every year for four years, then I cut down the old stems so that, barring the old stems at the bottom, my Vines looked always like four-year-old Vines. As to soil, bones and charcoal are good ingredients in it. I have neither bones nor charcoal in my border, and I had Black Hamburghs weighing 7½ lb. a bunch last year. *W. Hutchison, The Gardens, Lheyndu Court.*

Lilies of the Valley.—Having read several articles in your paper on Lilies of the Valley, wherein opinions have been expressed by several correspondents about the quality of these roots from different origin, I have to-day sent you a small box containing a pot of Lilies of the Valley for your inspection, and I would feel obliged if you will give your opinion about them. The pot contains a clump as generally grown here for the trade, and of the sort which is considered here as the best. Growing the Lily of the Valley very largely, I had some refuse clumps, from which I selected and forced a few, to adorn a small plant-house of my own; these, of course, were not the finest, the best having been sent to my customers. If you care to have my opinion of the reason why our Dutch Lilies of the Valley are judged by some parties to be of inferior quality, I beg to say that some people abroad, buying from everybody and often under market price, are sometimes imposed upon by growers, who sell the roots growing here in a wild state, and which are of very inferior quality. The difference between the two sorts is, however, very obvious, the leaves being much smaller and of a darker green, and the flower-stems shorter and giving only a few bells. An experienced man can distinguish at once the wild sort, even when leafless, the crowns being not so plump by far as those of the cultivated variety. *S., Haarlem.* [The sample received was a very good one, and much better than many other Dutch Lilies of the Valley that have come under our notice. EDS.]

STEMLESS MUSHROOM.

THE accompanying illustration, fig. 41, is a representation, natural size, of a stemless Mushroom, found last November near Newbury, by Mr. J. A. Bartholomew, of Penclose, Chieveley. The first information which reached me regarding this singular monstrosity was contained in a letter from Mr. Henry Reeks, F.L.S., of Thruxton, and through this gentleman's kind offices I was enabled to exhibit the actual specimen before the Scientific Committee of the Royal Horticultural Society, on December 9 last.

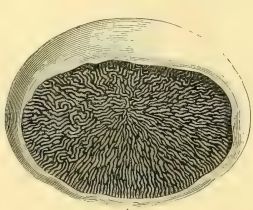


FIG. 41.—STEMLESS MUSHROOM AND SECTION.

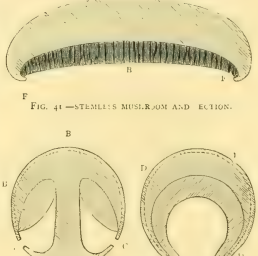


FIG. 42

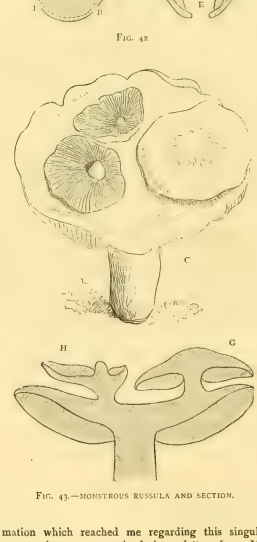


FIG. 43.—MONSTROUS RUSSULA AND SECTION.

In a letter from Mr. Bartholomew, the writer therein says he gathered the Mushroom himself in his own meadow at Penclose; the fungus was lying in a natural growing position (the dewy grass partly hiding it from observation) with no sign of a stem or any connection with the ground in any way, above or below.

By reference to the illustration it will be seen that the gills do not radiate from a centre as they usually do in Mushrooms, but are disposed in labyrinthiform patterns, after the manner of Daedalea, Boletus or Paxillus. Nevertheless the plant is a genuine specimen of the true meadow Mushroom, Agaricus campestris. This is proved by the nature of the trama and the size and colour of the spores, which I have examined microscopically. The upper figure, A, shows a general view of the complete plant, and the lower figure, B, a section.

It is by no means an easy task to explain the meaning of this singular monstrosity, and as far as my experience goes the specimen is quite unique. A stem is not invariably present in every member of the Mushroom tribe, but of necessity there is always a distinct point visible, showing where the fungus has been attached to the matrix which has carried it. In the plant here illustrated there is not the slightest trace of attachment to the ground, either above or below.

I am inclined to explain the abnormal growth of the plant in the following manner. In one way or other all members of the Mushroom tribe are in infancy enclosed in an entire wrapper; this wrapper may either take the form of a cloth-like veil, a mass of spider-web-like thread, or a coating of slime. An entire veil or wrapper is shown at B, B, B, B, fig. 42. When an Agaric is very young the plant looks like an infant Puff-ball, and does not put on the appearance of a Mushroom till the wrapper is cracked all round (by the growth of the stem), as at C, C. No doubt the stemless Mushroom was veiled in infancy by a wrapper which entirely covered it (D, D), and the point of attachment to the ground was at the bottom of the veil at the same point where the veil was ultimately ruptured (E); the edge of the veil is clearly seen in the actual specimen, at F, F, fig. 41.

The entire absence of a stem in the Penclose Mushroom is very remarkable, and the lesson it teaches should not be lost sight of by mycologists.

In the *Gardeners' Chronicle* for July 26, 1873, pp. 1016, 1017, will be found a series of illustrations of monstrosities in the Mushroom tribe, and a cut of singular "twin Mushrooms" may be seen in the number for March 25, 1876, but in neither paper is there anything like the monstrosity now described.

The following example, fig. 43 C, is also different from any of the specimens hitherto figured in the *Gardeners' Chronicle*, and therefore may be worth a place at the present time. It represents a specimen of Russula vitellina, exhibited at the last fungus meeting of the Woolhope Club at Hereford. The remarkable point in the plant is that it has three smaller specimens growing upon and confluent with the top. One of the upper plants has its gills placed downwards, as seen in the section at G, whilst the two others have them displayed upwards, as at H. *W. G. Smith.*

Florists' Flowers.

THE PROPOSED CARNATION SHOW IN LONDON.—You will greatly oblige if you will allow me through the medium of your pages to invite the attention of your readers to, and solicit their support for, the show of Carnations and Picotees intended to be held in London in July next.

It owes its origin to the fact that, save by this special show, no opportunity is afforded to the cultivators of these flowers for their presentation before the public, neither of the two societies devoted to horticulture offering inducements in the shape of prizes or days of exhibition suitable for their production, whilst an additional incentive to this action may be found in an assertion made some time since in the pages of the *Journal of Horticulture*, that "florists' flowers were hopelessly at a discount in the South."

When I state further that the proposed show is due directly to the suggestion of Mr. Charles Turner, of the Royal Nursery, Slough, and Mr. Douglas, who has charge of the fine collections at Loxford Hall, I shall have said enough to assure your readers that the display will be of great merit, and worthy the notice of all lovers of these very beautiful flowers, whilst, further, a reference to the subscription list, a copy of which I enclose, will show the promoters

do not solicit aid without first contributing liberally from their own pockets.

A schedule of prizes which has been proposed, and which the promoters believe would appropriately illustrate the cultivation and development of the flowers, offers ninety-one prizes, including, in Carnations, collections of twenty-four and twelve, and single specimens in each class; Picotees, white grounds, the same; yellow ground Picotees, prizes for collections of twelve and for single specimens; miscellaneous Selfs or fancies, a class usually especially interesting to ladies, three prizes each of twelve blooms; and Plants in Pots, two prizes each for twelve specimens. Resulting in an aggregate of 462 specimens, and a money total of £54 16s.

The funds thus far contributed amount in round numbers to fifty guineas, a further sum of £15 to £20 is therefore needed to provide the desired prizes, and for the expenses incidental to the show, and to this extent the promoters will gladly accept of help from any of your readers disposed thereto. *E. S. Dodwell, Hon. Sec.*, 11, *Chatham Terrace, Larkhall Rise, Clapham, S.W.*

Auricula Show.—We are glad to learn that the fund for carrying out the Southern Show of Auriculas, fixed to take place at the Crystal Palace on April 24 next, may be regarded as complete, allowing for a probable addition of £5, which, in the experience of the promoters, generally accrues at the last moment, as the contribution of the laggards in floriculture.

The tenacity with which the Auricula cultivators cling to their traditional ideal of what constitutes a perfect Alpine Auricula is well set forth by the Rev. F. D. Horner in the current number of the *Florist and Pomologist*. In the January number of that periodical Mr. R. Dean put in a plea for the recognition of the Self Alpine Auriculas at the coming exhibition of Auriculas. Several very beautiful flowers have been raised by Mr. C. Turner and others, but being destitute of the shaded petal they have been practically excluded from competition at the exhibitions of the National Auricula Society. Referring to this plea the Rev. Mr. Horner states:—

"The flower comes before us with a broad enough distinction, but it is a rather awkward one, for it makes the flower an alpine with the very first and prettiest property of the alpine left out. For it is not a mere benighted Northern idea that the alpine shall be a flower of shaded ground colour, but it is a leading property universally recognised among florists; so is the golden eye; and flowers possessing these properties will always take high precedence of those with pale eyes, or those nondescript new-comers the self alpines. Beautiful they are, and cannot fail to be; but to me, they have the look of dark piercing eyes, of an intensity that is almost fierce; and I see no such loveliness in them as I find in the true alpine, with all its tender, sweet expressiveness of softly-shaded petal, and the beauty of the golden centre. This class, in its strict integrity, forms a very lovely contrast to the self proper, the consort to the edged classes. The self, with its densely mealed centre, must not trespass on the shadings of the alpine, nor the alpine appropriate the pure ground colours of the self. Intermixture and confusion among them, in so far as they are florists' flowers, are to be deprecated. If there be self alpines, why not also alpine selfs, and a host of perplexing half-breeds? Were I a grower of alpines, I would admit none to the rank of show varieties but the one legitimate and not necessarily limited class of golden centres and heavy shaded petals."

It may be remarked that the National Auricula Society have broken through this limitation set up by the Rev. Mr. Horner, by making a class for alpines with white centres; and now that a beautiful race of self alpines has been obtained, it does seem a pity to exclude them altogether from competition; but where admitted it would be best if they were classed by themselves, and not in companionship with edged alpines proper, as some growers of the alpine Auricula will not admit the self flowers to their collections.

Natural History.

Witch Knots on the Birch.—The great mass of twigs looking like a large bird's nest fallen in a loose bunch amongst the branches of the Birch tree, and commonly known as a Witch Knot, is familiar to all, but its origin, from the attack of a minute four-legged Acarus (Phytoptus), very similar to the one causing much mischief to young buds of the black Currant, is not so well known.

During the last winter there has been a deal of this peculiar growth on some Birches planted by the roadside in the neighbourhood of Isleworth, which has given an opportunity of studying its progress from the beginning.

In the autumn leaf-buds are observable, distinguishable from the natural smooth lanceolate shape by their swollen appearance, being roughly spherical, comparatively large, and composed of loosely imbricated scales. In November the Phytoptus may be found in these buds, and it continues active through the winter. About the beginning of February these scales will drop to a touch, and show inside a short thickened axis, beset with numerous very minute round buds at the base of the scales—the beginning of the future diseased mass of twigs.

By examining the tree this growth may probably be found in every progressive stage, from the shortened twig, with the infested loose made buds placed as close as they can grow on it; the second stage, when some of these buds have again produced diseased twigs; what may be called the third, when the great numbers of swollen buds near together have formed a cluster, with diseased twigs proceeding centrifugally from it; up to the complete growth, a central nucleus of diseased buds, with a mass of variously diseased twigs in all stages of growth, disease and decay surrounding it, these often forming together a bunch a yard or more in diameter. The gall mite originating the malformation is cylindrical, whitish, about the two-thousandth of an inch long, and a quarter that width at its broadest diameter, and in walking appears to make much use of the sucker-like appendage with which its legs are terminated; and in February the creature may be found in the act of dis-



Fig. 44.—Witch knot on the birch.

closure from egg-like bodies, occurring in some numbers in the Phytoptus-infested buds. Whether these, however, are eggs or a stage of change in the Phytoptus I was unable to discover.

The matter is of some interest, from the Acarus attack producing woody growth, instead of simply galls from the cellular tissue, and it would be interesting to find whether, in cases where the black Currant buds were similarly infested, any instance could be found of increased woody growth taking place. In the Birch the numbers of Phytopti are so much smaller than those given for the black Currant that it suggests the probability of their exciting the diseased growth instead of destroying the point of attack.

The mischief in a case like the present is considerable, and would make it worth while to cut down the infested trees. *O.*

Notices of Books.

The Cactus and other Tropical Succulents. By H. Allnutt. (*Estates Gazette* Office, Fleet Street.)

Mr. Allnutt is an enthusiastic and, we may add, a very successful amateur town gardener, and in the little book before us, of 133 pages with sixty illustrations, he has rendered his flower and plant loving fellow citizens a service of no little value in bringing prominently under their notice, in a plain, agreeable, and instructive manner, a class of plants which, of all others, are the most calculated to afford them a maximum amount of enjoyment for a minimum expenditure of labour or money. As our author well puts it, "there are about five months out of the twelve in which little or nothing can be done in a flower garden," and as a consequence the ardent amateur's love and enthusiasm for plants has to be somewhat shelved during the winter months; but should he obtain, as Mr. Allnutt has done, a choice collection of small succulents, this order of things is at once changed, inasmuch that "the interest we may feel in a Cactus does not depend solely on its flowering, as is the case with the generality of plants." On the contrary, the Cactus is, by reason of its grotesque forms or individual peculiarity, a source of never-failing interest in the family circle. For culture in windows, or in such a small frame as Mr. Allnutt has figured and described in his book, the succulent plants have a great advantage over such subjects as Fuchsias and Pelargoniums, and which consists in the grower being able to keep a dozen or more of the former in the space taken up by one or two of the latter. Like everything else in the plant world, the succulent pays for attention in the matter of cleansing, watering, and potting as required, but where a little neglect in the case of any other plants would be fatal to their well-doing, it does little or no harm to the Cactus, and would, indeed, often prove beneficial. Written by an amateur for amateurs, practical gardeners being warned off, we shall not attempt to judge the merits of the book by a strictly horticultural standard; but we unhesitatingly recommend it to the class for whom it is intended.

—— We take the first opportunity of announcing the publication of the first of a series of volumes on *Economic Entomology*, by Mr. Andrew Murray, for the Committee of Council on Education (Chapman & Hall). The present volume is devoted to the wingless insects and, like those which are to follow, is intended as a guide to the admirable collections now in the Bethnal Green Museum. We shall have to speak more at length of this excellent book when our space is less crowded, but whatever we may find to criticise hereafter we at once say that no garden library should be without the book in question. It is copiously illustrated.

Publications Received.—A Nép Kertésze.—An Agricultural Rip Van Winkle (C. Matthews, 265, Strand).—Bulletino della R. Società Toscana di Orticultura.—Notes on the Colony of Victoria.—The Principles of Punishment, by E. W. Cox, Serjeant-at-Law (*Law Times* Office).—The Gardeners' Monthly.—Report of the Royal Botanic Garden, Edinburgh.—Delectus Seminum, &c. (Imperial Botanic Garden, St. Petersburg).—Annual Report on the Melbourne Botanic Gardens.

Reports of Societies.

Edinburgh Botanical: *Feb.* 8.—Dr. Cleghorn, V.P., in the chair. The following communications were read:—1. Experiments with Turnip Seeds, by A. Stephen Wilson, of North Kinmundy. 2. Notes on some British Plants in the Herbarium at the Royal Botanic Garden, Part IV., by Mr. F. M. Webb. 3. Notes on some Plants Introduced by Wool collected on the Banks of the Tweed in 1876, by Mr. C. W. Peach. 4. Notes on Open-air Garden Vegetation, by Mr. J. M'Nab (see p. 205). 5. Notice of Donation of Specimens of Palms to the Herbarium at the Royal Botanic Garden from Islands in the Indian Ocean, by Dr. Isaac Bayley Balfour. 6. Note on Tillandsia usneoides, by Mr. M'Nab. Dr. Bremner exhibited a mass of roots taken from the interior of an old Willow tree. The tree was a very large one, and had the lower part of its trunk completely decayed. An upper branch, however, was quite fresh, being supported by a great quantity of roots which descended from it inside the bark. Mr. Boyd, of Ormiston, exhibited a cone of the common Spruce, having one half of its bracts reflexed.

The Villa Garden.

The Greenhouse.—This, in the case of a well-cared-for house, is becoming alive with floral pleasantnesses; there is scarcely a thing but what is on the move. Spring is advancing with rapid strides, accompanied by soft, balmy, sunny weather more like that we look for in the genial April days than in February—one of the principal months of the winter. Some things demand immediate attention, and must have it.

Fuchsia cuttings in store pots—the cuttings put in early in September—are putting forth budding growths, and must soon be potted to have nice plants in June. Placed on a warm airy shelf in the early part of the winter, and watered in favourable weather, they are

breaking into growth at every joint, and urgently need root-room. Store pots of show Pelargoniums wintered in the same way require the same treatment. Some of the plants, by reason of being crowded in the pots, are a little lanky in appearance, but by pinching out the tops as soon as the plants get a little established after potting off, they break into a free growth, and quickly make stocky bushy plants. Two or three pots of cuttings struck in this way come in very useful, for they bloom late, after the larger plants have gone out of flower; and as the show Pelargonium is not only a fine and effective decorative plant, but also very useful to cut from, as the flowers keep fresh for a considerable time in water, their value is increased thereby.

A friend having a small greenhouse wrote a few days ago in a state of some alarm, on the ground that his plants of show Pelargoniums were making such a rapid growth, though kept in the coolest and airiest part of the house, that he was afraid the flowers would be expanding before the chances of wintry weather had quite worn themselves out: and he does not stand alone in this respect, for the rapid movement into growth is something remarkable, and it is difficult to divest one's mind of the fear that March, April and May, will in all probability be, in some part at least, chilly, and most unpleasantly uncongenial. The wintry forces are locked up somewhere, and must free themselves sooner or later, and with the experience of last and other springs stored up in one's memory, the later spring months may be waited for with some misgivings. Our advice to our friend was not to pinch out the tops of the shoots of his Pelargoniums as he had proposed, but simply to keep them in the coolest and airiest part of his house, and not allow them to suffer in any way through drought. The plants were repotted earlier than usual during the latter part of the past summer, and got into growth before the usual time. After the buds begin to show they are some time coming up, and it will be later than our friend imagines before they begin to bloom. If a few plants are wanted specially to bloom in June, perhaps for an exhibition, the growing shoots should then be stopped, pinching them back to about six leaves.

BEDDING LOBELIAS.—As the blue Lobelia is such a favourite and indispensable bedding plant, attention should be turned to getting up a stock of it from wintered plants. These are always to be preferred to seedlings, inasmuch as they can be better depended on for evenness of growth and similarity of type. Sometimes seed of the blue Lobelia varies very much in character, and spoils the effect of a mass. If three or four plants of a good variety be selected at the end of the summer, and wintered in pots on the shelf of a greenhouse, they make a free growth in spring, and can then be divided into a great number. But amateur gardeners are sometimes very unsuccessful in wintering the Lobelia: they keep them too dry, and kill them with mistaken kindness. We have wintered some plants in a cold house by simply planting them out in a shallow box, and keeping them on a plant stage. They grow nearly all the winter, and each shoot is now throwing out roots just above the surface of the soil. These shoots can now be divided and potted singly in small pots, and kept in the greenhouse, where they cannot fail to grow into nice plants by May.

The Weather.

LONDON: *Barometer.*—During the week ending Saturday, February 17, in the vicinity of London the reading of the barometer at the level of the sea decreased from 29·98 inches at the beginning of the week to 29.82 inches by the morning of the 11th, increased to 29.94 inches by the evening of the same day, decreased to 29·65 inches by the afternoon of the 12th, increased to 30.04 inches by the evening of the 14th, decreased to 29.77 inches by the evening of the 15th, and increased to 30.10 inches by the end of the week. The mean reading for the week at sea level was 29.88 inches, being 0·28 inch below that of the preceding week, and 0.10 inch below the average.

Temperature.—The highest temperatures of the air varied from 56° on the 12th to 50¾° on the 17th. The mean value for the week was 53¼°. The lowest temperatures of the air ranged from 36° on the 17th to 45° on the 11th. The mean for the week was 41°. The mean daily range of temperature in the week was 11¾°, the greatest range in the day being 14½° both on the 14th and 17th, and the least 8¼° on the 15th. The mean daily temperatures of the air were as follows:—11th, 50°; 12th, 48°·2; 13th, 47°; 14th, 48°·7; 15th, 48°·5; 16th, 43°·5; 17th, 42°·9; and the departures in excess of their respective averages were 11°, 9°.3, 8°.1, 9°.9, 9°.8, 4°.8, and 4°.2. The mean temperature of the air for the week was 47°, being 8°.2 above the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 102° on the 11th, 95¾° on the 16th, and 93° on the 12th, on the 15th 60¾° was the highest reading. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 31° on the 16th and 17th, and 38¼° on the 12th, the mean for the seven low readings was 37¼°.

Wind.—The direction of the wind was W.S.W., and its strength brisk. The weather during the week was mild, occasionally fine, but generally dull and cloudy.

Rain fell on five days in the week, the amount collected was 0.77 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 58¾° at Bradford and 57¾° at Plymouth; at Brighton, Portsmouth, Norwich, Wolverhampton, and Eccles 54½° was the highest temperature; the mean value from all stations was 55¾°. The lowest temperatures of the air were 31° at Wolverhampton, and 34° at Nottingham and Bradford; at Truro 42° was the lowest temperature; the general mean from all stations was 37°. The range of temperature in the week was the greatest at Wolverhampton, 23¾°, and the least at Truro, 14°; the mean range of temperature from all stations was 18½°.

The mean of the seven high day temperatures was the highest at Truro and Plymouth, 54¼°, and the least at Liverpool, Manchester, Eccles, and Hull, at 50¾°; the general mean from all stations was 52°. The mean of the seven low night temperatures was the lowest at Hull, 38¼°, and the highest at Truro, 47½°; the mean value from all stations was 42¾°. The mean daily range of temperature was the least at Portsmouth, Truro, and Liverpool, all 7°, and the greatest at Sunderland, 12¾°. The mean daily range from all stations was 9¼°.

The mean temperature of the air for the week from all stations was 46¾°, being 4° above the value for the corresponding week in 1876. The highest was 50¼°, at Truro, and the lowest 44°, at Hull.

Rain fell on every day of the week at Bradford, and on four or five other days at most places. The amounts of rain varied from three-quarters of an inch at Plymouth, Truro, Blackheath, Bristol, Liverpool, Manchester, and Sunderland, to a quarter of an inch at Sheffield and Leeds; the average fall over the country was six-tenths of an inch.

The weather during the week was mild, generally dull, and the sky cloudy, but fine at times.

SCOTLAND: *Temperature.*—The highest temperatures of the air ranged from 55° at Leith to 52° at both Dundee and Aberdeen; the mean value from all stations was 53½°. The lowest temperatures of the air varied from 31¾° at Aberdeen to 36° at Leith; the mean from all stations was 33¾°. The mean range of temperature in the week from all stations was 19¾°.

The mean temperature of the air for the week from all stations was 42¼°, being 4¾° above the value for the corresponding week in 1876. The highest occurred at Leith 44¾°, and the lowest at Aberdeen, 40°.

Rain.—The amount of rain measured during the week at Greenock and Paisley was rather more than 2½ inches, whilst at Dundee half an inch only fell. The average fall over the country was 1¼ inch.

DUBLIN.—The highest temperature of the air was 58½°, the lowest 33°, the range 25½°, the mean 47¼°, and the fall of rain 0.63 inch.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, FEB. 21, 1877.

Month and Day.	Barometer. Mean Reading at 32° Fahr.	Barometer. Departure from Mean of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean for 60 Years.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Feb. 13	In. 29·67	In. −0.14	° 53·0	° 44·8	° 8·2	° 48·5	° +3·8	43·3	82	S.; N.W.	In. 0.00
16	29·67	−0.15	51·6	38·2	13·4	43·5	+4·8	36·3	76	WNW.	0.03
17	29·84	+0.01	50·2	36·0	14·2	42·9	+4·2	35·7	76	S.W.; N.W.	0.03
18	29·87	+0.05	48·9	40·7	8·2	44·4	+5·6	42·0	91	S.S.W.	0.07
19	29·54	−0.27	50·2	38·9	11·3	43·6	+4·7	36·4	78	S.W.	0.06
20	29·14	−0.68	45·8	34·3	11·5	39·4	+0.5	31·5	77	N.W.	0.31
21	29·66	−0.15	43·2	33·9	9·3	38·1	−0.9	31·5	77	S.W.; NNW	0.00
Mean	29·63	−0.19	48·8	38·2	10.6	42·8	+4·0	36·8	82	S.W.; N.W.	sum 0.47

Feb. 15.—A very dull cloudy day. Mild.
" 16.—A fine bright day, partially cloudy. Rain in early morning.
" 17.—A fine day, very cloudy, and little thin rain at times.
" 18.—A dull cloudy day; occasional thin rain.
" 19.—A fine day, cloudy at times. Dull and wet, at night. Little rain in morning.
" 20.—Overcast, dull with sleet till 11 A.M. Fine, but cloudy after. Cool. Strong wind. Cloudless night.
" 21.—A fine but very cloudy day. Cold wind. A little thin rain fell at 10 P.M.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—BACON.

172. THE OLD BABY CUCUMBER.—*The Gardener,* Old Forge, Dunmurry, Belfast, will be much obliged to any of our readers for a few seeds of this old Cucumber.

Answers to Correspondents.

THE BOUQUET PEA, which "R. D." enquires about (Qy. 168, p. 185), is the Crown Pea, sometimes called the Mummy Pea. There are two varieties,—one white-flowered, the other as stated. *Hort.* I think the Pea your correspondent "R. D." inquires after in yours of February 10 is identical with a French variety—*Pois sans parchemin Turc à fleur rouge.* This is a kind of Sugar Pea, 6 feet high, with very strong branchless stem, and the flowers (crimson and pale pink or white) in a corona at the top of the stem. It is a very beautiful variety. Can any of your readers tell me what the "Organ Herb" is? I am puzzled by it. *J. Gould.* [? Origanum = Marjoram.]

BOOKS: *T. F.* The last edition of *Paxton's Botanical Dictionary* contains many more references than the pocket edition, and is besides the best that you can get.

CAMELLIA: *F. A. S.* A full-double well-formed symmetrical flower, but rather small, and not very novel in colour—a bright carmine-red, mottled with white.

CATALOGUE: *Ferns, Crayford.* We know of no illustrated catalogue that gives descriptions of rustic summer-houses, seats, bridges, gates, and fountains, &c. Mr. J. Gaven Fox, 42 Royal Horticultural Society, South Kensington, will send you a catalogue of summer-houses; for the others consult our advertising columns.

INSECTS: *A. P., M. D.* The beetles sent are the omnivorous weevil, Otiorhynchus sulcatus. If you would lay a sheet on the ground under your Orchids, they would be easily seen when they fall down on being disturbed by the introduction of a light after nightfall. They are a British species of too common occurrence. *I. O. W.*

LARCH: *Lorix.* You would do best to consult the chapters on Larch in Grigor's *Arboriculture* (Edinburgh, Edmonston & Douglas), or Brown's *Forester* (Blackwood & Sons).

LOBELIA EMPEROR WILLIAM.—Since writing in your last number I have had numerous applications for cuttings. Many of my correspondents I have supplied, and the others shall receive my best attention as soon as I can spare the cuttings. *P. Davidson, The Gardens, Stanmore Park.*

MISTLETO: *R. May.* The best scientific account is that by Dr. Harley in the *Transactions of the Linnean Society.* See also Dr. Bull's paper in Seeman's *Journal of Botany,* and numberless references in our back volumes.

NAMES OF FRUIT: *D. B. Apple:* We do not know the name of the American variety sent.—*T. Dimmick.* Your Apple is not known to us.—*A Subscriber.* Your small Pear is believed to be Bezi Quessei, but as the fruit was very much bruised and decaying we are not quite sure.

NAMES OF PLANTS: *An Old Subscriber.* Sparmannia africana.—*G. T.* We cannot undertake to name garden varieties of flowers, to which class your Camellias belong. They were, moreover, smashed beyond identification when we received them.—*H. W. D.* Probably a species of Swainsona.—*A. B. C.* Rather dark form of Anemone pavonina.—*W. W.* 1, Rivina laevis; 3, Saxifraga sarmentosa; 6, Selaginella Martensii, probably; 7, Senecio (Kleinia) articulata; 8, Tradescantia zebrina; 2, 4, 5, send these again, but not such scrappy specimens.—*D. Saunders.* The Laurus is Tetranthera californica. The Cupressus is probably *C. Goveniana,* but without fruit, and the other shrub again when in flower, and kindly number your specimens.—*A. Burrows.* We believe your Begonias are—1, B. ulmifolia; 2, B. Dregii; 4, B. nitida. The specimens are not good enough to determine with accuracy.

PARSLEY: *Wm. Cutbush & Son.* The sample sent is very vigorous, and the variety will probably prove to be a useful one for winter work; but we have seen more finely cut-leaved varieties.

PINES: *Y. H. G.* Some of the suckers were quite rotten, and they have all the appearance of having been scalded either by hot water or by the hot dung which they may have been laid in.

PLANTING PEACH TREES: *Peach.* We would recommend you to plant the trees as you receive them from the nursery, and leave them so until the buds are swelling a little; then cut the shoots back to, say, half their length or so, but this has to be regulated according to their strength, number, situation of buds, &c.; so that no precise rules can be given.

PRUNING YEWS: *St. Andrews.* Cut them back at once to 2 feet 6 inches, and then trim back the young growths to the required width every autumn, leaving the tops to grow till they attain the desired height.

QUERCUS FORDII: *A Constant Reader.* Probably a hybrid form of *Q. Gramuntia.*

RASPBERRY: *Y. L.* We will endeavour to meet your want shortly.

REFUSE FROM GASWORKS: *R. V. A.* You can do no harm in using it like ordinary lime.

ROCKY MOUNTAIN LOCUST: *Y. Sc.d.* The best account that we have seen of the Rocky Mountain Locust, Caloptenus spretus, is that published by Professor C. V. Riley, in his *Eighth* (1876) *Annual Report on the Noxious, Beneficial, and other Insects of the State of Missouri.* You may possibly get a copy from the author, if you write to him at St. Louis, Missouri, or from Mr. John Monteith, Secretary to the State Board of Agriculture, St. Louis. We do not know the price.

SOAP-SUDS: *P. L.* No. We do not care for soap-suds as manure for any kind of plant. They will be least injurious—may perhaps do a little good—amongst strong-growing vegetables or Vines, but do not use them for anything tender. Your Strawberry leaves have been attacked with a fungus or mildew, which is now dead. They will be none the worse.

STRAWBERRIES: *G. A. H.* The great point is to secure the runners early, and to get the crowns well ripened and thoroughly established in the pots before winter. It does not matter whether it is the first, second, or third runner that is taken.

VINES: *A Subscriber.* In planting Vines out of pots at this season the soil should be shaken clear from the roots, and they should be spread out carefully in layers amongst the soil.

CATALOGUES RECEIVED.—Fred. Gee (Biggleswade, Beds), Catalogue of Seeds, Plants, Roots, &c.—R. Parker (Exotic Nursery, Tooting, Surrey, S.W.), Catalogue of Hardy Alpine and Herbaceous Plants, Aquatic and Marsh Plants, Bulbous Roots, Violets, Fruit Trees, &c.—W. B. Rowe (65, Fore-Street, Worcester), General Seed Catalogue.—Messrs. W. Wright & Co. (Airdrie, N.B.), Catalogue of Hot-water Apparatus.—Messrs. W. Clibran & Son (Oldfield Nursery, Altrincham, Cheshire), Catalogue of Plants and Seeds.—Messrs. E. G. Henderson & Son (Pine-apple Nursery, Maida Vale, London, W.), Catalogue of Flower, Vegetable and Agricultural Seeds.—Rev. Alégiaire (Lyons, France), Catalogue of New Plants, Florists' Flowers, &c.—W. Ford (Pamber, Basingstoke), Descriptive Catalogue of Seed Potatos, Vegetable, Flower, and Agricultural Seeds, &c.—G. Yates (29, Little Underbank, Stockport), Descriptive Catalogue of Vegetable and Flower Seeds, Gladioli, &c.—Messrs. Cole & Brother (Pella, Iowa, U.S.A.), Catalogue of Vegetable and Flower Seeds.—Henry Bennett (Manor Farm Nursery, Stapleford, near Wilton), Trade List of New Roses for 1877.

COMMUNICATIONS RECEIVED:—Justitia (the subject of your letter is at present a private matter, with which we cannot interfere).—D. Sanders—J. C.—F. D. H. (many thanks)—G. W.—E. M. (please send us the name of the raiser)—A. D.—J. W. S.—A. R. R. (probably the roots are at fault, but we will give you a fuller answer next week)—J. T. B.—E. A.—W. H. E.—R. C.—W. W.

Markets.

COVENT GARDEN, February 22.

Trade has fallen off again this week, and prices are lower, though superior sorts of Apples are maintaining their full value. Kent Cobs are scarcely asked for. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.

	s. d.	s. d.
Azaleas, per dozen	24	0 60
Begonias, per doz.	6	0 12 0
Bouvardias, do.	12	0 24 0
Cineraria, per do.	9	0 18 0
Coleus, per dozen	3	0 9 0
Crocus, per dozen	9	0 18 0
Cyclamen, per doz.	18	0 36 0
Cyperus, do.	6	0 12 0
Dracæna terminalis	30	0 60 0
— viridis, per doz.	12	0 18 0
Epiphyllum, per doz.	18	0 42 0
Ferns, in var., p. doz.	6	0 30 0
Ficus elastica	18	0 63 0
Fuchsias, per dozen	3	0 9 0
Heaths, variety, do.	9	0 24 0

CUT FLOWERS.

	s. d.	s. d.
Azaleas, 12 sprays	0	9 3 0
Bouvardias, per bun.	1	0 4 0
Camellias, per blooms	2	0 4 0
Carnations, per dozen	1	6 4 0
Crocus, 12 bunches	2	0 6 0
Cyclamen, per doz.	0	3 0 9
Daffodil, dbl., 12 bun.	4	0 9 0
— single, 12 bun.	2	0 6 0
Epiphyllum, 12 blms.	1	0 3 0
Eucharis, per doz.	6	0 12 0
Euphorbia, 12 sprays	2	0 9 0
Gardenia, per doz.	9	0 18 0
Heliotropes, 12 spr.	0	6 1 0
Hyacinths, p. dozen	9	0 24 0
— Roman, 12 spr.	1	0 4 0

FRUIT.

	s. d.	s. d.
Apples, per ½-sieve	3	0 8 0
Cobs, per lb.	1	0 1 6
Grapes, per lb.	4	0 10 0
Lemons, per 100	4	0 10 0

VEGETABLES.

	s. d.	s. d.
Artichokes, per bush.	4	0 —
— Eng. Globe, doz.	4	0 6 0
Asparagus, Fr., bun.	20	0 —
— English, p. bun.	8	0 10 0
— Sprue, per bun.	1	0 —
Beans, French (new), per 100	—	4 0 —
Beet, per doz.	1	0 2 0
Brussels Sprts. bush.	7	0 —
Cabbages, per doz.	1	0 2 0
Carrots, per bunch	0	6 —
Cauliflowers, per doz.	2	0 4 0
Celery, per bundle	1	6 2 0
Chilis, per 100	3	0 —
Cucumbers, each	1	0 2 6
Endive, per doz.	1	0 2 0
— Batavian, p. doz.	2	0 3 0
Garlic, per lb.	0	0 —
Herbs, per bunch	0	2 0 4
Horse Radish, p. bun.	4	0 —

	s. d.	s. d.
Leeks, per bunch	0	2 0 4
Lettuces, Fr., p. doz.	1	0 2 0
— Cos, per doz.	1	6 0 —
Mint, green, bunch	1	0 —
Mushrooms, per pott.	0	6 1 6
Onions, per bush.	5	0 8 0
— young, per bun.	0	3 0 9
Parsley, per bunch	0	4 —
Peas, green, per lb.	1	6 —
Potatos, new, per lb.	0	2 0 4
Radishes, per bunch.	0	1 0 3
— Spanish, doz.	1	0 —
— New Jersey, doz.	2	0 —
Rhubarb, per bundle	0	6 —
Salsafy, per bundle	1	0 —
Seakale, per punnet	1	6 2 6
Shallots, per lb.	0	6 —
Spinach, per bushel	2	0 —
Tomatas, per doz.	2	0 6 0
Turnips, per bundle	0	4 — 6

Potatos.—Kent Regents, £5 to £6; Essex Regents, £4 10s. to £5; Kidneys, £3 per ton.

SEEDS.

LONDON: *Feb. 21.*—No great activity is yet seen on the seed market; the recent unfavourable weather and the distaste exhibited by provincial houses to the high prices of the present season combine to impart a quiet tone to the trade. As previously mentioned, advices from the American seaboard and interior state that the home demand there has now set in. In confirmation of this the imports into this country from across the Atlantic have lately been reduced to a moderate compass—the total quantity arrived in London from New York since the beginning of the present month being only 6781 bags, equal to a small weekly average of 1450 tons. The fine Canadian seed, of which a supply here is scanty, long prices are demanded. As regards home-grown reds, a fair show of samples still find their way to Mark Lane, but most of these parcels are brown and weathered, and are consequently sold at irregular rates. For white Clover the inquiry is limited, and there is at present no response here to the advance reported in Germany. Alsike keeps steady; of choice seed the value for this is small. Trefoils and Timothy passing has been limited in extent, and in those few cases where lots have changed hands the turn has been in favour of the buyers. Perennial grasses have this week been in improved request. For spring Tares there is also a rather better sale. Best qualities of Mustard and Rape seed are scarce, and for such, when forthcoming, buyers are readily found. For fine white Mustard quite a considerable advance has lately been established. Canary and Linseed are both easier. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London. E.C.*

CORN.

At Mark Lane on Monday trade was steady. Fine dry samples of English Wheat were about 1*s.* per quarter dearer than on Monday se'nnight; but there was a dull market for inferior samples, and no improvement was noticed in foreign Wheat. Barley underwent no particular change in value. Malt was rather firm in tone. Sound Oats advanced 3*d.* per quarter on the week, but lother corn remained at its previous level. Maize had rather an improving tendency. Beans and Peas were quoted as before. Flour was without alteration, the tone of the market remaining steady.—On Wednesday trade was quiet, and quotations showed little or no change from Monday. As regards Wheat, there was a scarcity of fine dry samples, the market for which had a hardening tendency. Barley and Malt met with a slow sale, and rates remained steady. Oats were in moderate request, and sound old corn was perhaps worth a trifle more money. Maize was firm, while previous quotations were supported for Beans, Peas, and flour.—Average prices for the week ending February 17:—Wheat, 51*s.*; Barley, 40*s.* 3*d.*; Oats, 23*s.* 5*d.* For corresponding week last year:—Wheat, 42*s.* 8*d.*; Barley, 32*s.* 10*d.*; Oats, 24*s.* 5*d.*

CATTLE.

At the Metropolitan Market on Monday there was only a short supply of beasts, and trade was more active at rather higher prices. Choicest descriptions of sheep were dearer, and an early clearance was effected. The absence of foreign supplies caused the short numbers here. Calves were dear. Quotations: Beasts, 4*s.* 6*d.* to 5*s.* and 5*s.* 6*d.* to 6*s.*; calves, 6*s.* to 7*s.*; sheep, 5*s.* 10*d.* to 6*s.* 4*d.*, and 6*s.* 10*d.* to 7*s.* 6*d.*; pigs, 4*s.* 4*d.* to 5*s.* 4*d.*—There was a small supply of stock at Thursday's market, and the few beasts brought rather better prices. Sheep were cleared off readily, at advanced rates. Prime calves firmly upheld their value. Pork quotations nominal.

POTATOS.

The reports from the Borough and Spitalfields markets state that there was a pretty good market for sound Potatos, whether English or foreign, but a dull trade was witnessed in the inferior kinds. The supplies were ample. Kent Regents, 100*s.* to 126*s.* per ton; Essex do., 90*s.* to 120*s.*; Scotch, 100*s.* to 130*s.*; Flukes, 125*s.* to 180*s.*; Victorias, 140*s.* to 170*s.*; Kidneys, 100*s.* to 120*s.*; Rocks, 75*s.* to 90*s.*—The imports into London last week comprised 26,583 bags from Antwerp, 19,815 from Hamburg, 8416 from Ghent, 3058 from Bremen, 900 from Rotterdam, 661 from Dunkirk, 667 bags 138 barrels from Harlingen, 208 tons 137 sacks from Rouen, and 321 sacks from Boulogne.

SURPLUS NURSERY STOCK
all transplanted, healthy and well-rooted:—
MAHONIA AQUIFOLIA, 9 to 15 inches.
LAURELS, Portugal, 1 to 1½ foot.
,, 1½ to 2 feet.
CHESTNUTS, Scarlet, 6 to 8 feet.
,, Common, Standards, 8 to 10 feet.
LIMES, fine Standards, 8 to 20 feet.
ALDER, 2 to 3 feet.
HORNBEAM, 3 to 4 feet.
BLACKTHORN or SLOE, fine, 1-yr. Seedling.
Special offers of the above at exceedingly low prices will be made on application to
THOMAS PERKINS, 42, Drapery, Northampton.

American Plants Without Peat.
WILLIAM MAULE AND SONS beg to offer the choicest hardy English and Continental RHODODENDRONS, with BELGIC and other AZALEAS, at 30*s.* per dozen, or £10 per 100.
The plants are grown in stiff loamy soil, on an exposed and elevated situation, and will thrive in almost any soil, free from iron, lime, or chalk.
Handsome Standard RHODODENDRONS, with fine heads, well set with bloom, 10*s.* 6*d.*, 21*s.*, and 42*s.* each.
Large bushes of ARBUTUS, CATAWBIENSE, and other common varieties, at 42*s.*, 75*s.*, and 100*s.* per 100.
The Nurseries, Bristol.

LEE'S NEW SWEET-SCENTED VIOLET, "PRINCE CONSORT."
As the above beautiful Violet will likely not be sent out, blooms are offered at from 3*s.* to 6*s.* per dozen, selected with long stems fit to mix with other flowers for Dinner-table Decoration, or other purposes; where three or more dozen are ordered, postage and package free. Also in flat or round bunches, at from 2*s.* to 3*s.* per dozen; carriage and package where three or more dozen are ordered.
Orders will be booked (conditionally) for plants as received, at 10*s.* 6*d.* for four plants, and 6*d.* for package; or 30*s.* per dozen Plants, and 1*s.* for package. Less than four plants not sent out. VICTORIA REGINA, 6*s.* per dozen plants; not less sent out.
GEORGE LEE, F.R.H.S.,
MARKET GARDENER, CLEVEDON, SOMERSET.

New Continental Roses for 1877.
H. BENNETT'S own selection, in the best possible Plants, ready in March.
Descriptive LISTS may now be had post-free on application.
MANOR FARM NURSERY,
STAPLEFORD, SALISBURY.

AVENUE TREES.
Chestnut, 2 kinds, 8 to 12 feet. | Poplars, 3 kinds, 8 to 12 feet.
Elms, 6 kinds, 8 to 12 feet. | Sycamores, 3 kinds, 8 to 12 ft.
Oaks, 2 kinds, 8 to 12 feet. | Sorbus, 3 kinds, 8 to 12 feet.
Laburnum, 2 kinds, 8 to 12 ft. | Limes, 8 to 12 feet.
Hornbeam, 8 to 12 feet.
All the above are very fine and very cheap.
CHARLES NOBLE, BAGSHOT.

The best New Potato Hooper's Covent Garden Perfection
Mr. SHIRLEY HIBBERD describes it, after two years trial, as "the *very model* of a gentleman's Potato."
Price 21s. 6d. per lb., 7 lb. 15s.
HOOPER AND CO., Covent Garden, London, W.C.

LEAMINGTON BROCCOLI
Has proved to be the finest late Broccoli grown.
Received First-class Certificate and Two First Prizes from Royal Horticultural Society.
In Sealed Packets only, 1*s.* each, free by post 13 stamps.
FREDERICK PERKINS,
Nurseryman,
REGENT STREET, LEAMINGTON.

New and Choice Seeds for 1877
J. SCOTT'S Priced Descriptive ILLUSTRATED CATALOGUE of 52 pages will be forwarded to all applicants. It contains much useful and reliable information to Amateurs.
JOHN SCOTT,
The Royal Seed Stores, Yeovil.

Special Offer of Surplus Stock.

WOOD AND INGRAM beg to offer the following, well grown and well rooted :—
BLACKTHORN, 1½ to 2½ feet, nice clean stuff, 9s. per 1000.
FIR, Balm of Gilead, 4 to 5 feet, 18s. ; 5 to 6 feet, 30s. ; 6 to 7 feet, 50s. ; and 7 to 8 feet, 60s. per 100.
OAK, Evergreen, 3 to 4 feet, 6s. ; 4 to 5 feet, 10s. per dozen ; less by the 100.
The Nurseries, Huntingdon.

Cheap Plants—Special Offer.

WILLIAM BADMAN offers, as under, all healthy strong stuff :—
VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 10z. per 100 ; well-rooted cuttings, 6s. per 100, 50s. per 1000 ; 12 choice named sorts, 8s. per 100.
CALCEOLARIA, Golden Gem, 5s. per 100, 40s. per 1000.
LOBELIA, speciosa (true), 3s. per 100, 20s. per 1000 ; Blue-stone and pumila grandiflora, all from cuttings, 5s. per 100, 40s. per 1000.
PELARGONIUMS, Vesuvius, from stores, 8s. per 100, 75s. per 1000 ; Jean Sisley, 10s. per 100 ; Madame Vaucher, 10s. per 100, 85s. per 1000 ; Master Christine, 12s. per 100 : all from single pots.
,, Tricolor, Mrs. Pollock, 20z. per 100 ; Crystal Palace Gem, 12s. per 100 ; Flower of Spring, 12s. per 100 ; May Queen (Turner's), 15s. per 100.
HELIOTROPE, finest dark, good bushy plants, 12s. per 100 ; rooted cuttings, 6s. per 100.
Packing included. Terms, cash.
Cemetery Nursery, Gravesend, S.E.

To the Trade

A FEW NOVELTIES and SPECIALITIES WELL WORTHY of a trial.

J. SCOTT, The Royal Seed Stores, Yeovil, has great pleasure in offering the following :—
NEW SUMMER CABBAGE LETTUCE. "The FAVOURITE."—This is, without exception, the finest Lettuce ever offered. It is exceedingly crisp and sweet, and will stand through the hottest summer without showing any signs of "bolting"—in fact, no other variety need be sown, as "The Favourite" is equally fit for use in its young state as when it is fully developed. Price, 6d. and 1s. per packet. Trade price, 12s. per ounce.
MELON, DUKE of EDINBURGH.—True, 2s. 6d. per 100.
SHALLOT, SCOTT'S NEW GIANT.—Bulbs grown from seed of this excellent sort attain the size of from 8 to 10 inches in circumference. They are mild in flavour, and keep firm and sound till late in the spring. Treat the same as Onions. Per packet, 1s ; Trade price, 7s. 6d. per dozen packets.
"THE MUMMY" PEA.—This is a remarkable Pea, and has something strange history as to its origin. It is said to have been taken from the hands of a mummy, hence its name. It grows upwards of 12 feet high, branching and bearing from the bottom, and, like the Scarlet Runner Bean, keeps bearing till frost sets in. It is no uncommon occurrence to see "ripe pods, pods fit to gather, and blossoms on the same branch. Price, 1z. per 2 oz. packet ; Trade price, 6s. per dozen packets.
JOHN SCOTT, The Royal Seed Stores, Yeovil.

Special Offer of Good and Cheap

NURSERY STOCK, the whole being healthy and excellently rooted.
ABIES CANADENSIS, 3 feet, 25s. per 100.
,, NIGRA ALBA, 1½ feet, 20s. per 100.
,, ORIENTALIS and MENZIESII, 9 to 15 inches, 20s. per 100
,, DOUGLASII, 9 to 12 inches, 15s. per 100 ; 3 to 6 inches, 8s. per 100.
PINUS PONDEROSA, 2 feet, 12s. per dozen ; 6 to 9 inches, 10s. per 100.
,, MURICATA, 2½ feet, stout, 60s. per 100.
,, LARICIO, 2½ feet, 30s. per 100.
,, AUSTRIACA, 2½ feet, 20s. per 100.
,, EXCELSA, the best of the long-leaved Silvery Pines, 2½ feet, 30s. per 100.
,, INSIGNIS, 3 feet, 75s. per 100.
,, WEYMOUTH, 2 feet, very bushy, 18s. per 100.
THUJA ORIENTALIS (Chinese Arbor-vitæ), 1-yr., 2-yr., 30s. per 1000.
,, LOBBII, 2½ to 3 feet, fine, 12s. per dozen.
,, GIGANTEA, 2 to 3 feet, 15s. per dozen.
,, ERICOIDES, 1 foot, 9s. per dozen.
,, OCCIDENTALIS (American), 3 to 5 feet, 50s. per 100.
CUPRESSUS LAWSONIANA, nice young plants, very bushy, and moved last spring, 2½ to 3½ feet, 60s. per 100.
,, MACROCARPA, 3 to 4 feet, moved last spring, 24s. per dozen.
CEDRUS DEODARA, 2 feet, fine, 18s. per dozen, £6 per 100.
,, 1 foot, 40s. per 100.
BERBERIS DARWINII, 1 foot, bushy, 15s. per 100.
,, ASIATICA, 1 foot, bushy, 40s. per 100.
,, (MAHONIA) JAPONICA, 9 inches, stout, 25s. per 100.
HOLLIES, 1 to 3½ foot, stout, good rooted stuff, 27s. 6d. per 100 ; 9 to 12 inches, ditto, 6s. per 100.
YEW, English, 9 to 12 inches, stout, 30s. per 1000.
HORNBEAM, 4 to 5 feet, 20s. per 100.
CHESTNUT, Horse, Double White, Standard, 18s. per doz.
MAPLE, Norway, 10 feet, 9s. per dozen.
SYCAMORE, Purple-leaved, 10 feet, 12s. per dozen.
ASH, Flowering, 5 to 6 feet, 12s. per dozen.
OAK, Scarlet, Fraxinus acuminata, 10 feet, 24s. per dozen.
LAURELS, Common and Portugal, fine, 5s. to 40s. per 100.
BROOM, White and Yellow Spanish, 15s. per 100.
POPLARS, of sorts, 8 to 10 feet, 45s. per 100.
CLEMATIS, strong and flammula, strong, 10s. per dozen.
IVIES, Irish, very strong, in pots, 12s. per dozen.
BIGNONIA RADICANS, in pots, 12s. per dozen.
LIGUSTRUM JAPONICUM, 4 feet, 15s. per 100.
RHODODENDRON PONTICUM, very bushy, 2½ feet, 9s. per 100 ; smaller, 5s. per 100.

FRUIT TREES, VERY FINE.

PEACHES, dwarf maiden, best known sorts, 75s. per 100.
NECTARINES, dwarf maiden, 75s. per 100.
CHERRIES, dwarf maiden, 60s. per 100.
PLUMS, dwarf maiden, 50s. per 100.
PEARS, dwarf maiden and 2-yr., Souvenir du Congrès, 75s. per 100, 12s. per dozen.
APPLES, dwarf maiden, 50s. per 100.
PEACHES and NECTARINES, dwarf-trained, very fine trees, 2s. 6d. each, or 30s. per dozen.
PEAR, Standard, Williams' Bon Chrétien, from 120s. per 100.
CURRANT, Black Naples, 3-yr., very fine, 12s. per 100.
PLUM, Victoria, bearing pyramids, 75s. per 100.
ROSES, dwarf red Moss, 12s. per 100 ; Cabbage, 20s. per 100 ; Harrisonii and Persian Yellow, 40s. per 100 ; dwarf H.P., new varieties of 1875, 20s. per dozen.
GEORGE GRAY and SON, Brox, Otterham, Chertsey, Surrey.

GEORGE FLOWER, Newark, has a few thousands of Black and Lombardy POPLARS, 12 feet ; English ELMS, 8 to 9 feet ; Portugal LAURELS, common do. ; AUCUBA JAPONICA, to offer at Cheap rates.

OSBORN and SONS can now offer the following at greatly reduced prices :—
AUCUBA JAPONICA, various sizes
ARBOR-VITÆ, Chinese, 3 to 4 feet
BOX, various sorts and sizes
CERASUS LAURUS, 2½ to 3 feet
CORNUS MASCULA VARIEGATA, 4 to 5 feet
COTONEASTER SIMMONSII, strong
CRATÆGUS, in variety
CYDONIA JAPONICA
ALBA
ELMS, Weeping, very fine heads
EUONYMUS, Green and Variegated, small and bushy
GENTIANA ACAULIS
HOLLIES, Green and Variegated, from 3 feet upwards
CHESTNUT, Horse, common
Scarlet
IVIES, in great variety
LAURELS, common, various sizes
Portugal, various sizes
LABURNUM, common, fine
LILACS, 4 to 6 feet
LIMES, very fine, 8 to 12 feet
MAGNOLIA GRANDIFLORA, some fine specimens
MAHONIA AQUIFOLIUM, 1 to 1½ foot, bushy
PHILADELPHUS, in variety
PHILLYREAS
PYRACANTHA, Red, extra strong
PRIVET, Oval-leaved, 3 to 4 feet
,, Box-leaved, 2 to 3 feet
ROBINIA INERMIS, Moss-head Acacia
SALIX CAPREA PENDULA, Kilmarnock Weeping
YEW, English, various sizes [Willow
Irish, well-selected golden heads
HERBACEOUS PLANTS in great variety
Prices of any of the above on application.
Witham Nurseries, Witham, S.W.

Presented (by post) on application,

NEW CATALOGUE for 1877,

MESSRS. CLIBRAN and SON will have great pleasure in sending their PRICED DESCRIPTIVE LIST for this Spring, free by post on application. Their stock of Florist Flowers, Bedding and Soft-wooded Plants generally, are surpassed by few, if any, either in extent or quality, while the newest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to intending purchasers is that none of the plants offered are taken directly from a warm propagating house and sent off, but are all carefully hardened and most of them potted off singly, and are therefore fitted to travel either by rail or post without the slightest injury. A great proportion are autumn-struck plants, and many of the undermentioned can be sent by post :—
Abutilons, in variety, 3s. 6d. per dozen.
Achimenes, in variety, 3s. per dozen.
Ageratums, in variety, 8s. per 100, 2s. per dozen.
Begonias, tuberous, 6s. and 9s. per dozen.
,, tuberous, 4s. per doz.
Caladiums, 12s. per dozen.
Calceolarias, Golden Gem, &c., 6s. per dozen.
Camellias, 30s. and 42s. per dozen.
Carnations and Picotees, 12 plants, 6s. ; 12 pairs, 10s. 6d.
Carnations, tree, in variety, 9s. per dozen.
Centaurea ragusina, 3s. per dozen.
Chrysanthemums, near 10,000 now ready, 20s. per 100, 3s. per dozen.
Cinerarias, 40s. per 100, 6s. per dozen.
,, to name, 9s. per dozen.
Clematis, in variety, 60s. per 100, 9s. per dozen.
Coleus, in variety, 20s. per 100, 3s. per dozen.
Cyclamen, in variety, 6s. and 9s. per dozen.
Dactylis elegantissima, 5s. per 100, 1s. per dozen.
Dahlias, 25s. per 100, 4s. per dozen.
Delphiniums, splendid sorts, 9s. to 12s. per dozen.
Epiphyllum, 9s. to 18s. per dozen.
Ferns, stove and greenhouse, 9s. to 18s. per dozen.
Fuchsias, 20s. per 100, 3s. per dozen.
Gardenia florida, 6s. to 12s. per dozen.
Greenhouse Plants, 9s. to 18s. per dozen.
Geranium, Tricolor, 3s. 6d. per dozen.
,, Bicolor, 20s. per 100, 3s. per dozen.
,, Silver-edged, 3s. 6d. per dozen.
,, Double, 20s. per 100, 3s. per dozen.
,, Zonals, for bedding, 15s. per 100, 3s. per dozen.
,, Zonals, for pot culture, 3s. to 6s. per dozen.
Gladiolus, to name, 6s. to 9s. per dozen.
,, Brenchleyensis, 6s. per 100, 1s. per dozen.
Helianthemums, 3s. 6d. per dozen.
Herbaceous Plants, 20s. per 100, 3s. per dozen.
Heliotropes, in variety, 2s. 6d. per dozen.
Hepaticas, 4s. per dozen.
The Oldfield Nurseries, Altrincham.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS ; also Plants of all the varieties, with Double PRIMROSES of different colours ; AURICULAS, both Single and Double ; with every sort of Early Spring Flowers. LIST on application.
Mr. WEBB, Calcot, Reading.

SURPLUS STOCK.
CUPRESSUS LAWSONIANA, 6 to 7 feet, well rooted, 10z. per dozen, 20s. per 100.
HOLLIES, Green, 1½ to 2 feet, 4s. per dozen, 25s. per 100.
SKIMMIA JAPONICA, flowering plants, 9 inches, 24s. per 100 ; 12 to 15 inches, 30s. per 100.
HEATHS (hardy), cinerea, coccinea, and vulgaris rigida, extra fine, 25s. per 100.
DAPHNE MEZEREUM, large bushes, 6s. per dozen.
MAJOR, 9s. per dozen.
CHERRY, Ohio Beauty, very fine, half-standards, 12s. per doz
ISAAC DAVIES, Nurseryman, Ormskirk.

To the Trade.

EDWARD HOLMES, Whittington Nursery, Lichfield, offers the following, price on application :—
APPLE, Blenheim Orange, suitable for making pyramids.
BRAMBLE, Parsley-leaved, in pots.
CHERRY, May Duke, dwarf-trained.
,, May Duke, dwarf-cut back, suitable for training.
CURRANTS, Red.
Black.
PEARS, Standards, sorts on application.
WALNUTS, various sizes, from 2 feet to 6 feet.

Special Offer.

GEORGE FARNSWORTH has to offer large quantities of the following :—
ASH, Mountain, 2½ to 3½ feet, 18s. per 1000 ; 4 to 5 feet, 20s. per 1000.
BERBERIS AQUIFOLIA, bushy, 1 to 2 feet, 40s. per 1000 ; 2 to 3 feet, 8s. per 100.
CHESTNUT, Horse, 7 to 9 feet, 10s. per 100.
LIMES, 2-yr. layers, 1-yr. transplanted, 3 to 5 feet, 9s. per 100 ; 6 to 8 feet, 25s. per 100.
LAUREL, Common, 2 to 3½ feet, 30s. per 1000.
POPLARS, Balsam, 8 to 10 feet, 6s. per 100.
,, Black Italian, 2½ to 3½ feet, 7s. 6d. per 100 ; 4 to 6 feet, 30s. per 1000 ; 6 to 8 feet, 6s. per 100.
RHODODENDRONS, in fine Planting, mixed, 3-yr. seedling, fine, 5s. per 100 ; do. and 2-yr. bedded, 18s. per 1000 ; extra transplanted, 1 to 1½ foot, 110z. per 1000 ; 1½ to 2 feet, 15s. per 100, 120z. per 1000.
SYCAMORE, 2 to 3 feet, 20s. per 1000 ; 3½ to 5 feet, 30s. per 1000.
Also other Nursery Stock as per LIST.
The Nurseries, Matlock.

PEAT, good Brown, of the best quality, at £1 per ton, put on rail at Bracknell Station, South-Western Railway. Fresh SPHAGNUM, 10z. per bag. REIGATE SILVER SAND, four-ton trucks, 12s. per ton.
W. PURSEY, Wokingham, Berks.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 4s. 6d. per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plants, &c., 3s. per truck.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S.W. R., by four-ton truck-load. Sample sack, 5s. 6d. each.
Fresh SPHAGNUM, 10z. 6d. per sack.
WALKER and CO., Farnborough Station, Hants.

RHODODENDRON PEAT.—For Sale, any quantity of good Peat. Price, delivered on Rails, at Sevenoaks Station, South-Eastern Railway, or London, Chatham and Dover Railway, 12s. per truck.
A. JEFFKINS, Brasted, Sevenoaks.

COCOA-NUT FIBRE REFUSE
FOR POTTING and PROPAGATING.
Cheapest and best advertised. Before purchasing elsewhere write for Sample and Price, &c.

M. H. BENTOTE,
FIBRE MAKER, LAUSANNE ROAD, NUNHEAD, S.E.

COCOA-NUT FIBRE REFUSE newly made.—Reduced price, 20 bushels, 6s. 8d. ; 100, 20s. ; or Truck-load, 40s. Delivered free to any rail in London.
J. STEVENS and CO., Fibre Works, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand sacks monials. Four-bushel bag, 1z., bag included ; truck-load, loose, free to any Rail, 35s.
POTTER and CO., Spitalfields Market, N.E.

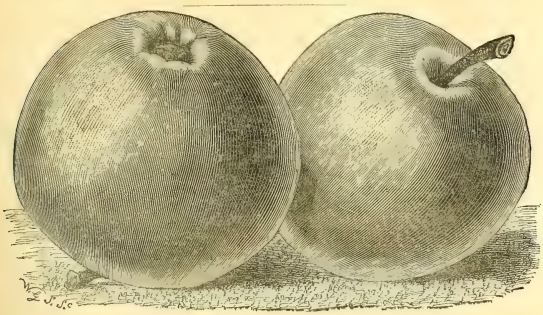
BONE-DUST MANURE.—For Sale, 4 Tons clean, guaranteed pure. Apply, with terms, to C. B., 14, Vauxhall Walk, Lambeth, S.

MILLER and JOHNSON (ESTABLISHED 1835)
Manufacture the highest quality of ARTIFICIAL MANURES
For ROOT, CORN, and GRASS CROPS.
36, Mark Lane, London, E.C.

MANURE, first-class, made from Blood, Bone, &c., of animals, 12s. per cwt., £9 per ton. Samples free.
FINEST KENT PEATS, per sack, ton, or truck.
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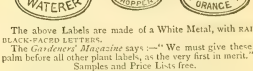
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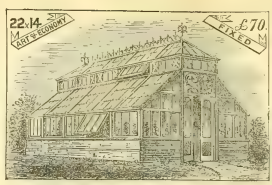


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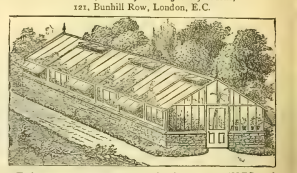


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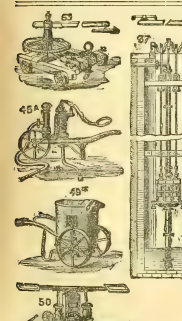
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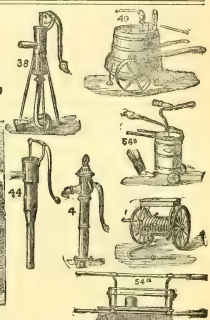


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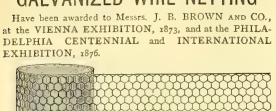
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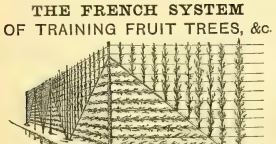
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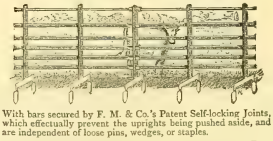
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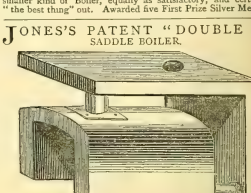
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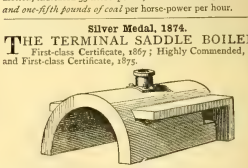
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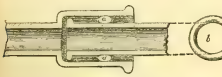
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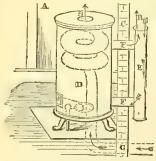
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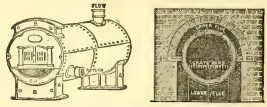
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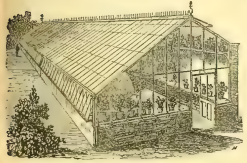
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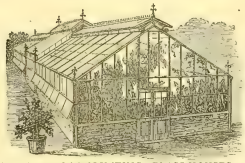
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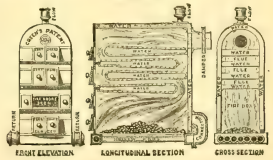
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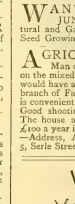
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Borecole, best sorts	3 *pkts.*	Onion, do.	5 *oz.*
Brussels Sprouts, do.	2 ,,	Parsley do.	1 ,,
Broccoli, best sorts	5 ,,	Parsnip, do.	3 ,,
Cabbage, do.	5 ,,	Radish, do.	2 ,,
Savoy, do.	2 ,,	Spinach, do.	1 *pts.*
Carrot, do.	6 *oz.*	Salsify	1 *pkt.*
Cauliflower, do.	2 *pkts.*	Scorzonera	1 ,,
Celery, do.	2 ,,	Turnip, best sorts	6 *oz.*
Couve Tronchuda	1 ,,	Vegetable Marrow, best varieties	1 *pkt.*
Cress, best sts. 8 *oz.* &	2 ,,	Sweet and Pot Herbs, best sorts	
Cucumber, do.	3 ,,	Tomato	4 ,,
Endive, do.	2 ,,	Capsicum	1 ,,
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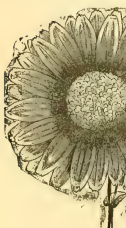
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Peas, best sorts	12 *pts.*	Lettuce, for succession	2 *pkts.*
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Beet, best sort	1 *pkt.*	Onion, Impd. Reading and others	3 ,,
Borecole, or Kale	2 ,,	Parsley, Sutton's Imperial	1 ,,
Brussels Sprouts	1 ,,	Parsnip	1 *oz.*
Broccoli, best sorts	3 ,,	Radish, best sorts for succession	3 ,,
Cabbage, do.	3 ,,	Spinach	4 ,,
Savoy, do.	1 ,,	Turnip, fine sorts for succession	3 ,,
Carrot, do.	3 *oz.*	Vegetable Marrow	1 *pkt.*
Cauliflower, do.	1 *pkt.*	Sweet and Pot Herbs	2 ,,
Celery, do.	2 ,,	Tomato	1 ,,
Couve Tronchuda	1 ,,		
Cress	3 *oz.* and 1 ,,		
Cucumber, best sorts	2 ,,		
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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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The "Gardeners' Chronicle" in America.

THE ANNUAL SUBSCRIPTION TO THE GARDENERS' CHRONICLE,

Including postage to the United States, is **$ 6.30** gold, to which add premium on gold for U.S. currency at the time, and 25 cents exchange—PAYABLE IN ADVANCE.

Agents:—Messrs. B. K. BLISS AND SONS, Seed Merchants, 34, Barclay Street, New York; Messrs. M. COLE AND CO., Decr Nos. 11, Atlanta Post Office, Atlanta, Fulton County, Georgia; and Mr. C. H. MAROT, 814, Chestnut Street, Philadelphia: through whom Subscriptions may be sent.

Now Ready, in cloth, 16s. 6d.,

THE GARDENERS' CHRONICLE VOLUME for JULY to DECEMBER, 1876.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—SCIENTIFIC, FRUIT and FLORAL COMMITTEES' MEETINGS, on WEDNESDAY NEXT, March 7, at 11 o'Clock. GENERAL MEETING for ELECTION of FELLOWS, &c., at 3 o'Clock. Admission 1s. Band of the Royal Horse Guards, from 3 o'Clock P.M.

N.B.—On this occasion the Fruit and Floral Committees will meet in the Conservatory, where Exhibits will also be shown.

THOUSAND-HEADED KALE.—In the extract from Mr. Russell's Paper on GREEN CROPS FOR SHEEP FEEDING, quoted in our advertisement last week (p. 234), the words "best known and most desirable" should read "*least* known and most desirable."

HURST AND SON, 6, Leadenhall Street, E.C.

NURSERYMEN COMING to HOLLAND during the International Horticultural Show at Amsterdam, in April, 1877, are requested to Visit my Nursery.

A. M. JONEKKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

GERANIUMS, strong, from Store Pots.—Bijou, Beaton's Indian Yellow, Vesuvius, Pernilla, Crystal Palace Gem, Waltham Seedling, Auroad, Amy Hogg, 5s. per 100: strong Cuttings, 4s. 6d.

W. BROADBRIDGE, Wellesbourne, Warwick.

New French Roses, 1877.

PAUL AND SON, The Old Nurseries, Cheshunt these Nurseries established 1806), have strong Plants of the few really worth having Novelties of the French raisers. LIST, with descriptions, now ready.

ROSES.—Extra fine Plants, in quantity, offered cheap. Special quotations given.

JOHN THOMPSON, Nurseryman, Seedsman and Florist, 21, Pilgrim Street, Newcastle-on-Tyne.

Berberis Aquifolia (for Cover Planting).

R. AND F. ALLUM, NURSERYMEN, &c., by Tamworth, have some thousands to offer, bushy and prettily trained, 12 to 18 inches and 24 to 30 inches; also a fine lot of 2-yr. bedded. Prices on application.

Transit Agency for Plants, Seeds, &c.

C. J. BLACKITH AND CO. (established 1823), Cox's and Hammond's Quays, Lower Thames Street, London, S.E.—Forwarders to all parts of the World.

Gentlemen's Gardeners, Amateurs, and Others REQUIRING

GARDEN POTS of best quality, are requested to send their orders to

J. MATTHEWS, Royal Pottery, Weston-super-Mere.

Price List on application.

The Best Medium and Late White Kidney Potato IN CULTIVATION,

SUTTON'S MAGNUM BONUM.—For full particulars see p. 264 of this day's paper.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

FIR, Scotch, 5000 to 6000, 3 feet to 4 feet, finely rooted, to be sold cheap. Prices on application to ROBERT T. VEITCH, Exotic Nurseries, Exeter.

To the Trade.

FIR SEED, Scotch, guaranteed true native. Cheap.

W. WISEMAN AND SON, Elgin, N.B.

Spanish Chestnut.

H. McMILLAN has to offer a quantity of the above, very stout, 1 to 1½ foot, also a few 2 to 3 feet. Price on application.

Nurseries, Kingston-on-Thames.

OAK and BEECH, English.—About 50,000 2-yr. Seedlings, strong plants of the above for Sale. For price, &c., apply to

J. HARTNELL, Bailiff, Houghton Hall, Rougham, Norfolk.

HAWS, or THORN QUICK SEED.—Sound Haws, fit for sowing at present, or spring coming; guaranteed free from soil or other mixture, and thoroughly well preserved. About 30 tons on hand. For lowest prices apply to GRANT AND CO., Park Nursery, Portadown, Ireland.

LARCH FIR, transplanted, 2 to 3 feet, 25s. per 1000, on application to

THOMAS PERKINS, 42, Drapery, Northampton.

To the Trade.—Common Ash.

STUART AND MEIN have a quantity of the above to Dispose of, all sizes from 3 to 10 feet.

The Nurseries, Kelso, N.B.

OAKS, transplanted, 10,000, 6 to 8 feet; 40,000, 4 to 6 feet. Price on application to

HENRY BAKER, Nurseryman, Atherstone.

PONTICUM RHODODENDRONS, —for Cover—2½ to 3 feet, fine, £8 per 1000.

J. JACKSON, Nursery, Kidderminster.

Hollyhocks, Gladioli, &c.

PRICED CATALOGUES of very choice varieties of the above free on application.

JOHN THOMPSON, Ravenside Nurseries, Feuham; and 21, Pilgrim Street, Newcastle-on-Tyne.

RHODODENDRONS. 3-yr. Seedlings, 6 to 10 inches, transplanted: 4-yr. Seedlings (fine), 8 to 10 inches, transplanted: 12 to 18 inches, transplanted.

For prices, which are low, apply to

HENRY FARNSWORTH, Matlock Bank, Derbyshire.

SPIRÆA PALMATA.—Fine crowns for forcing, 25s.: smaller, 15s. to 30s. per 100.

CHARLES NOBLE, Bagshot.

Balsam, Cineraria, and Primula Seed.

F. AND A. SMITH offer the above, saved from their unrivalled strains, in 1s., 2s. 6d., and 5s. packets. Price per weight to the Trade on application.

The Nurseries, West Dulwich, S.E.

Pear Stocks, Extra Strong.

CHARLES LEE AND SON have a few Thousands to offer to the Trade.

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

WANTED, 5000 Seedling BRIARS; 5000 MANETTI STOCKS, strong, for planting; 500 CHRISTMAS ROSES; 500 TEA ROSES, dwarfs, Gloire de Dijon, Maréchal Niel, Souvenir de Malmaison, &c.; 500 MOSS ROSES, of sorts. State lowest cash prices.

For SALE or EXCHANGE, 4000 good double white DAISIES, 6s. and 8s. per 100.

MAITLAND, Merton Abbey Nursery, Wimbledon, S.W.

WANTED, Cuttings of GERANIUMS, Vesuvius, Madame Vaucher, Mme Christine, any sort Tricolor, and good Bicolors, also CALADIUMS and ALOCASIA LOWII. ORCHIDS, TUBEROSES, LILY OF THE VALLEY, CLUMPS, SEEDS, &c., may be had in EXCHANGE.

W. F. BOFF, 203, Upper Street, Islington, N.

WANTED, 20,000 to 30,000 MANETTI ROSE STOCKS. Samples, with lowest cash prices, to

CRANSTON AND CO., King's Acre Nurseries, near Hereford.

WANTED, strong QUICKS. Quote price and height.

R. AND F. ALLUM, Nurserymen, &c., Tamworth.

Ficus elastica, Aspidistra lurida, Hardy Palms.

WANTED, nice young Plants of the above, about 1½ to 2 feet high. Address, stating price per dozen or 100, to the

SUPERINTENDENT, County Asylum, Prestwich, Manchester.

NEW REGAL PELARGONIUMS (Two of the Gems of the Season).

"PRINCE OF WALES" and "PRINCESS OF WALES.' Price 1 guinea each.

To be sent out the first week in May by

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Correction.

EUONYMUS EUROPÆUS, strong, 2-yr. seedlings plants, £1 per 1000 (not per 100), £9 per 10,000 (not per 1000). Offers for Cash.

A. RAITHE AND SON, The Nurseries, Praust, near Danzig, Germany.

Winter-flowering Orchids,

CALANTHE VESTITA RUBRA OCULATA. Price, 9s. per dozen, or 5s. per 100.

S. WOOLLEY, Nurseryman, Cheshunt, Herts.

EUTERPE EDULIS SEEDS, fresh, and newly arrived, 3s. per dozen, 20s. per 100. ALPINE AURICULA SEEDS, very fine strain, 1s. 6d. and 2s. 6d. per packet.

W. GORDON AND SONS, Haymarket, Edinburgh.

Cinerarias.

F. AND A. SMITH will send Blooms of the above from their superior Collection to all applicants on receipt of two stamps.

The Nurseries, West Dulwich, S.E.

Grape Vines.

FRANCIS R. KINGHORN has still to offer strong planting and fruiting Canes of most of the leading sorts. Particulars on application.

Sheen Nursery, Richmond, Surrey.

Vines, Vines, Vines.

B. S. WILLIAMS begs to announce that his GRAPE VINES this year are unusually fine, and are now ready for distribution.

For Detailed List, see Bulb Catslogue.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

GRAPE VINES, strong planting Canes of Black Hamburgh, Pearson's Golden Queen, Muscat of Alexandria, and other leading sorts, 3s. 6d. to 5s. each.

EWING AND COMPANY, Eaton, Norwich.

Vines, Vines, Vines.—The Planting Season.

THE COWAN PATENTS' COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Canes of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

Special Offer for Cash.

PEACHES and NECTARINES, Maiden, 35s. per 100. A few THUJA AUREA, moved last year, 10 to 14 inches, £5 per 100.

J. AND G. LOWE, Uxbridge.

SNOWFLAKE POTATOS.—Warranted true and free from disease, in cwt. bags, 26s., bag free, and carriage paid to any Railway Station in England on receipt of Post-office Order or Cheque.

DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

To the Trade.

JAMES BIRD, NURSERYMAN, Downham, has to offer extra fine Standard MAYDUKE CHERRIES.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

To Farmers, Market Gardeners, and Others.

G. CAVE, Nobottle Grange, Northampton, has a fine stock of RINGLEADER PEA (true) to be Sold cheap. Sample and quotation.

To the Trade.

H. AND F. SHARPE'S Special Priced LIST of HOME-GROWN GARDEN and AGRICULTURAL SEEDS of 1876 growth, is now ready, and may be had on application.

Seed Growing Establishment, Wisbech.

POTATOS.—Myatt's Early Prolific, splendid Seed, about 3 Tons for Sale; and also about 20 Tons of MANGEL WURZEL.

H. CANNELL, Swanley, Kent.

Now Ready,

CHARLES TURNER'S Descriptive CATALOGUE of SEEDS. Post-free on application.

The Finest Dwarf Marrow Pea is

TURNER'S DR. MACLEAN. See CATALOGUE, now ready.

New Early Prolific Pea,

ALLAN'S CHAMPION. Full description in CATALOGUE, now ready.

Schoolmaster.

FINEST ROUND POTATO. Description, with testimonials, in CATALOGUE, now ready.

CHARLES TURNER, The Royal Nurseries, Slough.

SALES BY AUCTION.

Lilies, Seeds, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 5, at half-past 12 o'Clock precisely, 1500 fine Bulbs of LILIUM KRAMERI, just arrived from Japan in fine condition, and an importation of good Bulbs of the beautiful LILIUM NEILGHERRENSE. The white flowers of this magnificent Lily are deliciously fragrant, and of great substance; it bears several flowers on a stem, each flower nearly a foot long. Also some excellent Bulbs of the following new varieties of Lilium neilgherrense, viz.:—

LILIUM NEILGHERRENSE ROSEUM—the exterior of the flower of this variety is pink, the interior white.

LILIUM NEILGHERRENSE FLAVUM, a handsome light yellow-coloured form of this charming Lily.

LILIUM NEILGHERRENSE TUBIFLORUM—a magnificent pure white Lily, with very long flowers; figured in Wight's *Icones Plantarum Indiæ Orientalis*.

LILIUM NEILGHERRENSE TUBIFLORUM LUTEUM —a very handsome yellow-flowered variety of tubiflorum.

And some splendid Bulbs of other choice LILIES, including Bloomerianum ocellatum, purpureum, Humboldtii, pardalinum, parvum, californicum, and Washingtonianum. Also a quantity of choice Bulbs and Tubers from California, including CALOCHORTUS, ERYTHRONIUMS, BRODIÆAS, TRITELEIAS, CALLIPRORA, BRYTHRONIUMS, BLOOMERIAS, &c.; and some fine blooming Bulbs of the handsome CRINUM BRACHYNEMA, A. C. AUSTRALE, C. PEDUNCULATENSE CANALICULATUM, tuberous-rooted handsome-flowered BEGONIAS, AMARYLLIS, with a variety of other Bulbs and Tubers, and a consignment of CONIFEROUS TREE SEEDS.

On view the morning of Sale, and Catalogues had.

Plants and Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 7, at half-past 12 o'Clock precisely, first-class Standard and Dwarf ROSES, the well-known English Nurseries, Tested FRUIT TREES for Walls; Hardy and Ornamental TREES and SHRUBS, HERBACEOUS PLANTS, RUSTIC GARDEN WORK, IRON CASE, Choice GLADIOLI, LILIUMS, RANUNCULUS, &c.

On view the morning of Sale, and Catalogues had.

Important and Extensive Collection of Insects.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, SATURDAY, and MONDAY, March 9, 10, and 12, at half-past 12 o'Clock precisely each day, a highly important and extensive Collection of FOREIGN and BRITISH INSECTS, formed by the late Edward Brown, Esq., of Elsworth-on-Trent, during the last thirty years; also his British Herbaria, Collection of Shells, Bird Skins, Plaster Casts, &c.

Each day's Sale will be on view the day prior and mornings of Sale, and Catalogues had.

The Unrivalled Collection of Specimen Stove and GREENHOUSE PLANTS of the late F. G. WILKINS, Esq., of Leyton.

MR. J. C. STEVENS has received instructions to offer for SALE by AUCTION, on the Premises, on THURSDAY, March 29, at half-past 12 o'Clock precisely, the magnificent COLLECTION of STOVE and GREENHOUSE PLANTS formed by the late F. G. Wilkins, Esq., of The Poplars, Leyton, comprising Heaths, Aphelexis, Statices, Hedeomas, Icones, Bougainvillea, Pterodendrons, Crotons, Anthuriums, Azaleas, Palms, Ferns, Trained Pelargoniums, &c. This collection is without doubt one of the finest in the kingdom, and has been grown and exhibited with great successfully by Mr. Ward for the last ten years. Also TWO EXHIBITION VANS.

On view the day prior and morning of Sale, and Catalogues had.

City Auction Rooms, 38 & 39, Gracechurch Street, E C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Rooms as above, on TUESDAY, March 8, at half-past 12 o'Clock precisely, a choice collection of English grown double CAMELLIAS, 2 to 3½ feet, beautifully set with bloom-buds, and in perfect health; choice AZALEA INDICA, selected GREENHOUSE PLANTS, a splendid assortment of 500 Standard and Dwarf ROSES of the best varieties, selected FRUIT TREES, hardy AMERICAN PLANTS, CONIFERÆ SHRUBS, together with some fine Bulbs of LILIUM AURATUM and LONGIFOLIUM, GLADIOLUS, RANUNCULUS, ANEMONES, also FUCHSIAS, DAHLIAS, &c.

On view the morning of Sale. Catalogues may be had at the Rooms, and of the Auctioneers, &c., 98, Gracechurch Street, E.C., and Leytonstone, E.

Plaistow, Essex.

CLEARANCE SALE of WELL-GROWN NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, The Nursery, High Street, Plaistow, on FRIDAY, March 9, at 12 o'Clock precisely, the whole of the valuable NURSERY STOCK, comprising Hollies, Cedars, Aucubas, and other Evergreen Shrubs; 500 Poplars, 200 Rhododendrons, and other American Plants; 400 Standard, Pyramid, and Dwarf-trained Fruit Trees; 500 Standard and Dwarf Roses, &c.

On view the day prior and on Sale. Catalogues obtained on the Premises, and of the Auctioneers.

Edgware, N.W.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Whitchurch Rectory, Edgware, on TUESDAY, March 13, at 12 o'Clock precisely, by order of the Proprietor, the Land being required for the formation of a Pinetum, the remaining portion of the extensive well-grown NURSERY STOCK, comprising a considerable number of choice Piceas, Thujas, Thujopsis, Cupressus, &c., a quantity of Rhododendrons, Standard Roses, and other flowering Trees and Shrubs, Fruit Trees, &c., together with a choice assortment of valuable Orchids.

On view the day prior. Catalogues obtained on the Premises, and of the Auctioneers.

Heatherside Nursery, Bagshot, Surrey.

IMPORTANT NOTICE.—The Sale of NURSERY STOCK, &c., advertised to take place on the Premises as above on TUESDAY NEXT, March 6, and following days, is POSTPONED UNTIL FURTHER NOTICE.

PROTHEROE AND MORRIS, Auctioneers.

Exhibition, Conservatory, Greenhouse, and Stove PLANTS.

ATTRACTIVE SALE of a splendid Collection of SPECIMEN PLANTS, the property of a leading Firm of Exhibitors in the North of England, who are giving up showing.

ARTINGSTALL AND HIND beg to notify the receipt of peremptory instructions to SELL by AUCTION, on FRIDAY, March 23, at the Cotton Waste Exchange, Manchester, a valuable collection of EXHIBITION PLANTS.

Catalogues in preparation, which may be obtained on March 1 on application to the Auctioneers, 51, Princess Street, Manchester.

FOR SALE, a compact MARKET NURSERY, near London; price £450, or Valuation, including Lease, Stock under glass and outside. Rent low. To an energetic, practical man this may be considered nearly equal to a 200 years' purchase. Particulars of

G. F. E., Mr. Morris, Chemist, Edmonton.

Midland Counties (2017).

TO BE DISPOSED OF, on advantageous terms, a thriving and increasing NURSERY BUSINESS. Comprises comfortable Dwelling-house with convenient Seed Warehouse and Shop; there are two Nurseries, one called the Home Ground, the other a mile and a half away. Nursery of 60 acres. Aggregate rental for the whole, £154 per annum. Incoming about £3300. Open to an offer, or the Stock to be taken by valuation in the usual way. Apply for further particulars to

Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

TO BE DISPOSED OF, near London, a NURSERY, comprising Greenhouses, heated with hot water, Range of Pits, stocked with a choice Collection of Plants, good Dwelling-house, Water laid on—convenience—on LEASE; very low rental. More Land if required. Immediate possession for £300, remainder at interest. Address Z., 423, Glasshouse Street, Regent Street, London, W.

To Florists, Nurserymen, and Others.

TO BE LET, or the GROUND LEASE TO BE SOLD, a very VALUABLE PROPERTY, with large frontages to Edgware Road and St. John's Wood Road, where the business of a Florist has been many years carried on. There is a good House and other suitable buildings on the ground. Apply to

Messrs. WORTH, ABBOTT AND RUSHWORTH, 22, Savile Row, W.

In the S.W. Suburb of London (4186).

TO BE LET, an old-established NURSERY, with Seed and Corn Business, Lease and Goodwill. Possession, the owner retiring from business. There is an Acre of Ground, with 8000 feet of Glass erected thereon. Stock at a valuation.

PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C., and Leytonstone, E.

To Purchasers of Large Quantities, Market GARDENERS and OTHERS.

SUTTON AND SONS can offer:—

SUTTON'S IMPROVED EARLY CHAMPION, the best and most productive Early Pea in cultivation.

Sutton's Ringleader	Sutton's Racehorse
Daniel O'Rourke	And all other leading kinds.

Lowest price per Bushel or Quarter on application.

SUTTON AND SONS, Seed Growers, Reading.

Pelargoniums, Pelargoniums.

JAMES HOLDER AND SON have a fine healthy batch in the above to offer, at the following low prices for Cash, viz., 35s. per 100, distinct sorts, hamper and package included; also extra strong plants, in 32-pots, 18s. per dozen, in 48-pots, 9s. per dozen, 6s. per 100, basket and packing extra. Crown Nursery, Reading.

Important Notice.

JAMES HOLDER AND SON beg to inform their numerous customers, and the public generally, that the Price Lists and Trade advertisements are not the Zonal Class, but consist of Show, French, and Fancy varieties. The Stock and Collection is First-class, as certified by numerous testimonials received from parties in all parts of the country.

Crown Nursery, Reading.

SEEDS—SEEDS—ALL KINDS.—Before ordering your Seeds, send for Illustrated CATALOGUE, containing Useful Directions, How, When and What to Sow.

PENGILLEY AND POOL (successors to the Heatherside Nurseries Company), 20, Queen Victoria Street, London, E.C.

Verbenas, Verbenas, Verbenas.

WILLIAM BADMAN offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, at 12s. per 100; or turned out of pots, 10s. per 100. Good rooted CUTTINGS, 6d. per 100, 5s. per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S.E.

Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE YEAR ILLUSTRATED CATALOGUE of FRUITS (by THOMAS RIVERS) is now ready; also CATALOGUE of Select ROSES. Post-free on application.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Roses, Fruit Trees, Evergreens, &c.

WILLIAM FLETCHER'S CATALOGUE is now ready, and may be had post-free on application. The Nursery Stock generally is in fine, healthy, and well-rooted. Early orders are respectfully solicited.

Ottershaw Nurseries, Chertsey, Surrey.

GLOXINIA CRASSIFOLIA GRANDIFLORA.—Magnificent strain, quite distinct; sown now will flower in autumn. Erecta and horizontalis, separate or mixed, 1s. and 2s. 6d. per packet.

PETUNIA, double large-flowered.—Yields a large percentage of double flowers, 1s. 6d. per packet.

STEPHANOTIS FLORIBUNDA.—Remarkably free-flowering variety from the Mauritius, 2s. 6d. per packet.

CATALOGUES free on application.

JAMES TYNAN Seed Warehouse, 68, Great George Street, Liverpool.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden.—"Gee's superior Bedfordshire-grown Plants and Seeds have attained much celebrity."—*Vide Bedford Mercury*, July 29, 1876. "The soils of the district offer facilities enjoyed at few places for bringing young plants, &c., and under the skill and perseverance of Mr. F. Gee they are turned to good account."—*Vide Agricultural Gazette*, July 31, 1876. See other opinions of the Press, also a Treatise on the Cabbage. CATALOGUES, lowest prices, &c., on application to FREDERICK GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

VERBENAS, VERBENAS, VERBENAS. —Strong, well-rooted, healthy CUTTINGS, free from disease, White, Purple, Scarlet and Pink, 6s. per 100, 50s. per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, 1s. Terms Cash. Carriage paid.

H. BLANDFORD, The Dorset Nurseries, Blandford.

LADY HENNIKER APPLE GRAFTS. 6 for 1s. 6d., 12 for 2s. 6d., 50 for 8s., 100 for 15s. A splendid Kitchen or Dessert Apple, weighs 18 oz., bears freely on one-year wood. Pyramids, 2s. 6d. each. Standards 3s. 6d. each.

EWING AND COMPANY, Eaton, Norwich.

To the Trade.—Turnip Seeds.

H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.

Seed Growing Establishment, Wisbech.

To the Trade.

STANDARD and DWARF ROSES of the leading sorts—splendid Plants, no better in the Trade, well-ripened wood—about 15,000 Standards and 5,000 Dwarfs, guaranteed true to name. For lowest prices apply to

GRANT AND CO., Park Nursery, Portadown, Ireland.

Herbaceous and Alpine Plants (Illustrated).

THOMAS S. WARE HAS IN STOCK out of the above for the present year is Now Ready, and includes New, Rare, and Choice Perennials, Bamboos, and Ornamental Grasses, Bog Plants, and Aquatics; also, a few Bulbs. Post-free on application.

Hale Farm Nurseries, Tottenham, London.

LARGE TREE BOX and EVERGREEN of HOLLY.—Handsome, bushy, and well-rooted, will transplant with good balls of earth, 5, 6, 7, and 8 feet high. Tree Box lives under trees better than any other Evergreen tree. An inspection invited. Price on application to

T. JACKSON AND SON, Nurseries, Kingston, Surrey.

To the Trade.—Mangel Wurzel Seeds, 1876 Growth.

H. AND F. SHARPE invite the attention of the Trade to their fine selected stocks of home-grown MANGEL SEEDS, raised from fine picked bulbs. Special offers and samples may be had on application to

Seed Growing Establishment, Wisbech.

Dickson's Improved.

MUSHROOM SPAWN.—This is undoubtedly the best Spawn. Circulars, with testimonials, prices, &c., on application to

JAMES DICKSON AND SONS, **108**, Eastgate Street, Chester.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LIST for 1877.

Extra Strong SEAKALE, 2s. per dozen.

RICHARD SMITH, Nurseryman, Worcester.

To Farmers and Market Gardeners.

SANGSTER'S NEW PEA, the earliest stock, 10s. per bushel. DILLISTONE'S PROLIFIC, the earliest and most productive of all the early Peas, 12s. per bushel. Samples by return.

BALL AND COMPANY, Seedsmen, 4, Mercer's Row, Northampton.

ASPARAGUS.—Grayson's Giant, 3,000,000, 1-yr. fine, 7s. 6d. per 1000; 2-yr., 15s. per 1000; 3-yr., 20s. per 1000. Conover's Colossal, 2,000,000, 1-yr., 12s. 6d. per 1000; 2-yr., 20s. per 1000. Good planting SEAKALE, 25s. per 1000. For Cash. Above prices at per 1000 or 500 only.

RICHARD ROCKE, Redhill, Surrey.

RALPH ROBSON, NURSERYMAN, Hexham, has to offer the following:—

LARCH, Native, 1-yr. seedling, fine.

POPLAR, Balsam, 1 to 3 feet, fine.

GOOSEBERRY BUSHES, Lancashire varieties.

FRUIT TREES, standard and dwarf-trained, of all kinds.

All the above are fine clean stuff, and well grown. Prices on application.

WANTED, strong THORNS; state size and price.

W. F. BOFF offers magnificent Bulbs of LILIUM AURATUM, 12s. per dozen; easy growing, flowers the first year, 6 to 10 per stem, 24s. per dozen; TUBEROSES, 2s. per dozen, 12s. per 100; LILY OF THE VALLEY, imported clumps, 5s. per dozen. CALCEOLARIAS, yellow, rooted cuttings, 5s. per 100.

203, Upper Street, Isliugton, N.

Special Offer.—150,000 Vesuvius.

WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, 10s. per 100; or from store-pots, 8s. per 100, 75s. per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S.E.

LEE'S PRINCE CONSORT VIOLET BLOOMS.—As there is little prospect of the above beautiful Violet being "let out" in plants, G. LEE has decided to offer the BLOOMS to the Nobility and Gentry, for Table Decoration during the present season, the following rates:—Single Blooms, with long stems, for mixing with other flowers, 3d. to 6d. per dozen; if three or more dozen are ordered, postage and package free. In Bouquets, flat or round (which please state), from 3s. to 30s. per dozen; if three or more dozen are ordered, carriage and package free.

Orders will still be booked for Plants (conditionally) at 10s. 6d. for four plants and 6d. for package, or 30s. for one dozen plants and 12s. for package; less than four plants not sent out. VICTORIA REGINA, 6d. per dozen plants; less not sent out.

GEORGE LEE, F.R.H.S., Market Gardener, Clevedon, Somerset.

Genuine Garden Seeds.

WM. CUTBUSH AND SON have for many years held some of the finest Stocks of SEEDS in the Trade, and they believe that no house can possibly supply better quality. CATALOGUES post-free on application.
HIGHGATE, LONDON, N.; and BARNET, HERTS.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours: AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.
Mr. WEBB, Calcot, Reading.

Complete Liberal Collections of

CHOICE VEGETABLE SEEDS, 15s., 21s., 42s., 63s., and 105s. each, carriage paid. As my new and choice seeds are now in large demand, please order early. SPECIALITIES:—
CAULIFLOWER, Veitch's Autumn Giant, true, 1s. 6d. per packet.
LETTUCE, Alexandra Cos, true, 1s. per packet.
ONION, Cantello's Prize, true, 1s. per packet.
BROCCOLI, Leamington, finest late, 1s. 6d. per packet.
CABBAGE, Alpha, fine, large, and early, 1s. per packet.
CATALOGUE of New and Choice Seeds on application.
R. B. M'COMBIE, Grower of Choice Seeds, &c., Christchurch, Hants.

ROBERT AND GEORGE NEAL, Wandsworth Common, Upper Tooting, and Garrett Lane Nurseries.
These Nurseries comprise about 50 Acres of well-grown and a most useful assortment of STANDARD, ORNAMENTAL, FOREST, FRUIT, and ROSES, and SHRUBS, all of which are in a most healthy and fit condition for removal. A personal inspection invited. CATALOGUES free on application.
The Nurseries are within a few minutes' walk of the Clapham Junction and Wandsworth Common Railway Stations.

To the Trade.

JAMES YOUNG, Brechin, N.B., offers the following:—
400,000 LARCH, seedlings, 2-yr.
100,000 FIR, Scotch, seedlings, 2-yr.
3,000 ELM, Mountain, transplanted, 4 to 5 feet.
10,000 BEECH, transplanted, 1 to 4 feet.
10,000 ,, transplanted, 2½ to 3½ feet.
500 HOLLY, Green, transplanted, 2 to 3½ feet.
300 CHESTNUT, Horse, transplanted, 4 to 5½ feet.
1,000 LIME, transplanted, 3 to 4 feet.
1,000 ,, transplanted, 5½ to 6½ feet.
600 PINUS CEMBRA, transplanted, 3 to 4 feet.
15,000 SPRUCE, transplanted, 1½ to 2 feet.
Special offers on application.

CHARLES NOBLE, Bagshot, can offer the following:—
ROSES, Dwarf, 42. per dozen, 25s. per 100, 210s. per 1000.
PEACHES and NECTARINES, dwarf-trained, 21s. per dozen, 150s. per 100.
RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1½ to 2 feet, 21s. per dozen, 150s. per 100.
,, ,, ,, for immediate effect, 3½ to 4 feet, and same through, 42s. per dozen, 300s. per 100.
,, Seedling, 1½ to 3½ feet, 24s. per dozen, 200s. per 100.
,, PONTICUM, 1½ to 2 feet, bushy, 6s. per dozen, 35s. per 100.
KALMIA LATIFOLIA, 1 to 1½ foot, buds, for potting, 75s. and 100s. per 100.
ANDROMEDA FLORIBUNDA, buds, for potting, 75s. and 100s. per 100.
ERICA CARNEA, very fine, 21s. per 100.

SPRING FLOWERING PLANTS:—
PRIMROSE, double yellow, 3s. per dozen, 20s. per 100.
,, double lilac, 2s. 6d. per dozen, 15s. per 100.
,, double purple-crimson, 6s. per dozen, 45s. per 100.
,, double crimson, 6s. per dozen.
,, single yellow, flowers in scapes, 9d. per dozen.
CARDAMINE PRATENSIS fl.-pl., 3s. per doz., 20s. per 100.
SISYRINCHIUM GRANDIFLORUM, in pots, 3s. 6d. per dozen.
PANSY, Blue King, strong, 2s. per dozen, 10s per 100.
VIOLA, Blue Bell, strong, 2s. per dozen, 10s. per 100.
,, lutea Grievei, strong, 2s. per dozen, 10s. per 100.
POLYANTHUS, sorts, strong, 2s. per dozen, 10s. per 100.
DAISIES, white and red, 3d. per doz. 2s. 6d. per 100.
WALLFLOWERS, double German, 6s. per 100.
,, single dwarf yellow, 6s. per 100.
ALYSSUM SAXATILE COMPACTA, 8s. per 100.
RODGER M'CLELLAND AND CO., 64, Hill Street, Newry.

Australian Plants and Seeds.

EUCALYPTUS GLOBULUS, PALMS, CYCADS, FERNS, and all kinds of PLANTS and SEEDS indigenous to Australia, Fiji, &c., supplied on the most reasonable terms. Priced CATALOGUES and Special Quotations on application.
SHEPHERD AND CO., Nurserymen and Seedsmen, Darling Nursery, Sydney, New South Wales. (Established 1837.)
Agents: Messrs. C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

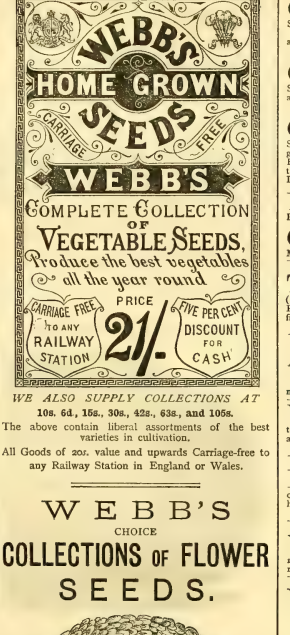
DOWNIE AND LAIRD, Royal Winter Nurseries, Edinburgh, are now Booking Orders for Dwarf ROSES, the finest in cultivation, at 9s. per dozen (selection left to D. & L.); also HOLLYHOCKS, best sorts, 18s. and 24s. per dozen—to the Trade at 15s per 100: PHLOXES, finest early, 6s. and 12s. per dozen; do., late, 6s. and 12s. per dozen; PENTSTEMONS, finest, 6s. and 12s. per dozen.

Presented (by post) on application,

NEW CATALOGUE for 1877. For remarks and List of Plants offered, with prices, see last week's large Advertisement. Plants true to name, well hardened off, low in price. See New Catalogue.
WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

Planting Season.

E. BURGESS begs to offer the following:—Strong Standard and Pyramid PEARS, ROSES, Evergreen and Deciduous Flowering SHRUBS, English OAK, ELMS, and LIMES, up to 10 feet, and Spruce FIRS. Prices on application.
The Nurseries, London Road, Cheltenham.



WE ALSO SUPPLY COLLECTIONS AT
10s. 6d., 15s., 30s., 42s., 63s., and 105s.
The above contain liberal assortments of the best varieties in cultivation.
All Goods of 20s. value and upwards Carriage-free to any Railway Station in England or Wales.

WEBB'S
CHOICE
COLLECTIONS OF FLOWER SEEDS.



Specially selected to produce a splendid and continuous display during Summer and Autumn.

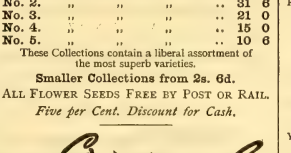
		£	s.	d.
No. 1.	Collection of Choice Flower Seeds ..	42	0	
No. 2.	,, ,, ,, ..	31	6	
No. 3.	,, ,, ,, ..	21	0	
No. 4.	,, ,, ,, ..	15	0	
No. 5.	,, ,, ,, ..	10	6	

These Collections contain a liberal assortment of the most superb varieties.

Smaller Collections from 2s. 6d.

ALL FLOWER SEEDS FREE BY POST OR RAIL.

Five per Cent. Discount for Cash.



The Queen's Seedsmen,
WORDSLEY, STOURBRIDGE.

Seed List.

CHARLES SHARPE AND CO.'S WHOLESALE LIST of VEGETABLE and FARM SEEDS is now ready, and will be sent post-free on application.
CHARLES SHARPE AND CO., Seed Farmers, Sleaford and at 31, New Corn Exchange, Mark Lane, London, E.C.

Select Swede and Turnip Seeds.

CHARLES SHARPE AND CO.'S carefully-selected Stocks of SWEDE and TURNIP SEEDS, the produce of their own Seed Farms in Lincolnshire, are offered in their Wholesale Seed List for 1877.

Select Mangel Seeds.

CHARLES SHARPE AND CO. have much pleasure in asking attention to their select Stocks of MANGEL WURZEL SEED, which have been grown under their personal supervision upon their own Seed Farms at Heckington, and in the adjoining parishes. Descriptions and prices are given in C. S. & Co.'s Wholesale Seed List for 1877.

EVERY DESCRIPTION of HORTICULTURAL and AGRICULTURAL SEEDS, SEED POTATOS of finest quality, both Home-grown and Imported.

CHARLES SHARPE AND CO., Seed Farmers, Sleaford, and 31, New Seed Market, Mark Lane, London, E.C. All letters address Sleaford.

Hardy Florists' Flowers.

THOMAS S. WARE'S New SPRING CATALOGUE of the above, including Pansies, Violas (Bedding), Delphiniums, Daisies, Pinks, Peonies, Phlox, Pyrethrums, and others, for immediate Planting, may be had free on application.
Hale Farm Nurseries, Tottenham, London.

New Roses for 1877.

A DESCRIPTIVE LIST of all the best New Roses of the Season is now ready. Extra fine plants ready in March.
CRANSTON AND COMPANY, King's Acre Nurseries, near Hereford.

WHITE MULBERRIES for SILKWORMS, 7000, 2-yr. drilled, very fine, 1 to 3 feet, 5s. to 12s. 6d. per 100. Price to Trade, or for larger quantities, on application.
EWING AND COMPANY, Eaton, Norwich.

Morello Cherries.—Special Offer to the Trade.

R. AND G. NEAL, having a very large Stock of Dwarf-trained MORELLO CHERRIES, can offer them very cheap in quantities. Price per dozen or hundred on application.
The Nurseries, Wandsworth Common, S.W.

Large Evergreen Trees for Screens.

WILLIAM MAULE AND SONS offer Norway SPRUCE and CEDRUS DEODARA, 10 to 15 feet high, well-rooted—the former at 5s. each, the latter 10s. 6d.
The Nurseries, Bristol.

To the Trade.

WILLIAM FLETCHER has the following STOCKS to offer:—
CRAB, 35s. per 1000. | PEAR, 40s. per 1000.
CHERRY, 40s. per 1000.
ACER NEGUNDO, 3 to 4 feet, 20s. per 1000. Also
APRICOTS, Maiden, 55s. per 100.
Ottershaw Nursery, Chertsey, Surrey.

IMPORTANT NOTICE TO INTENDING EXHIBITORS.
GLEICHENIA MENDELLI, 3 feet by 4 feet, in active growth; the same, 2 feetby 2 feet, and several smaller, in excellent health. G. SPELLMAN, 3 feet by 2 feet; G. RUPESTRIS, 1½ foot by 2 feet. ERICAS, hard-wooded leading varieties, well set with bloom and in the best of health, 1½ feet by 2½, from 1 foot by 2 feet; 1½ foot by 1½ foot; all well trained and fit for immediate exhibition. Several Stove specimens of ALLAMANDAS, BOUGAINVILLEAS, CLERODENDRONS, on trellises, 3 feet by 3½ feet and 2½ feet by 2½ feet, starting into growth; also CROTON PICTUM and C. VARIEGATA, in fine colour, 4 feet by 3 feet—a fine pair. Several fine plants of COCUS WEDDELIANA, 1½ feet, to leaves each. Specimens of APHELEXIS, DRACÆNA FRAGRANS, and PHŒNICOMA.
Also a great quantity of STOVE and GREENHOUSE PLANTS of intermediate sizes, to offer at greatly reduced rates: a good opportunity to those about building new houses. 2000 CAMELLIAS, from 1 to 3 feet, well-grown healthy plants.
List of names and Prices on application. An inspection respectfully solicited.
HENRY WALTON, Edge End Nursery, Brierfield, near Burnley.

Rhododendrons.

J. MATTHEWS AND SON, Milton Nurseries, Stoke-on-Trent, Staffordshire, have to offer the following:—
RHODODENDRONS, 100,000, fine bushy plants, thinly grown and well-rooted.
,, SPLENDENS, 10,000, white, 1 to 1½ foot, 37s. 6d. per 100.
,, CAUCASICUM PICTUM, 10,000, light scarlet, 1 to 1½ foot, 50s. per 100.
,, JACKSONI, scarlet, 1 foot, 40s. per 100; 1 to 1¼ foot, 50s. per 100; bushy, 60s. per 100.
,, HYBRIDS, from all the choicest named varieties, 1 foot, bushy, 30s. per 100; 1 to 1¼ foot, 30s. per 100; 1¼ to 1½ feet, 40s. per 100.
,, PONTICUM, 10 to 12 inches, 50s. per 1000; 12 to 15 inches, 10s. per 100; 15 to 18 inches, 15s. per 100; 18 to 21 inches, 40s. per 100; 2 to 3 feet, 50s. per 100; 3 to 3½ feet, bushy, 80s. per 100.
YEWS, English, clean, well-grown plants, 6 to 9 inches, 40s. per 1000; 9 to 12 inches, 50s. per 1000; 1 to 1½ foot, 30s. per 100.
CUPRESSUS LAWSONIANA, fine Ornamental tree for Lawns or Wood Planting as shelter for Game, also for Garden Fencing, 2 to 3 feet, 30s. per 100; 3 to 4 feet, 50s. per 100.
ASH, Mountain, 2½ to 3½ feet, 25s. per 1000.
BOX, Tree, 1 to 1½ foot, 12s. 6d. per 100; 1¼ to 2 feet, 20s. per 100; 2 to 3 feet, 30s. per 100.
CURRANTS, quantity of extra strong Black Grape, 10s. per 100.
CATALOGUES of all other Nursery Stock free on application.

B. WHITHAM, The Nurseries, Reddish, near Stockport, begs to offer the following fine healthy NURSERY STOCK, many times transplanted, in fine pyramidal form for Parks, Avenues, &c., as the ground must be cleared in consequence of expiration of lease :—

YEWS, English, 9 to 12 inches, 10s. per 100, 90s. per 1000 ; 1 to 1½ foot, 18s. per 100, 170s. per 1000 ; 1½ to 2 feet, 25s. per 100, £12 per 1000 ; 2 to 3 feet, 40s. per 100, £18 per 1000 ; 3 to 4 feet, 70s. per 100.

CHESTNUTS, Horse, 5 to 6 feet, 10s. per 100, £4 10s. per 1000 ; 6 to 8 feet, 20s. per 100, £9 10s. per 1000.

LIMES, 5 to 6 feet, 20s. per 100 ; 6 to 8 feet, 30s. per 100.

BEECH, 4 to 5 feet, 10s. per 100, £4 per 1000 ; 5 to 6 feet, 20s. per 100 ; 6 to 8 feet, 30s. per 100 ; 8 to 10 feet, 50s. per 100.

CURRANTS, Black, Naples, 4-yr. old, strong fruiting trees, 10s. 6d. per 100.

STRAWBERRY, new seedling, Clarendon, extra fine, prolific bearer, £1 5s. per 1000.

DAISIES, red and white, 4s. per 100.

Hardy Plants, well Set with Buds.

CHARLES VUYLSTEKE, NURSERYMAN, Loochristy, near Ghent, Belgium, begs to recommend his splendid Stock of the following well-shaped, healthy plants for Spring Planting, viz. :—

AZALEA MOLLIS, in 12 named varieties, with buds, 24s. per dozen, £9 per 100.

" " seedling, strong plants, with buds, 15s. per dozen, £6 per 100.

AZALEAS, hardy Ghent, 25 named varieties, very strong plants of first quality, covered with buds, 12s. per dozen, £4 10 £5 per 100.

KALMIA LATIFOLIA, strong bushy plants, full of buds, 12s. to 15s. per dozen, £5 per 100.

RHODODENDRONS, hardy, extra fine, best named varieties, with flower-buds, 20s., 30s., and 40s. per dozen, £8, £10, and £15 per 100.

The CATALOGUES and PRICE CURRENT may be had of our Agents,

Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

Cabbage Plants.

H. I. HARDY begs to offer a quantity of strong Autumn-sown Plants, all true :—

ENFIELD MARKET, } 3s. 6d. per 1000.
ROBINSON'S DRUMMHEAD, }
LETTUCE PLANTS, Autumn-sown—CHAMPION and SIBERIAN COS, 7s. 6d. per 1000.

Package and carriage free for 5000 upwards (or plants equivalent) to any Railway Station in England. Cash must accompany all orders from unknown correspondents. Post-office Orders made payable at Bures.

H. I. HARDY, Stour Valley Seed Grounds, Bures, Essex.

LYE'S FAVOURITE. — The handsomest and best Potato ever offered. Indispensable for Exhibition. This variety will be the greatest Prize Winner of the season. We have purchased the entire Stock of Mr. James Lye, Clyffe Hall, Market Lavington, and parties wishing to grow this remarkably handsome and beautiful variety should order at once, as the stock is getting very limited. It can only be obtained direct from us. Price 5s. per lb. Orders of 20s. and upwards carriage free.

DANIELS BROS., The Royal Seedsmen, Norwich.

New Catalogue of Hardy Herbaceous and ORNAMENTAL BEDDING PLANTS, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE is now published, and will be forwarded to applicants. It contains Select Descriptive and Price Lists of Alpine and Herbaceous Plants, Aquatic and Marsh Plants, Asters (herbaceous), Chrysanthemums (early blooming bedding varieties), Delphiniums, Fruit Trees, Helianthemums, Iris germanica, miscellaneous Bedding and Decorative Plants, Pæonia sinensis, Phlox (herbaceous), Potentillas, Pyrethrums (double flowered), Sweet Violets, &c.

Exotic Nursery, Tooting, Surrey, S.W.

Special Offer.

GEORGE FARNSWORTH has to offer large quantities of the following :—

ASH, Mountain, 2½ to 3½ feet, 16s. per 100 ; 4 to 5 feet, 20s. per 100

BERBERIS AQUIFOLIA, bushy, 1 to 2 feet, 40s. per 100 ; 2 to 3 feet, 8s. per 100.

CHESTNUT, Horse, 7 to 9 feet, 10s. per 100.

LIMES, 2-yr. layers, 1-yr. transplanted, 3 to 5 feet, 9s. per 100 ; 5 to 8 feet, 25s. per 100.

LAUREL, Common, 2 to 3½ feet, 30s. per 1000.

POPLARS, Italian, 5 to 7 feet, 8s. per 100.

„ Black Italian, 2½ to 3½ feet, 17s. 6d. per 100 ; 4 to 5 feet, 30s. per 1000 ; 5 to 6 feet, 6s. per 100.

RHODODENDRONS, Hybrid and Pontica, mixed, 3-yr. seedling, fine, 5s. per 100 ; do. and 2-yr. bedded, 18s. per 100 ; extra transplanted, 1 to 1½ foot, 12s. per 100 ; 1½ to 2 feet, 20s. per 100, 180s. per 1000.

SYCAMORE, 2 to 3 feet, 20s. per 1000 ; 3½ to 5 feet, 30s. per 1000.

Also other Nursery Stock as per LIST.

The Nurseries, Matlock.

MESSRS. JNO. STANDISH AND CO.'S CATALOGUE for Autumn, 1876, and Spring, 1877, is now ready, and may be had, post-free, on application.

It contains the following :—

Plants of Recent Introduction.	Coniferæ.
Stove and Greenhouse Plants.	Hardy Climbers, Clematis, &c.
Plants for Winter Forcing.	Rhododendrons, Azaleas,
Azalea indica and Camellias.	Kalmias, &c.
Tree Carnations and Ericas.	Roses, Standards and Dwarfs,
Ferns and Lycopods.	also in pots.
Hardy Trees and Shrubs.	Fruit Trees.
Transplanted Forest Trees.	Grape Vines.
Dutch Bulbs, Flower Roots, &c.	
Royal Nurseries, Ascot, Berks.	

ALTERNANTHERAS, by the 100 or 1000, from Stores, including the following varieties :—amœna, amœna spectabile, amabilis, latifolia, magnifica, paronychioides, spathulata, tricolor, versicolor, 8s. per 100, 70s. per 1000. For Cash with Order, package included. Special arrangements for large quantities. Stock plants of all the above that would produce an abundance of Cuttings. All other plants suitable for CARPET BEDDING, as used on the West Brighton Est. and other Public Gardens, at the above Price.

WILLIAM MILES, West Brighton Nurseries, near Clifton-ville Station, Sussex.

SURPLUS NURSERY STOCK, all transplanted, healthy and well-rooted :—

MAHONIA AQUIFOLIA, 9 to 15 inches.

LAURELS, Portugal, 1 to 1½ foot.

„ 1½ to 2 feet.

CHESTNUTS, Scarlet, 6 to 8 feet.

„ Common, Standards, 8 to 10 feet.

LIMES, fine Standards, 8 to 10 feet.

ALDER, 2 to 3 feet.

HORNBEAM, 3 to 4 feet.

BLACKTHORN or SLOE, fine, 1-yr. Seedling.

Special offers of the above at exceedingly low prices will be made on application to

THOMAS PERKINS, 42, Drapery, Northampton.

GREEN TREE BOX.—The hardiest evergreen, exclusive of the Coniferæ, thrives in almost any soil, especially on chalk. The wood is very valuable, and, on account of its being applied in increasing quantities to new uses, is rapidly rising in price. A few acres of Box trees planted now would in a comparatively few years be worth an almost fabulous amount of money. Very bushy and extra well rooted plants can be supplied.

1½ to 2 feet, 4s. per dozen, 25s. per 100, £10 per 1000.
2 to 2½ feet, 6s. per dozen, 35s. per 100, £15 per 1000.
2½ to 3 feet, 9s. per dozen, 60s. per 100, £25 per 1000.

CATALOGUES of ROSES, FRUIT TREES, and General NURSERY STOCK, free.

EWING AND COMPANY, Eaton, Norwich.

From Paris.—Roses, Pæonies, Camellias.

LÉVÊQUE AND SON, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand ROSE TREES, Standards, Half-standards, Dwarfs, and on own root—New and Old sorts.

LEVÊQUE AND SON respectfully solicit Gentlemen and Nurserymen visiting Paris to inspect their Stock, the largest in Paris.

SPLENDID PYRAMID CAMELLIAS, price 12s. to 50s each ; small, 2l. 6d. to 10s.

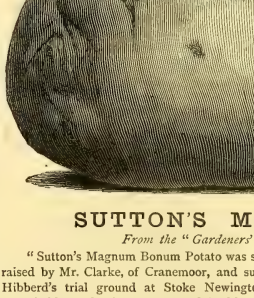
CATALOGUES and LISTS on application.

From Paris.—Large Bulbs of Gladioli, Seedlings AND NAMED SORTS.

LÉVÊQUE AND SON, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand strong, healthy Flowering BULBS of GLADIOLI. The Seedling Bulbs are particularly recommended—their flowers equal to the named sorts (seeds have been taken from the best sorts of the collection). GLADIOLI, Seedlings, 8s. per 100, £3 per 1000, £26 per 10,000 ; mixed white, red, pink. Separate colours, 12s. to 20s. per 100 ; yellow, 24s. per 100. Named sorts per 100, 10 sorts, 20s. ; 25 sorts, 20s. ; 50 or 100 sorts (the best), from 25s. to £6, less or more, according to the novelty. All good flowering bulbs. English Cheques on London, or Post-office Orders on Paris, accepted in payment.

THE BEST MARKET POTATO IN THE WORLD.

Opinion of SHIRLEY HIBBERD, Esq., Editor of the "Gardeners' Magazine."



SUTTON'S MAGNUM BONUM.

From the "Gardeners' Magazine," February 24, 1877.

"Sutton's Magnum Bonum Potato was selected by Mr. Martin Sutton from a set of seedlings raised by Mr. Clarke, of Cranemoor, and subjected to proof of quality and distinctness in Mr. Hibberd's trial ground at Stoke Newington. This variety proving of excellent quality and remarkably productive was secured by Messrs. Sutton for trade purposes. The entire stock was purchased by them, and in anticipation of a large sale they withheld it for a season, in order to raise a sufficient quantity. The heavy crop produced in 1875 enabled them to send it out in 1876, and one season's experience of it by cultivators sufficed to establish its fame. These facts will have some interest for those who are enquiring into the history of this useful variety."

From the "Pictorial World," February 24, 1877.

"In our opinion the best market Potato in the world, all points considered, is Sutton's Magnum Bonum. It is not a perfect beauty, and therefore does not shine as an exhibition Potato But it is a good-looking market root, and cooks well, the flesh being white, mealy, and of excellent flavour. None but a fastidious amateur, such as the undersigned, would wish for a better Potato than Magnum Bonum, and being of good quality and appearance the next question is as to its cropping capabilities. Well, what do you think of lifting stools of 5 lb. to 10 lb. weight of ware Potatos? Such is the capability of this sort that a set weighing 6 ounces will in a good soil, with the aid of a good season, swell up a heap of handsome tubers weighing as much as 12 lb. We speak from knowledge, and will add, that with good cultivation this sort may be expected to produce stools averaging 5 lb. to 7 lb. at the very least, and therefore it must be a profitable Potato. This variety requires extra space to grow in, and the best way to do it is to put the rows 4 feet asunder, and dib in some kind of winter greens or Broccolis, or some other crop that will pay for the extra space required by the vigorous haulm of this productive Potato." *S. H.*

Price, 5s. per Peck.

No customer can be supplied with a larger quantity than One Peck.

SUTTON'S Priced Descriptive LIST of other Choice POTATOS

GRATIS AND POST-FREE ON APPLICATION.

THE QUEEN'S SEEDSMEN, Sutton & Sons READING, BERKS.

Shallot Seed.

DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild; with ordinary treatment bulbs have been grown 10 and even 12 inches in circumference—by far the best method of growing the Shallot. Treatment same as Onions. Price 1s. per packet. May be had of all Seedsmen in sealed packets, and Wholesale of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C., or
E. R. DAVIS, Nursery and Seed Warehouse, Yeovil.

EWING AND COMPANY'S LIST of NEW ROSES for 1877 is now ready, and may be had gratis. Additional Houses have this season been built specially to extend the Propagation and Growth of NEW and TEA ROSES. The plants are making vigorous, strong growth, and will be unusually large and fine.
Their GENERAL LISTS of Roses, Fruit Trees, Ornamental Trees for Avenues, Coniferæ, Evergreens, Clematis, &c. (104 pages), with full descriptions, gratis.
The Royal Norfolk Nurseries, Eaton, near Norwich.

CRANSTON AND COMPANY have to offer:—
PEARS, Pyramid, on Quince, extra strong bearing trees, 3 to 4, 4 to 5, and 5 to 6 feet, all the leading kinds.
PEARS, Dwarf-trained, for Espaliers and Walls, well furnished, all the best late kinds.
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1500 LILIUM KRAMERI,

and good Bulbs of the beautiful LILIUM NEILGHERRENSE. The white flowers of this magnificent Lily are deliciously fragrant, and of great substance; it bears several flowers on a stem, each flower nearly a foot long. Also some excellent Bulbs of the following new varieties of Lilium neilgherrense, viz.:—

LILIUM NEILGHERRENSE ROSEUM—the exterior of the flower-tubes of this variety is pink, the interior white.
LILIUM NEILGHERRENSE FLAVUM—a handsome light yellow-coloured form of this charming Lily.
LILIUM NEILGHERRENSE TUBIFLORUM—a magnificent pure white Lily, with very long flowers; figured in Wight's *Icones Plantarum Indiæ Orientalis.*
LILIUM NEILGHERRENSE TUBIFLORUM LUTEUM—a very handsome yellow-flowered variety of tubiflorum. And some

Splendid flowering Bulbs of other choice LILIES, including BLOOMERIANUM OCELLATUM, PURPUREUM, HUMBOLDTII, PARDALINUM, PARVUM, CALIFORNICUM, and WALLICHIANUM; also a quantity of choice Bulbs and Tubers from California, including CALOCHORTUS, CYCLOBOTHRAS, BRODIÆAS, TRITELEIAS, CALLIPRORAS, ERYTHRONIUMS, BLOOMERIAS, &c.; and some fine blooming Bulbs of the handsome CRINUM BRACHYNEMA, C. AUSTRALE, C. PRATENSE CANALICULATUM, tuberous-rooted BEGONIAS, PANCRATIUMS, AMARYLLIS, North American CYPRIPEDIUMS, with a variety of other Bulbs and Tubers.

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CHARLES LEE & SON

(Successors to Messrs. J. & C. LEE)

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MANN'S HYBRID GREEN-FLESH MELON,

Which they now offer for the first time.

It has already earned a high reputation in London and the provinces for its many excellent qualities, among which may be mentioned a remarkably high and exquisite flavour at all seasons of the year—perfection of shape and size for dessert—a thin rind and melting flesh, with an overflow of perfumed juice. It is also a heavy cropper, and forces well.

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Messrs. Charles Lee & Son are now prepared to offer this very useful and delicious new Melon
In Sealed Packets, at 3s. 6d. per Packet.

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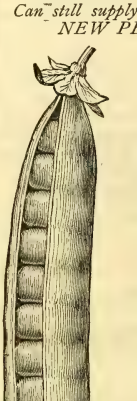
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This distinct and beautiful Begonia was raised at the Royal Vineyard Nursery. The colour of the flowers is quite new in Begonias, being of an orange-crimson. It is a most abundant bloomer, and the flowers are of the largest size.

It received a First-class Certificate from the Floral Committee of the Royal Horticultural Society in 1875.

Good Plants, price 10*s. 6d. each.*

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This lovely Begonia was also raised at the Royal Vineyard Nursery. The flowers are of a bright vermilion-scarlet, and of the largest size; and the plant is a very abundant bloomer.

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CORNUS MASCULA AUREA ELEGANTISSIMA (J. & C. Lee).

This elegant and lovely hardy shrub was raised from seed in our Isleworth Nursery, and has been proved to be perfectly constant in its beautiful variegation.

A broad margin of pure gold surrounding a bright green centre is of itself a sufficient attraction, but when in July the tips of the leaves become suffused with the brightest carmine, it is impossible to give an idea of the beauty and elegance of the plant, which will bear a favourable comparison with the best variegated stove or greenhouse exotics. Suffice it to say, that it has been seen and admired by many amateurs and nurserymen, and has been awarded a First-class Certificate at South Kensington.

The habit of the plant is semi-pendulous, and very graceful.

Price of Maiden Plants, 15*s. each; Larger Specimens,* 21*s. each.*

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JUNIPERUS VIRGINIANA ELEGANS (J. & C. Lee).

This very elegant variety of the Red Cedar was raised from seed in our own grounds in 1869. It is scarcely necessary to remark upon the hardiness of this plant, but it is due to its character to state that the elegant cream-coloured variegation with which the whole plant is suffused is perfectly constant, and has never been injured by frost or burned in the least degree by the hottest sunshine, although fully exposed in the open air.

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The golden variety of this noble Poplar sent out in February last by Mr. Charles Van Geert, of Antwerp, has fully borne out in our Nurseries the description he gave of it, and has retained its golden colour much better than either the Golden Catalpa or the Golden Oak during the late tropical summer.

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"Our golden Poplar, on the contrary, is a first-sized tree, of rapid and vigorous growth.

"Its leaves are quite as large as those of the common Canadian Poplar, and the yellow hue, instead of looking sickly, has a warm and vigorous tint. The better nourished the tree is, and the more it is exposed to the sun, the more vivid is the golden hue."

Having received in February last a large consignment of this magnificent novelty from Mr. Van Geert, we are enabled to offer

Nice Plants at 7*s. 6d. each.*

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This is decidedly the finest golden Conifer of large growth yet introduced. It is of free growth, and requires to be planted in the full sunshine. In such a position the whole tree is suffused with the richest gold.

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THE QUEEN'S SEEDSMEN,
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SATURDAY, MARCH 3, 1877.

YELLOW GRAVEL.

THERE are some kinds of gravel that I recommend themselves to our notice on account of certain inherent qualities which they possess, among which we reckon that of strength to stand the wear of traffic; that of binding, to carry a good face after the roller; and last, but not least, to be of an agreeable colour, so as to harmonise with the green of the lawn and the foliage of the flower-beds. The celebrated Kensington gravel was always considered the very perfection of gravel, and other kinds were valued according to their resemblance to Kensington gravel. Now, as I lived in the parish of Kensington, and trod the walks of Kensington Gardens, I may be allowed to speak of the article with some kind of authority, for the trade in gravel in my time was great, and we can form some idea of the statistics of the trade when a ton of coals and and a ton of gravel from Kensington gravel-pits were the same price in Edinburgh, whither the gravel was conveyed for important purposes.

When the elder Nesfield designed a monogram to be worked in Box embroidery and yellow gravel at Alton Towers, we had recourse to baked fire-clay of a light yellow colour, got from the Staffordshire potteries, called by the workmen "grog," being "saggers" pounded and riddled, these saggers being the outer cases containing the ware when in the oven, and this grog is a regular article in the business of the potter.

I have mentioned these two kinds of road-stuff in order to contrast them with an article very superior to either, the price of which, including cartage 5 or 6 miles, is 10*s.* per ton. I have used several tons of it, and find that it binds firmly, is clean from sand or small particles, and is of a rich yellow colour, with a dash of brown, perhaps from iron ore; it was obtained for me by the good offices of a jobbing gardener, and comes from a place called "Fool's Neuk," near Macclesfield, Cheshire. I have often been astonished to see asphalted paths in front of the principal windows of gentlemen's villas done up in true coffin colours—white tears upon a black ground. In the North we frequently see a black coffin studded with white commas, called there tears, and it is very becoming in that case to give a place for tears for those who have died young, but the taste is very doubtful to put gas-tar and Derbyshire spar side by side on a walk or terrace in front of a gentleman's house, for as long as blue and yellow colours when mixed make green, so long will yellow gravel harmonise with green grass: and this rule is not subject to caprice, for it "altereth not."

Mr. Nesfield was a landscape painter of the highest order, and designed many beautiful gardens, but he confessed that he was neither botanist nor gardener, but, relying on the "brush," he doled out in his parterres, panels, &c., many strange colours, for if I recollect aright coloured glass broken fine made up part of the patterns in the garden of the Horticultural Society at Kensington, and in the garden designed by Nesfield at Alton Towers some twenty or thirty circular beds were paved with white pebbles, which could not be endured, and were planted with exotics warm and bright. Neither white pebbles nor white spar are ever likely to give any good effect in a flower garden, and the same may be said of red brick pounded.

Cracked limestone, when of a bluish tint, makes the carriage-way as good as it can be; and, for the reasons given above, the blue tinge harmonises with the greensward just as the yellow does. I have no interest whatever in praising the gravel from Macclesfield. I was agreeably surprised to see its fine colour and other fine qualities, and therefore resolved to send a paragraph to the *Gardeners' Chronicle*, in order that those who do the asphalting on the coffin pattern may have no excuse if they do not finish with yellow; for be it observed that this fine gravel is not in egg-sized pebbles and made up with foreign matter, as clay and sand, such as we see everywhere, but confined to the size of one-inch pieces and down to that of Kidney Beans, so that a ton would coat a large surface of asphalted walk, and it is equally available for any ordinary gravel walk, especially where clay predominates.

For asphalte the gravel should be thoroughly dry, for one of the many odd properties of gas-tar is that it is not soluble in water and does not take kindly to wet substances. For facing ordinary gravel walks the gravel should be put on wet, and treated as if it were puddle, for you may water ordinary garden earth to any extent so long as you do not tread upon it, but if you poach it you make puddle of it, and although a headland in a cornfield may be poached and yet recover itself and bring a good crop, it is not so in gardening operations, and soil that has been puddled will take a long time to recover a healthy open texture. Let no one despise these practical hints, for the loss of one spoke in the wheel ruins the "turn." I recollect setting a gentleman right as to how he was to roof a building with paper and gas-tar and lime, and when I met him after, he said he had tried it and it was a failure, but when he detailed the process he said "I slaked the lime." That was sufficient; he had added water, which he should not have done, and the lime should have been fresh and pounded to powder. He thanked me, and we parted; but the next time I saw him he pointed out a building nicely roofed in this way, and laughed heartily at his blunder in not knowing water when it was apparently dry in powder lime; but all doubt on that score is removed when you see a man put a hogshead of water to a cartload of lime, and though the mixture is dry as dust it is useless to say that there is no water there when you have just added twice the bulk of the lime in water.

The prevalence of weeds on walks is frequently owing to the prevalence of dirt in the gravel, which acts as a seedbed for grass, and this gravel, being clean and very likely highly charged with iron, from its appearance, is not likely to feed weeds of any kind. If used with judgment and discrimination it will brighten many a dull walk and terrace at little cost, and its brightness will remain after the flowers have faded, for it will exhibit itself all the year round "a thing of beauty," which, if not "a joy for ever," will, with its face of iron and its heart of stone, have a long lease. *Alex. Forsyth.*

MELONS FROM CENTRAL ASIA.

IN the course of last year we received at Kew from Dr. King, Superintendent of the Royal Botanic Garden, Calcutta, a collection of Melon seeds brought from Yarkand and Kashgar, in Western Turkestan. Anything from a country so little known botanically could not fail to have some interest, and Dr. King especially directed our attention to these Melons, as likely to be of some horticultural value. He remarked, in an accompanying letter, "Mr. Scully brought me the seed, and he tells me some of the Melons are very fine. They will probably be worth cultivation in Europe, and though not quite in your way may be of some use. Should you have to refer to them, kindly quote the numbers on the packets." We divided the seeds, of fifteen kinds, between the Royal Horticultural Society and M. Naudin, the well-known monographer of Cucurbitaceæ. I believe that some at least of the kinds fruited at Chiswick, but I have not obtained any reply in answer to my inquiries, nor do I find any notice of the Melons amongst the reports in the recently published number of the Society's *Journal*. M. Naudin has, however, most kindly sent me the results of his trials at Collioure. This note may probably meet the eye of Dr. King, and I therefore mention that, perhaps because I forgot to ask that it might be done, M. Naudin has unfortunately not preserved Dr. King's numbers. He, however, has been careful to give the native name, which may answer the purpose equally well. The result is somewhat disappointing. This is M. Naudin's report:—"I send you seeds of the eight best of the Melons from Central Asia. All belong to the same race; they are small, round in form, more or less depressed, whilst a few are ovoid. Speaking generally, their quality is moderate, but perhaps they may improve on cultivation, and even serve for the production of new and more valuable varieties by crossing with older kinds. Your skilful horticulturists will be able to exercise their industry on these novelties."

No. 1. Bajin Koghun.—Oblong, slightly netted, without ribs; flesh white, sugary. This is one of the best of the collection; Yarkand.

No. 2. Jori-Kand.—Round, depressed—tolerably good; Kashgar and Yarkand.

No. 3. Jori-Kand.—Ovoid, netted, without ribs; flesh entirely white, with the odour and taste of white Sugar-Melons. Another form with the same name as the preceding, but quite different.

No. 4. Joyokin.—Ovoid, without ribs, slightly netted, small, odour none; flesh pinkish, delicate, melting, slightly sugary—seems a late variety; Yarkand.

No. 5. Lobiari.—Small, round, depressed, ribs imperceptible; flesh sugary, tolerably good—might probably be improved by cultivation; Yarkand.

No. 6. Au-Nabat.—Small, round, ribless; flesh reddish—tolerably good; Yarkand.

No. 7. Na-Shakar.—Small, round, depressed, sugary and good; Yarkand.

No. 8. Bhilki.—Small, round; flesh of no great thickness, and but slightly sugary—quality moderate; Kashgar and Yarkand.

Following M. Naudin's suggestion we have distributed the seeds to Mr. Gilbert of Burghley House, Mr. Speed of Chatsworth, and Mr. Woodbridge of Sion House, at whose hands their horticultural capabilities will no doubt have a fair trial.

It is worth mentioning as a curious contrast to the weather that we have had this winter in England, that M. Naudin informs me in his letter that since October 20, that is during 115 days, there has only been a single shower at Collioure (Eastern Pyrenees) of about half-an-inch—a rainfall, as he remarks, altogether insignificant. *W. T. Thiselton Dyer.*

CENTROPOGON LUCYANUS.

I DO not remember to have seen any notice of this Centropogon, and as I have found it one of the most showy and useful among the few really good winter blooming plants, I am induced to bring it before the notice of your readers, many of whom, although greatly put to for flowers at that dull season, may not have met with it as yet. × Centropogon Lucyanus is one of those good things that you may cut and come again, for after the terminal head is severed, or without if left on the plant, it starts again from the axil of almost every leaf down the whole of the stems, and forms laterals, all of which bloom in succession, thus keeping up a continuous supply for a long period of time. And another equally good quality pertaining to it is that it lasts well in water when cut, which is a a great consideration, taking into account how ephemeral many flowers are that are forced or come in naturally during the short days, when there is very little sun or light to aid in giving substance to the petals, whereby alone they are able to endure the dry air of a room, unless they happen to be borne on soft porous stems that take up water freely, which this Centropogon does, and thus maintains its freshness. Its habit, too, renders it an admirable subject for decorating epergnes or hall vases, as it is naturally somewhat pendulous, so that it may be arranged to droop naturally over the sides, in which position it shows off its bright Æschynanthus-like flowers to the greatest advantage.

Small plants obtained now will come in admirably for working up a stock, as they propagate most readily and make excellent plants by the autumn if treated liberally during the summer by growing them on without check. The soft young side shoots should be chosen for cuttings, and taken off with a heel, and if then inserted in sandy soil in a brisk heat they will soon root and be ready for potting off, which should be done either in peat and loam in about equal parts, or leaf-soil and the latter in the same proportion, with just sufficient sand to keep it open and porous, as it is a plant that delights in vegetable matter and a somewhat loose medium for its roots to ramble in, with the addition of a plentiful supply of water when growing. From March to the end of May they should be pushed on in stove-heat, standing them in a nice light position near the glass, where they can be kept well syringed and otherwise attended to according to their requirements. In June, and for the remainder of the summer months, the best situation for all plants of this class is a deep pit, where they can be plunged in a bed of gently fermenting leaves or tan, as here they are under control, and can be kept more uniform, both in regard to heat and moisture, than when treated with the ordinary occupants of the stove. By the end of July they should receive their final shift into 6-inch or 8-inch pots, according to their size and strength, and all the after-attention they will require during the summer, in addition to the requisite watering and a very thin shade for an hour or two in the middle of bright sunny days, is a good damping overhead both morning and afternoon, closing them up immediately after the latter application, by which means their growth will be most rapid.

Towards the autumn full exposure to sun, with an abundant supply of air, will be necessary to consolidate and ripen the young wood so as to induce a free-flowering habit, and by the end of September they should be again introduced to mild stove heat, where by Christmas, or before, they will be in full beauty, and last in that condition for at least two months if kept in a moderately cool house-temperature, from which they may be removed to use in vases for dinner-table decorations—a purpose for which their bright colour and exceedingly floriferous habit renders them particularly suitable. Not only are they most valuable as pot-plants, but they are alike suitable for baskets on account of their drooping habit, and when seen suspended from the roof they have a very bright, cheerful appearance. Whichever way they are grown, the shoots should not be stopped, but allowed to grow naturally to their full length, as the plants start freely from the crown, thus affording plenty of flowering wood; and as all of this makes laterals freely, as before observed, the longer it is the better effect it has, especially if depending over the sides of ornamental baskets. The treatment requisite after blooming is to afford them slight rest by keeping them moderately dry at the root, and in an intermediate-house temperature till the end of April, when the old shoots should be shortened back, and the plants shook out and repotted in smaller pots in the same kind of soil as that advised for growing them in.

Excepting greenfly, they are fortunately not subject to insects, which is a great point in their favour. *J. S.* [This is a beautiful hybrid, too little known. It was raised at Marseilles in 1856, between Siphocampylus betulifolius as the pollen parent, and Centropogon fastuosus as the female parent. EDS.]

FERTILISATION OF PLANTS.*

(*Continued from p.* 204.)

MR. DARWIN has been good enough to notice one of my criticisms and to explain it as due to a misprint of "self-fertilised" for "crossed," so that the sentence on p. 275 now runs as follows:—"The most probable explanation [of the ratio 100 : 131] is that the seeds from which the crossed plants of the third generation were raised were not well ripened [*i.e.*, this will account for the self-fertilised beating the crossed], for I observed an analogous case with Iberis. Self-fertilised seedlings of this latter plant, which were known to have been produced from seeds not well matured, grew from the first much more quickly than the crossed plants, which were raised from better matured seeds; so that having thus once got a great start they were enabled ever afterwards to retain

* *Cross and Self Fertilisation of Plants.* By C. Darwin. (Murray.)

their advantage . . . and when in full flower were 5 to 6 inches higher than the crossed" (p. 103). So that if I were hypercritical in detecting an error due to the misprint, my inference is not altered, viz., that Mr. Darwin attributes the inferiority of the crossed Petunias to unripened seeds, and the superiority of the self-fertilised Iberis to the same cause! So that the case of Iberis, though in harmony with the original misprint, is no longer analogous, but exactly the reverse. I echo Mr. Darwin's hope that any reader who is interested in the subject will not take my interpretation of his statements without consulting his book.

After having devoted seven chapters to the details of his experiments, and to tables and summaries of the results, Mr. Darwin, in the eighth and ninth, deals with the comparative advantages and the reverse of crossing and of self-fertilisation respectively. Then follow two chapters on "the means of fertilisation and the habits of insects in relation to the fertilisation of flowers," and the last (twelfth) is devoted to general results.

Mr. Darwin commences the eighth chapter by observing that, "as the seedlings were planted on opposite sides of the same pot, they had to compete with one another, and the greater height, weight, and fertility of the [inter] crossed plants may be attributed to their possessing greater innate constitutional vigour." He, however, notices that whilst very young—*i. e.*, before competition began—they were, with some exceptions, of equal height; but afterwards the intercrossed exceeded the self-fertilised. He next observes (p. 286), "that the [inter] crossed plants have an inherent superiority independently of competition, was *sometimes* well shown when both lots were planted separately in good soil in the open ground." But the word "sometimes" I have italicised is rather misleading, for on p. 288 the force of this sentence is reversed, where he says of plants thus grown—"The result was in several cases (but not so invariably as might have been expected), that the [inter] crossed plants did not exceed in height the self-fertilised in nearly so great a degree as when grown in pairs in the pots."

The sentence in brackets is an important admission in favour of self-fertilised plants when they can grow freely; and agrees with the tables, which clearly show such to be the case (*vide, e.g.*, A., Vandellia, Eschscholtzia, Reseda, Petunia, 5th gen.; Beta, B., Reseda lutea; C., Nicotiana). The rule, therefore, appears to be that when self-fertilised plants are compared with intercrossed in open ground, the vigour of the former often evinces itself either in an equal degree or in a higher ratio than the intercrossed. Mr. Darwin's later experiences as detailed in this book thus corroborate his statement given in 1868: "If [the seeds are] sown in ample and good soil, there is often but little difference in their growth."[*] Nevertheless as plants for the most part are certainly compelled to compete with one another in Nature, the superiority of intercrossed and crossed plants is specially shown in that capacity. Mr. Darwin next observes that "the innate power of the [inter] crossed plants to resist unfavourable conditions far better than did the self-fertilised plants, was shown on two occasions in a curious manner . . . when both sets were grown under extremely unfavourable conditions."

He here refers to seedlings of the plants of Petunia and Iberis, referred to in the last paper, of which when sown in sand and burnt earth, *i.e.*, without any organic matter, the intercrossed surpassed the self-fertilised in height until they all died: a fact obviously of no great trustworthiness for deducing a general result, especially as the seeds were in an abnormal condition. Mr. Darwin refers to some analogous case with the first generation of Nicotiana. Unfortunately he does not appear to have recorded it, for his other observations on that plant are all in favour of the self-fertilised, not only in the first year during which he says "the self-fertilised were greatly superior to the [inter] crossed," but also mostly in the two following generations!

The stronger constitution of the intercrossed was also seen in withstanding sudden changes of temperature—*i.e.*, from the house to the open ground—as well as in resisting cold and intemperate weather. He illustrates this fact with Ipomœa, Mimulus, Viola, and Sarothamnus and Nicotiana; Eschscholtzia formed an exception. There appears, on the other hand, however, to be some correlation between a reduction of temperature and self-fertilisation. Several observations have led me to draw the conclusion that flowers, perhaps usually intercrossed, become self-fertilised not only, as has been by others inferred, in the absence of insects; which is apparently another and distinct cause, as, *e.g.*, in Pisum sativum and Lathyrus odoratus in England; but when the autumn draws on, and habitually in winter for such of our wild flowers as blossom in that season: * several cases are mentioned incidentally by Mr. Darwin, which corroborate my observations. Thus he speaks of Reseda odorata, that while some plants were quite sterile in one year, three other plants in the next "became loaded with capsules, especially during the early part of the summer; and this fact indicates that temperature produces some effect." What that effect is I think I have discovered, and will explain hereafter.

Another fact in favour of intercrossing is that the intercrossed are less liable to premature death, independently of any apparent external cause. The self-fertilised plants often germinated sooner, but the seedlings oftener died than their competitors. They also arrived at maturity quicker, and began to wither sooner than the intercrossed; just as these latter did before the offspring of a cross with a fresh stock.

Lastly, the intercrossed often threw up a larger number of flower-stems, the result probably of greater vigour, and showed a tendency to flower before the self-fertilised. Mr. Darwin gives lists of species which flowered first. Thus forty-four intercrossed flowered first, either in a majority of the pots or in all. In nine cases a self-fertilised plant flowered first; in five the two lots flowered together. In the case of Cyclamen the intercrossed actually flowered some weeks before the self-fertilised.

"On the whole," concludes Mr. Darwin, "there can be no doubt that the [inter] crossed plants exhibit a tendency to flower before the self-fertilised, almost, though not quite so strongly marked as to grow to a greater height, to weigh more, and to be more fertile." *George Henslow.*

(To be continued.)

* *Animals and Plants under Domestication*, vol ii., p. 128

* Mr. A. Bennett has also observed the same fact. *Nature* 1869, p. 11.

ORCHIDS IN FLOWER AT KEW.

THE fine display of good ornamental kinds is at present a chief attraction to professional and other visitors. Dendrobiums are in strong force: a fine specimen of the primrose-coloured form of D. Hillii has seventeen spikes, and smaller plants of the pure white have spikes 15 inches long, producing a considerable show of this species alone. It should perhaps be considered as a well marked variety of the old D. speciosum, with which, as it also is in bloom, comparison can be made, and doubtless from a horticultural point of view D. Hillii will be considered the best. As a fine variety and well flowered, D. crassinode may be mentioned as one of the most attractive; the curious stems along their whole length are laden with flowers of the brightest colour. Of D. Wardianum are several plants in pots, of different shades, and there is one of splendid size and colour, suspended in a basket. D. primulinum is very select, having delicately coloured flowers of crystalline appearance, and quite distinct. D. heterocarpum presents an uncommon colour among Orchids, and its strong perfume at once arrests attention. A hybrid from this with D. japonicum was recently exhibited by Messrs. Veitch, as D. endocharis. The flowers are intermediate in size, having chiefly the colour of D. japonicum, but with a decided touch in the lip from D. heterocarpum. Of D. nobile are several forms, including the varieties pendulum and elegans; the latter is beautifully coloured. D. moniliforme and D. gratiosissimum have flowers most delicately tinted, and the rare D. linguæforme unites its starry white blooms with curious tongue-like leaves. D. hirsutum has been in flower for the last two months; it has white sepals and petals, with an orange-coloured fringed lip. The Australian D. gracilicaule and others of botanical interest are also in bloom. The graceful Dendrochilum glumaceum is represented by a fine plant having fifteen spikes. There are good spikes of Vanda suavis and V. tricolor, with a solitary flower of the rare V. Cathcartii. The Saccolabiums are S. giganteum, and S. Harrisonianum with white flowers of pleasing perfume. S. distichum of the Himalayas is indeed curious; it has a trailing habit, and the leaves, stems, and flowers are all spotted. The species of Phalænopsis are P. rosea, P. grandiflora and P. Schilleriana. The curious genus Mormodes is illustrated by M. buccinator. Angræcum sesquipedale and two others, A. eburneum and the variety virens, are considerably ornamental; the curious A. distichum is pretty, from its habit of growth and number of small flowers. The Cypripediums are not only always in flower, but ever present some of their choicer kinds. There are at present the rare C. pardinum, the stock of which was distributed from Kew some years ago, and two of Mr. Dominy's hybrids, × C. Harrisianum and × C. Dominianum. There are also C. venustum, C. biflorum, C. barbatum, C. insigne, and its variety Maulei.

Among terrestrial Orchids the most handsome is Stenorrhynchus speciosus, which is not often seen out of Kew. It has a tuft of dark green ovate-lanceolate spreading leaves, from which rises a scape bearing crimson flowers, springing from bracts of the same colour. The spotted variety, frequently known as Neottia maculata, is also in bloom. Other terrestrials are Bletia acutipetala, Bletia hyacinthina, whose flowers come with the light green leaves, and the not very ornamental Stenoglossum atropurpureum and Pescottia gigantea. Many Odontoglossums are showing for bloom, and of those already in flower are O. pulchellum and its variety majus, O. cordatum, O. triumphans, O. Rossii and the variety superbum, O. gloriosum, O. nebulosum, O. luteo-purpureum, and O. odoratum. Restrepia elegans is a pretty little flower of a curious genus; it is like a small edition of R. antennifera, but is much more richly coloured. A few Orchids are suggestive of Stapelia, but scarcely any more so than Trias picta, which from its marking, flat form, and somewhat regular outline, allows of no difficulty in forming a comparison. Oncidium cheirophorum is of neat growth, and produces a multitude of bright yellow flowers on slender stems. It is figured in the *Botanical Magazine* for the last month, where it is described as a charming, very sweetly-scented little species. Others are O. flexuosum, O. aureum, O. reflexum, O. cucullatum, O. triquetrum, O. anomalum, and the remarkable O. abortivum. Lycaste linguella has seventeen flowers growing from a single bulb, the sepals and petals are greenish, and the lip white; there are also light and dark forms of L. Skinneri. The smaller Maxillarias are here grown on Tree Fern stems, a method found both convenient and graceful. The kinds in flower are M. punctata, M. variabilis, var. lutea, and the variety media. Keferstenia graminea is an interesting species, with narrow grassy leaves and small yellowish flowers, with transverse marking. The Masdevallias are M. gibberosa, M. ignea, and M. ochthodes, which, in a famous London collection, has been said to flower continuously for eleven years. Among Epidendrums are several of interest; E. xanthinum has bright yellow flowers, E. ciliare purple ones, and less ornamental species are E. fragrans, which is worth growing on account of its sweet perfume and free flowering habit, and E. cochleatum, with a dark purple lip. E. sophronites is extremely curious, the leaves are more densely covered with white meal than any other Orchid we remember, and if protected from moisture are almost like an Echeveria farinosa. The flowers are large in proportion to the size of the plant, green in colour and marked with purple. A large plant of Lælia superbiens has three fine spikes, while a smaller specimen has one still stronger. Cattleya Trianæ is showy in light and dark forms; one plant has eight large flowers of rich colour. C. quadricolor is also in bloom. Calanthe viridi-fusca is quite unlike the more familiar species; the sepals and petals are yellowish-brown, twisted and twined upwards, and the lip is much reduced in size. Eria obesa is a pretty deciduous species, with white starry flowers in dense clusters. Showy well-known plants are Ada aurantiaca and Sophronites grandiflora. Rodriguezia crispa has pale yellow flowers of pleasing perfume. Cymbidium sinense, Brassavola cordata, and several others of various genera, are also in bloom.

New Garden Plants.

LÆLIA ALBIDA STOBARTIANA, *hort. var.*

This is a very pretty novelty, sometimes with very large flowers. Both sepals and petals have beautiful purplish large tips, and the borders of the anterior lacinia of the lip is deep purplish. It looks in colour just like Chysis Limminghei. What a curious fact that amidst the Lælias, usually so constant in colours, or with white varieties of purple-flowered species, there is one single species so very rich in quite unusual colours. I think, with great pleasure, of the beautiful introductions made once by Mr. Low—the magnificent purplish var. Tuckeri, the brown var. brunnea, and the ochre-coloured var. ochracea—gems, which appear not to have been sailing to England

since 1868. I believe it is well known that a fabulous immense mass of the old Lælia albida exists in the wonderful collection of Mr. Day. Now our latest novelty was sent to me by Mr. L. Hartley, gr. to William C. Stobart, Esq., Etherley Lodge, Darlington, to whom it is dedicated. I obtained later several flowers from Messrs. Veitch, and there is just at hand a flower from Messrs. Haage & Schmidt, Erfurt. *H. G. Rchb. f.*

MASDEVALLIA VESPERTILIO, *Rchb. f.**

This rather modest and yet pretty species of the Chimæra group I had hitherto only known in a dried state, from specimens collected by Messrs. Wallis, Kœel, Chesterton, and Patin. It is much in the way of M. Nycterinia. The sepals are pallid yellow, blotched with brownish purple; the petals small, yellow with brown, and the lip extended in a very broad transverse epichile without any keel, when the small hypochile shows a nearly horse-shoe-like, more angular, blunt keel. Column white, beaked, in a fringed appendage over the anther. Sepals inside with numerous yellow bristles, and with yellow tails longer than their bodies. The six crenate Hooker-green wings of ovary are very peculiar. A very small bud is observed at the base of the pedicel, wrapped round by the bract. The habitat is New Grenada. The first fresh flower I ever saw is just to hand from Sir Trevor Lawrence, who purchased it as M. Houtteana, a nice white-flowered species, with purplish tails. *H. G. Rchb. f.*

CYPRIPEDIUM HAYNALDIANUM, *Rchb. f.*†

Labor improbus omnia vincit! For years and years an object of my greatest interest was to ask after the health of the Philippines Cypripedium Lowei when I went to Messrs. Veitch's nursery. They were very few plants, and since they suffered very much by most accidentally travelling twice the usual time, they were for a time near to breathe out their last. All medications a good grower thinks of were applied—changes of air, change of light, change of soil, various quantities of beverage. Such tender care was finally well paid for, and if we consider the sufferings of the endless travelling we may believe the species as strong as C. Lowei, which is regarded—I don't know whether British orchidists are of same opinion—as much stronger than C. Stonei; finally, it has just flowered. I knew well before that it was a highly curious beauty, having seen a photograph and obtained dry flowers of it. It is very near Cypripedium Lowei, Lindl., so near that a casual observer might confuse the two. There are, however, judges who prefer the new one, not alone because it is new, but also for its far richer blotches spread over all the flowers excepting the lip. I write this having at hand five flowers of the new one (two fresh ones), and thirty-five flowers of the old one, and several sketches and analyses prepared from living specimens. The chief differences in the shape are the following:—The staminode is much narrower and most distinctly bilobed, and the lobes are contiguous and bent down, quite covering a small tooth between them. In C. Lowei there is a much broader staminode, with three flat, equally expanded, not touching lobes, the middle one acute, ligulform, the lateral ones blunt, all straight. The side lobes of the lip are much more prominent in the new one, and in their sinus with the channelled nail there is but a small entire keel. In C. Lowei those lobes are blunt and shorter, and the keel in the sinus has several teeth. The stigma is round and bent in C. Lowei, blunt, pentagonous, straight in the new one. The inferior sepal is broader, and much shorter in the new one. Now, speaking of colour, the upper sepal of C. Lowei is yellowish green, and the inferior sepal too. There are purplish lines and very small punctiform dots on the inner base of the superior one. In the new one the upper sepal is white at the tip, pallid green, with large, beautiful brown spots in the inferior part, when the borders are broadly violet. The inferior sepal is pallid green, with some brown spots. The colours of the petals and of the lips are nearly alike. The new species produced a two-flowered raceme, with a rudiment of a third



FIG. 45.—HOMALOMENA PELTATA. (SPATHE AND SPADIX NAT. SIZE; FLORAL DETAILS MAGN.)

* *Masdevallia Vespertilio*, Rchb. f. in *Gardeners' Chronicle*, 1874, p. 817, June 22, nomen.—(Succilabiatæ) uniflora (flore seu floribus succedaneis hysterochronicis): sepalis oblongotriangulis intus hispidis, in caudas longiores attenuatis; petalis subinvisibilibus, papulis adnatis in valva unica ascendentibus, valva altera prope obliterata interna; labello pandurato: hypochilio angulato utrinque obtusangulo; carina antrorsum angulata in disco; epichilio transverso latissimo oblongo utrinque involuto, lævi, columna apice lacero rostrata. Petalum cum caudis flavida, purpureomaculata. Tepala ejusdem colons. Labellum albidum. Columna alba. Nova Granata.

† *Cypripedium Haynaldianum*, Rchb. f.—Aff. C. Lowei, Lindl. Pedunculo stricto deorsum ac patentim villoso; usque quadrifl.-ro (in planta spontanea); bracteis oblongis acutis villosis; ovaria pedicellata villosa non æquantibus; sepalo dorsali rhombeo obtusangulo acuto; sepalo inferiori oblongo acuto bicarinato labello breviori; petalis lineariligulatis antrorsum dilatatis oblongis acutis; labello saccato utrinque juxta saccum in angulum angustum producto; lamella in sinu inter angulum et unguem integra (non planidentata); staminodio spatuliformi apice obtuse bilobo; lobis contiguis, deorsum flexis, denticulum medium abscondentibus, processu dentiformi in basi.—Rchb. fil, *Xenia Orchidacea*, ii., p. 222.—Insul. Philipp., Wallis.

flower. It may even produce four flowers like the beautiful C. Lowei. It is one of the very best Philippine discoveries of Mr. Wallis. I had the great satisfaction of dedicating, a few years ago, this splendid plant to his Excellency Dr. Ludwig Haynald, Archbishop of Kalocsa, a zealous botanist, and a most liberal promoter of science and art in modern Hungary. His Excellency's name will for ever be connected with the development of that wonderful land. *H. G. Reichb. f.*

HOMALOMENA PELTATA, *Mast.**

This is a new Aroid, alike of striking appearance and much interest. It was, we believe, introduced into Mr. Bull's establishment at Chelsea by Mr. Shuttleworth, from Colombia. Our illustrations (figs. 45, 46) will suffice to convey a general idea of its habit and botanical structure, and from the latter it may be seen that the plant is a true member of the genus Homalomena, the other species of which, with one exception (H. Wendlandi), are East Indian. In the *Gartenflora* for October, 1876, and again in the number for February, 1877, our learned friend Dr. Regel reduces the genus Curmeria of Linden and André to Homalomena, but if so then Curmeria must form a distinct section, for it possesses none of the neutral flowers of Homalomena, nor are the fertile ovaries mixed with abortive ones, as they are in the last-named genus.

Be this as it may, the present plant is undoubtedly not a Curmeria, but a true Homalomena. It is of tufted habit, with numerous leaves springing from a contracted stem, and interspersed among them in due season are formed numerous flower-stalks. The leaf-stalks in Mr. Bull's plant are about 30 inches in length, sheathing at the base, nearly cylindrical above, where they are about the thickness of the finger, covered with soft rusty brown simple conical multicellular hairs, interspersed amid which, near the base, are numerous conical prickles. The blade of the leaf is convolute in vernation, about 2 feet in length by 16 or 17 inches in width, rather coriaceous in texture, dark green and glabrous above, covered with soft ferruginous pubescence beneath, especially along the nerves. It is attached in a peltate manner to the stalk about half-way between the base and the centre, and in form is cordate ovate acuminate. The base is deeply cordately two-lobed, the two lobes rounded, widely spreading, and separated by a triangular sinus. The nervation is prominent on the lower, depressed on the upper surface; from each side of the midrib proceed alternately, at intervals of about an inch, eight secondary nerves, which run obliquely to the margin, where they inarch with their fellows. Seven of these ribs are unbranched, but each of the basal nerves divides into two divisions, and of the latter one is again bifurcated. The tertiary nerves are very much smaller, parallel to the secondary ones, and enclose a fine reticulation. The peduncle is about a span long, sub-compressed, oval in outline, channelled on the anterior side, setose, and marked with linear pinkish blotches. The spathe is persistent, 6—7 inches long, tightly rolled round, except near the apex; constricted in the middle, acuminate at the apex, prominently but obtusely keeled at the back, glabrous externally, pinkish in colour, and white-spotted, internally greenish, shining; margins thin, pinkish, finely denticulate It opens rather more than half-way down, and subsequently closes again. The spadix is nearly as long as the spathe, of the thickness of the forefinger, entirely covered with flowers, those of the upper two-thirds or rather less being cream-coloured male flowers, the lower third or rather less being occupied by female flowers of a greenish colour, mixed in with abortive female flowers, the intervening space being occupied by neutral flowers. The stamens are 4—5-cornered, oblong, with very thick white filaments, and two-celled anthers bursting inwardly below the flat truncate apex of the filament. Pollen coherent, the individual grains oval. The neutral or abortive flowers are club-shaped, with a slender stalk and a thick whitish club-shaped head. The fertile ovaries are frequently intermixed with abortive club-shaped flowers, and are free, or more or less connected by mucous threads. Each ovary is obtusely four-cornered, with four cells, and a sessile 4-lobed viscid stigma. The placentation is axile, the ovules being very numerous, minute, horizontal, anatropal, and stalked. When open the flowers have a peculiar somewhat aromatic perfume, comparable to aniseed or turmeric.

The appearance of the plant is, as we have said, very striking, and the flowers are produced in great abundance. Our examination was made in February. *M. T. M.*



FIG. 46.—HOMALOMENA PELTATA (MUCH REDUCED).

* *Homalomena peltata*, Mast., n. sp.—Cæspitosa: petiolo basi vaginato superne tereti canaliculato pubescente, basin versus muricato; foliis peltatis cordato ovatis acuminatis superne glabris subtus ferrugineo-pubescentibus, spatha valde carinata.

Florists' Flowers.

TULIPS.—It is fifteen years since I sowed my first Tulip seed, and as it takes a seedling from five to seven or eight years to give its maiden bloom, the interest attaching to one's own seedlings, and especially the batch due to bloom in the current season, becomes intense—a very agony of pleasure.

Just now, when the plants are getting fairly above-ground, the chief excitement over the seedling-bed lies in watching the growth of the largest yet unbloomed, to catch a glimse of the significant second leaf. For this is the one sure sign that the bulb intends to flower this time ; whereas the very boldest first or "guard"-leaf, if it does not contain a second within its fold, will only result in that well-known blank, single leaf which florists—borrowing a term curiously remote from all horticultural pursuits—term a "widow." Still, the idea of loneliness which the word conveys gives it an expressiveness for these solitary leaves.

I do not know any seedling raiser of Tulips who would cross out of the classes, *i.e.*, a yellow ground (bizarre) with a white ground (a byblœmen or a rose). White blood would tend to pale the rich yellows of bizarre ground colours, and yellow blood would stain the lustrous purity of the white ground classes. It would also greatly increase a mongrel and now untolerated class called tricolors. One pod of seed is capable of giving flowers in all the three classes, just as a pod of Picotee seed will throw seedlings in all "the edges," light or heavy. This being so in the Tulip, there are now and then some seedlings which, instead of being purely of this or that class, drop in between two, and in their rectified state exhibit a combination, more or less confused, of colours belonging to white and yellow ground classes.

In the seedling or "breeder" state, these "tricolors" are detected by their base or ground colour belonging to one class, and their body colour to another ; thus, a yellow base belongs to the bizarre, and a lilac body colour to the byblœmen breeders.

But sometimes a lilac seedling comes with a yellow base. Here we have elements of two classes ; and this confused flower will break into a tricolor. Its bizarre base will throw yellow into it, and the byblœmen breeder colour will break into a byblœmen marking, and also strike a byblœmen white ground colour into the yellow, either in the form of streak or shading.

Though I have had tricolor seedlings with bizarre base and byblœmen body, I have never seen the combination of byblœmen base with bizarre body, or known of it occurring.

But the "rose" class body colours, which are red or pink, are combined with yellow bizarre bases, and produce tricolors of scarlet, white, and yellow. Sometimes, however, the yellow base and red body are the breeder form of the dashing "red bizarres," a grand sub-class. However, a practised eye can at once distinguish between the red ground colour of the "rose" seedling, and that slightly browner or yellowish red which denotes the undeveloped red bizarre.

A very interesting point in Tulip culture is the origination of "strains." Name is something in a florist Tulip, but strain is everything. For strains we are indebted to the "breaking" of the breeders into their permanent form.

Every breeder that breaks, originates a new strain of the flower that bears its name. If the breeder break badly, it and all its offsets after it are a "bad strain" of the name it bears. If it break in a fine feathered character, that is the foundation of a fine "feathered strain," which it and its offsets will (with a sport now and then to a flame and back again) maintain.

Many breeders break into no distinct character at all—a muddle between the flamed and feathered state, —the "feather" full of "skips" or misses, and the flame a smudge or daub. Bad breaks are thrown away, however high the name of the flower in its fine strains. The breeders help a flower into circulation very much, as in this state both bulbs and increase are larger than when "rectified" in good "breaks."

Tulips are a mystery in many ways. Why does a flat-sided offset always bloom when a round one of equal, or even greater weight, will be a widow for the year? My only guess is that the flat offset has been fed at its mother's side, being connected with the old bulb, while a round offset is entirely on its own root. The flat offset may, perhaps, thereby draw sustenance enough to allow of its forming a blooming heart, which these bulbs do at their leisure when at rest.

Seed should be sown when the old bulbs are planted in November, and it will appear with them in spring. Bulbs may but never should be planted as late as January, and seed may be sown as late, and still will appear the same season. But if not sown till, say, April, it will remain idle until the succeeding autumn, when it is natural for its parent to root again.

I have twice had seed do this, and that is all the experience I can speak from. I thought twice was often enough, and have ever since taken the hint to be more punctual. It is no light matter to incur yet more outlay of time than the necessary five to eight years. *F. D. Horner, Kirkby Malzeard, Ripon.*

Forestry.

PLANTING as a branch of rural industry may be divided into two classes, namely, the planting of large and small trees ; but between the tree 30 feet high and the seedling a few inches in length there is a wide and important difference. The one is attended with much difficulty, labour, skill, and expense, while the other is exempt from almost any—the one is very difficult, the other is very simple.

The operation of planting is in general well known, but there are a few particulars of such vital importance as to require more than a cursory remark. The first thing to which I wish to direct attention is the thickness of the turf or herbage of the ground into which the trees are to be planted. Nothing is more injurious to plants than excluding the air and other elements from the lower part of the stem, or, more properly speaking, the neck of the plant. That part of the plant where the stem and root are connected is very sensitive, and requires the greatest possible care and attention ; and it is more on account of the requisite treatment plants receive in the nursery, compared with what they receive in the forest, that their early growth is so much superior.

Thousands of plants at five years, planted in the forest, have scarcely begun to grow, and a large portion are quite dead. It is often asked what becomes of all the plants grown in the public nurseries year after year, and what of the 3000 or 4000 trees that were planted per acre. The answer doubtless is, they all died in infancy, and for want of air rather than want of food. It is quite a common thing to find patches of the best soil, and favourable situations, either entirely destitute of trees or occupied with distorted ones, the result of too rank herbage amongst them in their early stage of growth.

In planting rich old pasture-ground, or hollow places in moorlands, it is well either to pare off the turf, and cart it away, for enriching bare hillocks in arable fields, or to turn it over by means of the spade or plough, and allow it to remain. By either means of preparation the plants are allowed to be planted without burying the stems too deep, and the herbage is thereby prevented from injuring them till they are sufficiently advanced to keep it down, for nothing more effectually keeps down weeds than a good close crop.

Next in importance to avoiding deep planting, and giving air, light, and sunshine, to every part of the plant—stem, branch, spray, and leaf—is that of adapting the roots to the soil in which they are destined to grow. With very small plants, and even medium-size ones, up to 30 inches, with ordinary precautions and attention, nothing serious need result from the operation of planting or transplanting, since up to that stage the roots have scarcely acquired a fixed state or condition. With older trees, however, the case is widely different, so much so, indeed, that when a tree is removed from one quality and condition of soil to another of an opposite and different one, the roots all decay and rot, frequently back to the very stem and base from whence they originally started. To remove a tree from a poor to a rich soil does not prevent the roots from decaying, neither is it prevented by removal from a clay to a loam. The most disastrous failures I have met with have been when the trees grew in strong clay, wet or dry, and were transplanted into light loam or sandy moss ; nor does it appear that different species are differently affected : I have seen Oak, Beech, Elm, and Ash, all influenced in a manner similar to Lime, Poplar, Willows, and Alder. Experience has taught me, however, that unless a large tree can be removed with a good ball of earth it should not be attempted to transplant from clay soils, even although into loam of a superior quality. It is a common and in some respects desirable thing, to form hedgerows of large trees, by transplanting them either into, or a few feet distant from, the hedge. In doing this some of the trees usually die the first season, and every successive year others gradually sicken, lose their tops and side branches, until nothing but bare poles remain as relics of what were once handsome and flourishing trees. The situation is blamed for it, the air is charged with the evil, the planter is censured, and the hedge itself into which the trees are planted is also accused. It is seldom or never suspected that the evil is all at the root, and it was only after taking up trees in the various conditions described that I found out where the evil lay. Removal with a good-sized ball prevents decay of the roots, as by it they are protected and nourished till they elongate their fibres, and reach the new soil for nourishment, when they are safe. Next to these, another important consideration is abundance of branches upon the stem, and the lower down the better, as by the lower branches the roots are supplied with food, as much so as from the soil in which they grow. The soil in being returned upon the roots, in planting large trees, should be in a dry state, and never in the form of puddle or mortar ; and when the soil is naturally destitute of sand, that should be added, as it greatly incites to growth. *C. Y. Michie, Cullen House, Cullen, Feb.* 24.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Continuity of supply is one of the first desiderata in a garden, equally as much in flowers as in eatable commodities. This can only be attained by timely forethought. There are many species of hard-wooded plants that can be retarded for several weeks, or even months, so as to give a succession without injuring them in the least, provided the retarding process is effected by placing them in a house little acted upon by the sun, such as a lean-to with a northern aspect, and not by matting up or the use of material that darkens an ordinary plant-house. The latter course is always injurious in its effects, as, despite the shading process, the temperature of a house fully exposed to the sun is always so much raised during bright weather as to excite growth, which through the shading is unavoidably weaker than is consistent with the future well-being of the plants. If some of the late-flowering varieties of Epacris, such as miniata, miniata splendens, Eclipse, or grandiflora rubra, are now put in a retarding-house before the flowers have made much progress, they will move little further for the next six weeks, and then come in for greenhouse or conservatory decoration up to the beginning of June ; whereas if placed where they will be kept back until later on, though their flowers are further advanced, it will frequently cause them to fall off. Polygalas, Aphelexis, Boronias, Dillwynias, Chorozemas, Eriostemous, Hoveas, and Rhynchospermum jasminoides—these also will submit without injury to their time of blooming being retarded along with the Epacrises ; set them well up to the glass, and in giving air be guided by the state of the weather, for even if a minimum of growth is progressing they should never be subjected to the lights being opened wide when there is a cold piercing wind. A corresponding amount of care must also be taken in the application of water, allowing the soil to get a little drier before giving it, than if the plants were in a house fully exposed to the warming effects of the sun's rays. There is no season of the year when the presence of plants like the above is more acceptable in the conservatory than late in the spring, when they are useful for mixing with such things as Pelargoniums and Fuchsias, of which at this time there is usually a superabundance. Any of the latest flowering varieties of Camellias that have not been put where their blooming will be retarded, may now be subjected to treatment similar to that of the above-named plants ; they will open their flowers here equally as well, and furnish a supply much later than if kept warmer. This also has the advantage of furthering a later flowering dis position in these late kinds by delaying the time of their making growth. The worst feature in Camellia culture is often a glut of flowers at one time, with few early in the winter or late in spring, whereas by careful management, with a moderate number of healthy plants, there is no difficulty in keeping up a supply from November till the end of April. A portion of the latest blooming Cinerarias, herbaceous Calceolarias, as also some of the shrubby kinds, should be kept back in like manner. Heaths.—More caution is necessary in the admission of air during the next six weeks than at any other time in the year. An

impression often prevails that these air-loving plants, when well established in the soil and in rude health, will at all times bear the air blowing freely through them. Yet this is by no means the case, especially with the hardest-wooded kinds. I have seen large and valuable plants at this season, in a few days so injured in their foliage by the incautious admission of too much side air, as to have a considerable portion of it prematurely destroyed; the leaves so affected first turn of a reddish bronzy colour, which by the inexperienced might be taken as an evidence of health; but when they have so suffered they soon after lose their vitality, become brown, of no further assistance to the plant, and very unsightly till removed. *T. Baines.*

ORCHIDS.—Continue with the potting and top-dressing of the plants as previously advised, and that as soon as possible the whole of the collection will have been gone over, and by this means the state of the roots and breaks will be more clearly perceived and better understood than they would otherwise be. As soon also as signs of returning activity and growth are observed, the fresh soil will be at hand for the young roots to push into; and this in the case of the majority of these plants is the best and safest time for any shifting, or for the placing of new soil about them. No doubt many things are potted late on in the season, sometimes probably through purchase, or some cause may have prevented their being seen to in the early months of the year. These may, and doubtless many do, succeed fairly well, but then extra care must be given both in regard to shading and water, otherwise the bulbs and leaves shrivel and turn yellow before the roots can again find away, and keep up their regular and requisite amount of life-giving and sustaining sap. The sun will now be getting rather powerful during the middle of the day, and though it may seem early to speak about shading, it will be advisable to look to the blinds and see that they are sound and fit to be put up with a likelihood of lasting the season through, and then on a dry day to fix them along the top ridge, so that they may be ready when the sun breaks through clear and bright. By running them down for an hour or two during the hottest part of the day, the atmosphere is kept much more moist, and in better growing condition, than by failing to shade and keeping the houses cool by the admission of a greater quantity of external air. The evergreen section of the Dendrobiums, such as densiflorum, Schroederi, Farmeri, thyrsiflorum, chrysotoxum, &c., will now be commencing to show their flower-buds at the joints, chiefly at the top of the bulbs. Such of these as were stood out in a cooler division should now be brought back into the Dendrobium-house, where, under the influence of a little more heat, the spikes will push out and develope their usual crops of flowers. As only a small quantity of water will be required, the amount being increased when the growths appear. If this is not kept in mind the buds are apt to push out, and to damp off at the tip of the spikes, and thus a great quantity of the blooms are lost. The Vanda suavis Lowii is a variety that is still very scarce, but its rich and showy racemes of deep yellow flowers, and the number that are produced on a spike, though the spike may have started away from a comparatively small bulb, are sufficient reasons why this should be highly appreciated. This should be grown in a basket, as in all probability the plants will be small, and thus being nearer the light, it will come on better than if it were in a pot and stood under some of the larger plants. D. Falconeri, too, that has been in the cool must now be brought back to the same house, and, provided it has roots that are strong and well-ripened, will quickly push out a number of its charming flowers—generally singly, but sometimes in pairs—at the joints of last year's or the preceding year's growth. A slight sprinkling overhead will help them, but it must not be done very much at first, the young points will start growing very vigorously before the buds appear. The plants of Chysis must be looked to, for it will be found that C. Limminghii will be starting into growth, and as the flower-spikes of all the species come up soon after the young breaks have started away, they must be watched that no insect or damp causes the buds to turn yellow and fall off. C. bractescens is a most beautiful species, with large white and yellow flowers of fine form and substance, of a delicious perfume, and will keep in perfection for a period of from three to four weeks. C. aurea and lævis are scarcer than the preceding, but if they can be procured in a healthy and vigorous condition they will be found to be most desirable and attractive when their richly coloured flowers expand. Small plants of any of the genus will succeed well in baskets in moss and peat, and liberally supplied with water when growing. These all during the growing season must have the temperature of the Cattleya-house, and if for a short time in the height of the growing season they were to be placed in the Dendrobium-house, the little extra heat would be of great assistance in swelling up the bulbs. The little yellow thrips is apt to get into the young growths; it must, therefore, be watched, and if any are observed, they must immediately be got rid of by smoking the house with tobacco-paper or cloth. *W. Swan, Fallowfield.*

FRUIT HOUSES.

PINES.—In the preceding Calendar for this department an intimation as to the needful preparations required for potting and other concurrent requirements was given. At any time now, when the heat at about a foot beneath the surface of the bed is steady at from 85° to 90°, proceed in potting those plants which demand every attention; for this operation select only those with an abundance of roots, and when they are done plunge them into the bed forthwith. If on the other hand the temperature as indicated be not attained, defer these operations; and in the event of an insufficient amount of heat being apparent, at once add some fresh materials and turn the bed over again. Plants which are shifted without having the roots much disturbed, should be watered with tepid water after they are potted, and be placed where the ventilation of the house is carried on in the usual way, but in the case of disrooted plants or rootless suckers water should be entirely withheld for about a fortnight, by which time new roots will begin to appear at the side of the pot; water may then be freely given whenever it is required. During the period named the object will be to induce the formation of new roots to re-establish the plants; for this end the atmospheric conditions about the plants should be such as will sustain Nature in the absence of these essentials, and should therefore be temperate and invigorating without aridity: artificially from 55° to 65° constantly will suffice. Keep the house closed whilst its temperature remains below 80°, with an abundance of moisture about it; exclude powerful sunshine altogether, and lightly syringe the plants overhead with a fine syringe twice or thrice every week. To decide on the size of the pot to be used due regard should be given to the variety and the time the plants are required to produce ripe fruit. If plants of the Queen and kindred kinds which are now in from 5 to 7 inch pots, are, when full of roots, transferred to 10-inch ones, the plants under proper care will surely start into fruit the subsequent February, and be ripe early in the succeeding June; if those of larger size be employed it generally makes them later. The rapid way of cultivating these now-a-days dispenses with the annual disbudding of stock which formerly was necessary at about this period of the year, and confines it to a more limited number of plants—which is assuredly an advantage, inasmuch as the maintenance of an over-abundant supply of suckers sometimes tends to impair the quality of those which are absolutely needful, and thereby upset calculations which are deduced from practical observation. See that no lack of heat exists at the roots of plants which are started into fruit. Avoid wetting the fruits whilst in flower, and maintain an equable temperature in the house, as before advised. To prolong the supply of ripe Pine-apples, if necessary, remove to cooler quarters those which are just ripe. *G. T. Miles, Wycombe Abbey.*

CUCUMBERS.—A period extending over many weeks of mild sunless weather is now likely to be succeeded by cold cutting storms from the North, which will necessitate extra firing, and as the days are now increasing in length the evaporating pans must be kept well filled, and the plants may be more frequently syringed to keep down red-spider, which generally accompanies increased fire-heat, and spreads, if left unchecked, with alarming rapidity, particularly if the plants have been weakened by heavy cropping. In cases where this pest does not succumb to the liberal use of clean water, a weak solution of Gishurst or soft soap may be applied towards night, when the foliage is likely to hold the moisture, or the foliage may be dusted with flowers of sulphur, providing the appearance of this unfailing remedy is not objectionable. To keep up a good supply of Cucumbers through February and March, every means must be employed for keeping the plants in free growth, for if once allowed to become unhealthy the season over which Cucumbers are most in demand will have passed away before they can be restored to a bearing state. Of equal importance with the management of the foliage is the bottom-heat, which should never fall below 80°, if 5° more can be secured so much the better. Attend to top-dressing with thin layers of turfy loam and old mortar; as the roots appear water with tepid liquid manure at a temperature of 85°, and syringe the surfaces of the beds and floors with the same at nightfall. Sow seeds and strike cuttings for succession in pits and frames; keep in readiness a supply of warm turfy compost for earthing up plants which were turned out last month on small hills as soon as the roots begin to work on the surface. Attend to linings before the heat is too far spent, keep up a good supply of material in a fermenting state for this purpose, and turn the back and front linings alternately.

THE ORCHARD-HOUSE.—If not already done, fruit trees growing in pots should now be placed in their summer stations, and if the pots can be sunk one-third of their depth in the border, where they can root through into good turfy loam, the fruit will be finer, of better quality, and less liable to injury from an irregular supply of water through the hot months of July and August. The pots should be plunged quite level, with ample provision for water to pass freely away after it leaves the drainage, otherwise the soil will soon become sour and unhealthy. In lofty houses, where it is desirable to keep the trees as near the glass as possible, the evil effects of drought may be counteracted by placing each pot on a neatly cut sod of new turf, grass side downwards. See that all the trees are perfectly free from aphis at the time the first blossoms begin to unfold by syringing occasionally with quassia or weak tobacco-water. I always make a point of smoking with tobacco-paper just before the earliest tree unfolds its bloom, and I find the trees are then safe until after the fruit is set.

Owing to the mildness of the season many kinds will now be in flower and fit for fertilisation, which is best performed with a camel-hair pencil about noon on fine days, when the atmosphere is warm and dry. Ventilate freely on all favourable occasions, close the house sufficiently early to insure a rise of a few degrees on sunny afternoons. Keep quite close on dull or wet days, as damp is more injurious than a low dry temperature in the unheated orchard-house when the trees are in bloom. Watering will now require careful attention. Let the water used be a few degrees warmer than the house, and apply it early on fine mornings, in order that the atmosphere may become dry before night. Trees which are planted out will also require a thorough soaking, to bring every particle of the soil into a growing state, when the surface may be top-dressed with rotten manure and stiff loam. *W. Coleman.*

KITCHEN GARDEN.

With the advance of the season there will be less risk in committing seeds to the earth, and taking stock of what has already been sown and the appearance of such as are through the surface. The sowings of Peas may be at once supplemented by a larger sowing of various sorts. A very good selection for this sowing would be Champion of England, Veitch's Perfection, and Ne Plus Ultra. Sow also Longpod and Windsor Beans for succession; the improved varieties are best for the purpose. Sow on the open borders—a sheltered south aspect is much to be preferred—Radishes, Lettuces, Drumhead Savoy, Brussels Sprouts, salading, and a moderate bed of Prickly Spinach, also Celery in heat at once, if not already sown, and prick out that which was sown for early purposes in frames or a gentle heat, when ready to must be pricked out the early sowings of Walcheren and other Cauliflowers, as well as the different sorts of autumn Broccoli as before-mentioned. Another sowing of all the sorts for succession should be made at once on the open border, and the choice sorts will be better for the protection of handlights. Cauliflowers under handlights will now require attention; the ground should be pricked up all round them. During the operation the earth should be laid round each group of plants in a basin-like form, so that if the necessity for watering should arise, the water may be retained at once with the roots; for the same reason it will prevent the waste of the liquid manure, good doses of which should be given at intervals as soon as the plants are growing freely. The Cauliflower plants which have been kept in frames may now be planted out in the open quarters; a little temporary shelter is obtained by planting them in deep drills, which may be filled up with advantage as they advance in growth. The alleys between Asparagus beds are excellent sites for these early Cauliflower plants, and as the crowns of the Asparagus will soon be on the move, the forking will be dispensed over and pricked up the better; when the alleys are well thrown out over the surface, they should be heavily manured with rich dung, and the Cauliflowers planted at once. Where new beds of Asparagus, Seakale, and Globe Artichokes are required, and the beds have been trenched up as recommended last month, let no opportunity be lost of bringing the ground into good condition for planting, by tormenting and knocking about in dry weather, and plant at any time now. Trench up the beds intended for the main crop of Onions; this should be well manured, and frequently turned over and knocked about on dry days to get it into a fine seasonable condition for sowing soon. Also the beds for the main crops of Carrots will require a considerable amount of cultivation and tormenting to get the soil well pulverised to a good depth. The ground for this crop should always be heavily manured the previous year, so that it may be thoroughly decayed and intimately incorporated with the soil in the frequent turnings about in the cultivation necessary to bring it into condition for sowing; the reason for this is that if there are lumps of dung in the bed, and not incorporated with the soil, as soon as the Carrots start into growth they will throw out forked roots in search of it, instead of the straight tapering roots so desirable in this crop. *John Cox, Redleaf.*

THE
Gardeners' Chronicle.

SATURDAY, MARCH 3, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Mar. 5 { Sale of Lilium Krameri and L. neilgherrense at Stevens' Rooms.
Royal Horticultural Society: Meeting of the Fruit and Floral Committees at 11 P.M.

WEDNESDAY, Mar. 7 { and Scientific Committee at 1 P.M.
Sale of Roses, Fruit Trees, Shrubs, &c., at Stevens' Rooms.

FOR our horticultural readers the great value of Mr. DARWIN'S last work on CROSS AND SELF FERTILISATION OF PLANTS, of which Mr. HENSLOW is providing us with an abstract suitable for our purposes, consists in the practical applications which follow from the author's very numerous, protracted, and laborious experiments. Seed growers and hybridisers will find, as we have already pointed out, and as we shall have occasion to repeat again and again, that much that was mere haphazard and of a tentative nature in their practice has been by Mr. DARWIN reduced to rule and method. Uncertainty and loss of time are thus to a considerable extent replaced by certainty and confidence as to result, with a corresponding gain as to time. But although this is apparent to those who read the book carefully, nay, in many cases, is proved to demonstration to those who can read figures and form anything like a clear estimate of the value of evidence, yet it is certain, judging from all past experience, that these practical results will be a long time filtering into the minds of those who will eventually most profit by them. The theories and speculations, on the other hand, that may be and are based on these facts, will be keenly discussed from the first. Good cannot fail to result from what may seem at first sight profitless discussion. New facts will be brought to light and old facts will be viewed in a new light, and so the results cannot fail to be of advantage. One of the first points which has elicited discussion is as to the ORIGIN OF THE SEXES IN PLANTS, and the question whether the ancestors of existing plants were "dicœcious," that is, whether they had their male flowers on one plant and their female flowers on another, or whether the primordial flowers were hermaphrodite. Mr. Darwin (p. 410) adopts the former view, and in so doing is considered to be in so far opposed to those great doctrines of evolution and progressive development of which he is the high priest. We should as soon think of controverting as of defending so mighty a master, but if there is one quality for which he is more remarkable than another it is his perfect candour and freedom from dogmatism. We cannot doubt, therefore, that, however averse to barren controversy, free discussion on a proper scientific basis will be welcomed by him. It is under such an impression that we venture to make some remarks on this question of the origin of the sexes in plants. Without going into minute botanical details, though at the risk of sacrifice of precision, we may premise that there are some plants in which no difference of sex has been yet observed, others in which two sexes have been discovered in the same flower, as in the so-called hermaphrodite flowers, such as Lilies; others again, in which the two sexes are borne, not in the same flower, but on the same plant, as in the Hazel (monœcious); while still another class of plants, like the Aucuba, for instance, bear the sexes on different plants (dicœcious). All this is, of course, well known to most of our readers, but it is necessary to start with clear notions in discussing so intricate a problem. So far, then, we have (1) plants which bear sexless flowers (we use the latter word here in its widest sense, including the reproductive organs of the so-called flowerless plants), (2) others which are as to structure and conformation two-sexed in the same flower, or (3) two-sexed on the same plant but not in the same flower, and (4) others again two-sexed on different plants. But now arises a complication: a flower may be two-sexed as to structure and as to function also. These are the so-called "self-fertilised" plants, of which a prominent instance is the common Bee Orchis. But in the majority of cases, albeit both sexes exist in the same flower, yet the pollen from one flower must be carried by insects, or by the wind, or by some other agency, to another flower; and thus cross-fertilisation is effected. The necessity for this arises from the circumstance that structural peculiarities of various kinds, or the fact that one sex is mature while the other is immature, prevent self-fertilisation and necessitate cross-fertilisation. So then a flower may be structurally two-sexed, but physiologically one-sexed, or "dichogamous."

The assumption on the principles of evolution, adaptation, and survival of the fittest, would therefore be that hermaphrodite or two-sexed flowers were the progenitors of one-sexed flowers. In course of time the advantages accruing from the union of two parents of the same stock, but of remote degree, as contrasted with the results of the union of two very nearly related parents, would become greater and greater. The tendency of growth would therefore show itself in the production of one-sexed flowers, and ultimately of one-sexed plants, rather than of two-sexed flowers. In other words, the hermaphrodite condition would precede the dichogamous, that the monœcious, and that again the dicœcious, the latter being considered the latest stage of evolution. We may put this in the form of a table, thus:—

Sexless plants?	
Flowers two-sexed—	
Structurally and functionally	1. Hermaphrodite.
Structurally only	2. Dichogamous.
Flowers one-sexed—	
On the same plant	3. Monœcious.
On different plants	4. Dicœcious.*

The order of progression would be from 1 to 4, according to the general principles of subdivision of labour and least expenditure of power to attain a given result.

Mr. DARWIN, on the other hand, to the surprise of some of his followers, supposes plants to have been originally dicœcious, and that the hermaphrodite condition was subsequent.

If we look at the matter physiologically, it is difficult to resist the hypothesis of a primitive oneness of sex. No difference of sex exists in the first instance in the structure of any plant or animal; it is only after development has proceeded some way that any difference is observable. There is, then, in the life of every individual a primordial oneness of sex. What happens in the individual may be true, as PLATO surmised, of the race. It may even be the foundation of the myth of the development of EVE from ADAM'S rib. Reverting to plants, among the lowest forms we have an apparent oneness, or inseparate condition of sexes. The first stage of duality is merely a subdivision of one into two; and, indeed, looked at in its simplest form, the process of reproduction is nothing more than the repeated subdivision of an original unit. It is the cause of this subdivision which remains at present a mystery. From the very simple stage of plant life just referred to we advance gradually to those in which the sexes become well marked, and placed in proximity, or apart, or even on different plants. Now, if we could trace a gradual unbroken line upwards from the lowest mass of mucus or protoplasm to the most highly specialised flowering plant, the pedigree would, of course, be as complete as it would be interesting. It happens, however, unfortunately for the pedigree-makers, that the self-same conditions of one or two-sexed flowers (if we may so call them), and one or two-sexed plants, exist, broadly speaking, among fungi, among Algæ, among Charas, among Ferns, &c., so that we cannot look upon these conditions as marks of progressive development from one group to another, though they may be so within the limits of each individual group.

If we regard the matter from a structural point of view only, then it appears as if we must begin by the simplest forms, and ascend gradually to the more highly-developed ones. We find geological evidence of the very simple-flowered, wind-fertilised Cycads and Coniferes long before there is any evidence of ordinary flowering-plants, much less of such highly specialised forms as Compositæ, Umbellifers, or Orchids. These latter, so far as we know, were late developments on the earth's surface. Again, in point of individual development, we have, first, the simplest sexless structure, then a development of stamens, then a development of pistils, so that each individual flower begins as sexless, but it becomes in time male, and afterwards hermaphrodite (structurally); or if growth and development of either stamen or pistil be arrested it may remain one-sexed. How, then, can the hermaphrodite precede the dicœcious condition? From this point of view, then, Mr. DARWIN seems to us to be unquestionably right. But it stands to reason, in a case of this kind, we must look at the matter on all sides, and so, in direct proportion to the diversity we see, is, of course, our ignorance of the matter. If a particular opinion is borne out by the facts of morphology or structure, and is not consonant with what we know of physiology, or *vice versâ*, it is quite certain some part of our theories is untenable.

We cannot doubt that the existing structure of plants and animals is the direct consequence of a long inheritance by descent, modified more or less by necessary adaptation to surrounding circumstances. It is our business to study these relations and to profit by them. To know the exact line and course of descent of existing plants and animals may partake of that knowledge which is too wonderful for us. In any case it is quite certain that the depth of our ignorance is such that all speculations as to the pedigree, or, as it is the fashion now to call it, the "phylogeny" of existing organisms, are little more than guesses, more or less wild.

* We add the signs commonly used to express these conditions—thus, ☿ for hermaphrodite, ♂ ♀ for monœcious, and ♂–♀ for dicœcious; to these we venture to add ♂ ♀ for dichogamous flowers.

—— The accompanying figure of EURYCLES AUSTRALASICA (fig. 47), an almost forgotten amaryllidaceous plant, was made from one of a number of well-flowered specimens exhibited at South Kensington on the 14th ult. by Messrs. VEITCH & SONS, of Chelsea. It is one of those pancratiform plants in which the flower-scape is developed just in advance of the leaves, the latter being very broad, with a strongly marked cordate base, and petiolate. The flowers are white, produced in a many-flowered umbel, and have a cylindrical tube and regular limb of equal segments, with an inner cup or crown. The genus comes very near to Calostemma, and has the curious property of the seeds germinating in the capsule. HERBERT makes two species—E. amboinensis, a stove bulb, requiring winter rest, and subject to great variation in the development of the crown; and E. australasica, our present subject, which, he says, has much narrower leaves, and is sufficiently hardy to bear greenhouse treatment. ALLAN CUNNINGHAM, writing in the *Botanical Magazine* (t. 3399), where E. Cunninghamii is figured, makes three species:—E. sylvestris or amboinensis, E. australis or australasica, and E. Cunninghamii, distinguishing the last from E. australis, which has a simple stigma, by its smaller and fewer-flowered umbel, and its three-lobed stigma. KUNTH adopts the same three species. Finally, BENTHAM, in the *Flora Australiensis*, adopts two species:—E. amboinensis, in which he includes australasica, distinguishing it by its very broad cordate leaves, and its



Fig. 47.—Eurycles australasica. (Leaf ⅛ nat. size; pollen × 160.)

corona not being one-fourth as long as the perianth-lobes; and E. Cunninghami, distinguished by its ovate not cordate leaves, and its corona not being two-thirds as long as the lobes. Of the published figures our plant certainly most nearly resembles the former, but it has the split corona attributed to the form named E. australasica.

—— The Thirty-fourth Anniversary Dinner of the GARDENERS' ROYAL BENEVOLENT INSTITUTION will take place on Wednesday, July 4, when Sir TREVOR LAWRENCE, Bart., will preside.

—— We have received the schedule of prizes arranged by the committee of the NATIONAL ROSE SOCIETY for their first exhibition at St. James' Hall on July 4, and it fully justifies the term that has been applied to it of "liberal," the prizes amounting to upwards of £250, including three silver cups; of these, Messrs. CRANSTON & CO., of Hereford, offer one for amateurs—a challenge cup of fifty guineas, with the liberal condition that it must be won in three years, unlike some challenge cups which go on for an indefinite time; thus if it is won by A. in 1877, and by B. in 1878, only A. and B. can compete for it in 1879. There have been already promised in donations towards the prize-list upwards of £120, and since then 100 members have joined, and the committee have great hopes that before long they will be able to announce that the prize-list has been covered by donations, and the number of members trebled, for the terms are very generous. The subscription is fixed at ten shillings, and for that each member is to receive two five-shilling tickets of admission, entitling the holders to see the Roses for an hour before the show is open to the general public. As the only Rose show in or about the metropolis this year is likely to be that at the Crystal Palace (although that is not yet announced), there can be little doubt that the new venture will be successful in point of flowers, and we hope may be equally so in the attendance of visitors. The Horticultural Club has permitted the Society to use its rooms, and all intending members can address the Secretary of the National Rose Show, 3, Adelphi Terrace, W.C. Seeing that Wednesday, July 4, is the day fixed for the evening *fête* at the Botanic Gardens, Regent's Park, for the holding of the committee meetings at South Kensington, and for the anniversary dinner of the Gardeners' Royal Benevolent Institution, we would ask why this date has been selected for the holding of the Rose show, while the previous and subsequent Wednesdays are disengaged. Rose growers cannot tell to such a nicety when their flowers will be at their best as to make this clashing at all necessary, and it certainly will produce much embarrassment.

—— The CLIMBING PLANTS in the Conservatory No. 4 AT KEW are just now very interesting. Most beautiful of all is perhaps Clematis indivisa, whose white star-like blossoms must be seen to be appreciated. In addition there are Lonicera sempervirens, Hardenbergia Comptoniana, Kennedya rubicunda, Akebia quinata, Hibbertia dentata, a species whose rich bronzy leaves contrast well with the large yellow flowers. In the Succulent-house the very magnificent Agave Ellemeetiana, though past its best, is still worth a journey to Kew to see.

—— Following the example of the Belgians, the Italians propose combining the chief horticultural societies of the kingdom into a HORTICULTURAL FEDERATION, and to hold periodical exhibitions at Milan, Venice, Florence, Turin, Naples, Rome and Genoa—the first to take place at Milan in 1878, the second in Florence in 1880.

—— The WATER PLAGUE AT KEW has not much abated yet. Only a few days since there were, we were told, two feet of water in the stokeholes of the Temperate-house. In the case of the Palm stove an attempt is being made by means of steam fire-engines to empty the lake in front, in hopes that in this way the water may be reduced in the stokeholes.

—— We desire to call attention to the interesting lecture of Sir JOHN LUBBOCK, on the RELATIONS BETWEEN PLANTS AND INSECTS, before the Society of Arts, and a portion of which we reprint from the *Journal* of the Society. Apart from its special interest, it has a value as affording one more and most striking evidence of the value of the Darwinian hypothesis in supporting what theologians call the argument of design, and which was made use of so effectively in the case of PALEY and the watch. The evidence, says Sir JOHN LUBBOCK in closing his lecture, "is sufficient to justify the conclusion that there is not a hair nor a line, not a spot nor a colour, for which there is not a reason, or which has not a purpose and a function in the economy of Nature."

—— A recent number of the *Moniteur* gives full particulars as to the measures proposed to mitigate the disasters caused by the PHYLLOXERA in FRANCE, such as remission of taxation, &c. The vineyards devastated are estimated at 200,000 hectares (a hectare = 2·4 acres), 50,000 hectares being now completely devoted to some other crop. The Government are desirous of aiding all those who are exerting themselves against this pest, and without definitely pronouncing in favour of any particular course—the facts not being, in their opinion, sufficient to justify such a proceeding on their part—they yet call special attention to the replanting of the French vineyards with American Vines. M. FABRE writes that the resistance of the American Vine has now been conclusively proved. Four years ago he grafted on some "Aramons" some American scions, and these he double-grafted with Bordeaux varieties. The roots of the Bordeaux varieties, and of the "Aramons," have been completely destroyed by the Phylloxera, while the American roots are quite healthy. No alteration in the quality of the wine was noticed. It is not clear, however, from M. FABRE'S letter what the effect of the double-grafting was. We imagine, however, from the context, that it is essential that the *roots* should be of American origin. As the insect is of American origin, it is recommended that these American Vines be introduced solely into those regions already affected by the Phylloxera, and not planted in districts up to this time free from the pest. The stamping-out process is also strongly insisted on.

—— We are requested to state that, in addition to Messrs. VEITCH, WILLS, and WILLIAMS, Mr. WILLIAM BULL is also an agent in this country for the International Horticultural Exhibition to be held at Oporto on June 29 and 30 and July 1 and 2 next.

—— It is stated that, on account of the unfavourable weather, the clay soils on the carse lands of Scotland will probably this year be entirely out of cultivation, and this, added to the scarcity of the crop, owing to the dry summer of last year, may account for the high prices now being obtained for what is known as CARSE TARES, a variety the seed of which is almost as large again as our ordinary English Tares. The price per quarter is now some 20 or 25 per cent. higher than it was at this time last year.

—— We are again reminded of the recent MILDNESS OF THE SEASON by the receipt from Mr. BESTER of a spike of flowers of a single blue Hyacinth, cut from a plant growing in the open air at Tottenham. We are also informed that at the residence of the Dowager Lady WILLIAMS, at Tregullow, near Truro, a fine dish of Asparagus was cut on the 15th ult. from an old bed in the open air, without any forcing. The garden lies on very high ground, and exposed to north and east winds.

—— The experimental grounds of Messrs. BARR & SUGDEN, at Tooting, just now afford an admirable illustration of the wealth of SPRING FLOWERING PLANTS available for decorative purposes at this season of the year. We were too late to see Galanthus Elwesii, the blooms being just over, but G. Imperati and G. plicatus were both in flower. Scilla bifolia and its white variety are very beautiful, and S. sibirica is rapidly throwing up its charming blue blossoms. Iris reticulata shines out in the gleaming sunlight with a richness of purple beauty peculiarly its own. A few days' bright sunshine would bring into flower a new Dog's-tooth Violet, which may probably prove to be E. grandiflorum; and E. giganteum is showing for bloom. Hepaticas in variety are getting into full flower; their soft vernal tints are known to all who appreciate these fine old plants. Anemone blanda and the gorgeous A. fulgens are out, and A. appenina is following close on their wake. All the spring-flowering Cyclamens are also in bloom; any one seeking for information in respect to these plants has a good opportunity for obtaining it at Tooting. The foregoing are but a selection representative of many subjects of something more than common interest, and from Christmas onwards there are always subjects to charm and instruct. The Daffodils are coming on apace, and by the middle of this month they will be well worth an inspection. In many gardens the common double Daffodil is already in full bloom, and clumps that have remained undisturbed for years are aglow with an auriferous sheen that seems to set at defiance the wintry influences that have played about them during the past week.

—— Mr. T. W. BOND, late gardener to GILEAD A. SMITH, Esq., The Beeches, Weybridge, has been appointed to the management of the gardens, Oak Lodge, Addison Road, Kensington, W., the residence of JAMES MCHENRY, Esq., in the room of Mr. A. WILKIE, who is leaving.

—— The next meeting of the Fruit and Floral Committees of the ROYAL HORTICULTURAL SOCIETY will be held on the 7th inst., in the conservatory, on which occasion a flower show will take place. A meeting will also be held in the afternoon for the election of Fellows, &c. It is expected that the show will be of superior character.

—— Those who propagate DAHLIAS largely are already at work increasing their stock. In nurseries, where large numbers of plants are required, a low lean-to house is used, with the hot-water pipes passing underneath the bed on which the plants are placed. The "ground roots," as they are termed, which have been carefully preserved all the winter, are well examined, in case any decay has set in. They are then half buried in a bed of appropriate soil, but all the dormant buds which surround the base of the main stem cut away in the autumn are left exposed. As soon as planted the bed is watered and a brisk heat maintained. Small fibrous roots are thrown out from the thick fleshy roots, and from the eyes spring forth growths, which are carefully cut through just beneath an eye when 4 inches or so in length, put into store-pots, and placed in bottom-heat, generally in a frame heated with a good dressing of manure. Here they soon root, and the cuttings are best potted singly into large thumb-pots, and hardened off for sale. Some roots throw out a much larger number of cuttings than others, and it will occasionally happen that a root will remain altogether blind. This is sometimes a very serious matter when the variety is a valuable or scarce one. The Dahlia propagation season is one of extreme activity in the instances of such nursery establishments as Mr. TURNER'S at Slough, or Mr. KEYNES' at Salisbury. The closest attention is required, and in this important business the propagator must be instant in season and out of season. When the young stock has to be counted by tens of thousands, a ceaseless activity is absolutely necessary.

—— Mr. W. J. CROSS, gardener to Lady ASHBURTON, Melchet Court Gardens, Romsey, has sent us a photograph of a specimen of CELOGYNE CRISTATA which is bearing seventy-five spikes, or about 350 flowers, and which measures over 6cm side to side 5 feet 2 inches. Some ten or twelve years go the plant was growing in a 6-inch pot, and it looks well in the flat rusticated pot made by Mr. MATHEWS, of Weston-super-Mare. The pot measures 30 inches in diameter, and its outside is a good imitation of Elm bark.

—— The BRIGHTON AND SUSSEX FLORICULTURAL AND HORTICULTURAL SOCIETY'S ANNUAL EXHIBITIONS are announced to be held on June 27 and 28, and September 12 and 13.

—— IN REFERENCE TO THE ENCLOSURE OF COMMON LANDS, the *Globe* has the following remarks on the recent decision in the Chobham Common case:—

"Another of the long series of actions which are now pending with respect to the rights of commoners and of the public against lords of manors was decided a few days since, and the decision was in favour of the lord. Its effect may be very briefly stated, and is one at which those now enjoying such rights have good reason to be alarmed. It assures practically to the lords of a very

great many manors—perhaps most manors—in England the right to turn the wastes of the manor, that is to say, the village common, into a brickfield. Chobham Common is an open space of about 8 square miles in extent. The commoners have all their rights of pasture, turbary, and estovers, which usually belong to the tenants of such a manor, and it was admitted that they had not given any assent to the action of the lord in granting out parts of the common to be destroyed for brick-making purposes. Upon these facts the judges of the Queen's Bench Division have held that the action complained of was perfectly legitimate, and that there is no remedy at all, either for the commoners or for the inhabitants of the parish, to interfere with the proceeding. The practice is justified by a custom, the existence of which the judges inferred from the fact that in ancient times the commoners had not protested against its exercise. It is unnecessary to say that on similar negative grounds a like custom might be supported in a vast number of commons throughout the country. But the most alarming feature in this as in other cases is that the interests of the public and the neighbourhood are quietly and utterly ignored. This is the consideration which makes it so abundantly clear that the Legislature must step in and practically recognise rights which the common law is unable to discern."

RELATIONS BETWEEN PLANTS AND INSECTS.

[The following extracts are taken from a recent lecture of Sir John Lubbock before the Society of Arts.]

Neither plants nor insects, indeed, would be what they are, but for the influence which each has exercised on the other. We know now, for instance, that certain plants produce no seeds at all unless visited by insects. Thus, in some of our colonies, the common red Clover sets no seeds on account of the absence of humble-bees; for the proboscis of the hive bee is not long enough to effect the object. According to Mr. Belt, the same is the case for the same reason in Nicaragua with the Scarlet Runner.

But even in those cases in which it is not absolutely necessary, it is a great advantage that the flowers should be fertilised by pollen brought from a different plant, and, with this object in view, insects are tempted to visit flowers for the sake of the honey and pollen; while the colours and scents are useful in making the flowers more easy to find.

Use of Honey.

The real use of honey, indeed, now seems so obvious that it is remarkable to see the various theories which were entertained on the subject. Patrick Blair thought it absorbed the pollen, and then fertilised the ovary. Pontedera thought it kept the ovary in a moist condition. Linnæus confessed his inability to solve the question. Other botanists considered that it was useless material, thrown off in the process of growth. Kölreuter even observed that in meadows much visited by bees the plants were more healthy, but the inference he drew was that the honey, unless removed, was very injurious, that the bees were of use in carrying it off. Sprengel was the first to show that the real office of the honey is to attract insects, but his view was far from meeting with general consent, and even so lately as 1833 was altogether rejected by Kurr, who came to the conclusion that the secretion of honey is the result of developmental energy, which afterwards concentrates itself on the ovary.

One reason why the earlier botanists missed the true explanation was, perhaps, that some plants secrete honey on other parts besides the flowers. Belt and Delpino have, I think, suggested the true function of these extra floral nectaries.

Ants.

The former of these excellent observers describes a South American species of Acacia, which, if unprotected, is apt to be stripped of the leaves by a leaf-cutting ant, which uses the leaves, not directly for food, but, according to Mr. Belt, to grow Mushrooms on. The Acacia, however, bears hollow thorns, and each leaflet produces honey in a crate-formed gland at the base, and a small, sweet, pear-shaped body at the tip. In consequence, it is inhabited by myriads of a small ant, Pseudomyrma bicolor, which nests in the hollow thorns, and thus finds meat, drink, and lodging all provided for it. These ants are continually roaming over the plant, and constitute a most efficient body-guard, not only driving off the leaf-cutting ants, but, in Mr. Belt's opinion, rendering the leaves less liable to be eaten by herbivorous mammalia.

Delpino mentions that on one occasion he was gathering a flower of Clerodendron fragrans, when he was suddenly attacked by a whole army of small ants.

I am not aware that any of our English plants are protected in this manner from the browsing quadrupeds, but not the less do our ants perform for them a very similar function, by keeping down the number of small insects, which would otherwise rob them of their sap and strip them of their leaves.

Mr. Forel watched, from this point of view, a nest of Formica pratensis. He found that the ants brought in dead insects, small caterpillars, grasshoppers, cercopis, &c., at the rate of about twenty-eight a minute, or more than 1600 in an hour. When it is considered that the ants work not only all day, but in warm weather often all night too, it is easy to see how important a function they fulfil in keeping down the numbers of small insects.

Some of the most mischievous, indeed—certain species, for instance, of aphis and coccus—have turned the tables on the plants, and converted the ants from enemies into friends, by themselves developing nectaries, and secreting honey, which the ants love. We have all seen the little brown garden ant, for instance, assiduously running up the stems of plants, to milk their curious little cattle. By this ingenious idea not only do the aphides and cocci secure immunity from the attacks of the ants, but even turn them from foes into friends. They are subject to the attacks of a species of ichneumon, which lays its eggs in them; and Delpino has seen the ants watching over them with truly maternal vigilance, and driving off the ichneumons whenever they attempted to approach.

But though ants are in some respects very useful to plants, they are not wanted in the flowers. The great object is to secure cross-fertilisation; but for this purpose winged insects are almost necessary, because they fly readily from one plant to another, and generally confine themselves for a certain time to the same species. Creeping insects, on the other hand, naturally would pass from each floret to the next; and, as Mr. Darwin has shown in his last work, it is of little use to bring pollen from a different flower of the same plant—it must be from a different plant altogether. Moreover, when they quitted a plant they would naturally creep up another close by without any regard to species. Hence, even to small flowers (such as many Cruciferæ, Compositæ, Saxifrages, &c.), which, as far as size is concerned, might well be fertilised by ants, the visits of flying insects are much more advantageous. Moreover, if larger flowers were visited by ants, not only would they deprive the flowers of their honey without fulfilling any useful function in return, but they would probably prevent the really useful visits of bees. If you touch an ant with a needle or a bristle she is almost sure to seize it in her jaws, and if bees when visiting any particular plant were liable to have the delicate tip of their proboscis seized on by the horny jaws of an ant, we may be sure that such a species would soon cease to be visited.

On the other hand, we know how fond ants are of honey, and how zealously and unremittingly they search for food. How is it, then, that they do not anticipate the bees, and secure the honey for themselves? Kerner has recently published a most interesting memoir on this subject, and pointed out a number of ingenious contrivances by which flowers protect themselves from the unwelcome visits of such intruders.

The most frequent are by the interposition of *chevaux de frise* which ants cannot penetrate, glutinous parts which they cannot traverse, slippery slopes which they cannot climb, or barriers which close the way.

Firstly, then, as regard *chevaux de frise*.

In some respects they are the most effectual protection, since they exclude not only creeping insects, but also other creatures, such as slugs.

With this object it will be observed that the hairs which cover the stalks of so many herbs usually point downwards. A good example of this is afforded, for instance, by a plant allied to our common Blue Scabious, Knautia dipsacifolia. The heads of the common Carline (Carlina vulgaris), again, present a sort of thicket, which must offer an impenetrable barrier to ants. Some species of plants are quite smooth, excepting just below the flowers. The common but beautiful Cornflower (Centaurea Cyanus) is quite smooth, but the involucres forming the flower-head are bordered with recurved teeth.

In this case neither the stem nor the leaves show a trace of such prickles. In this species the stigma projects about one-fifth of an inch above the flower, so that if ants could obtain access they would steal the honey without fertilising the flower; a flying insect, on the contrary, alighting on the flower could scarcely fail to touch the stigma.

Kerner has called attention to very interesting illustration afforded by the Polygonum amphibium. The beautiful rosy flowers of this species are rich in nectar, the stamens are short, the pistil, on the contrary, projects considerably above the corolla. The nectar is not protected by any special arrangement of the flower itself, and is accessible even to very small insects. The stamens ripen before the pistil, and any flying insect, however small, coming from above, would assist in cross-fertilisation. Creeping insects, on the contrary, which in most cases would enter from below, would rob the honey without benefiting the plant. P. amphibium, as its name denotes, grows sometimes in water, sometimes on land. So long, of course, however, as it grows in water it is thoroughly protected, and the stem is smooth, while, on the other hand, those specimens which live on land throw out certain hairs which terminate in sticky glands, and thus prevent small insects from creeping up to the flowers. In this case, therefore, the plant is not sticky, except just when this condition is useful.

All these viscous plants, as far as I know, have upright or horizontal flowers. On the other hand, where the same object is effected by slippery surfaces, the flowers are often pendulous, creeping creatures being thus kept out of them, just as the pendulous nests of the weaver-bird are a protection from snakes and other enemies. As instances of this kind, I may mention the common Snowdrop or the Cyclamen.

(To be continued.)

Home Correspondence.

Double-Bearing Raspberry.—All Raspberries delight in a deep rich sandy loam, resting on a moderately dry bottom, and unless these conditions can be secured either naturally or artificially it is almost useless attempting to grow the autumn-fruiting kinds, for should the weather by chance be favourable to ripen them, their flavour will be so inferior as to be of little value. A well-sheltered site having a southern aspect, but sufficiently far away from trees not to have their roots encroaching on those of the Raspberry, is the best place to make the plantation, which may be done at once by proceeding in the following manner. Trench the ground from 18 inches to 2 feet deep, and thoroughly break up the bottom by using a Parks' fork or other suitable tool, but do not bring any of the subsoil to the surface—a mistake many make, by which trenching has been brought into bad repute. As the work proceeds, shake and work in plenty of thoroughly decomposed manure, keeping the same well down, and if the land is at all stiff and adhesive add a good proportion of road scrapings or sharp sand, to keep it open and porous. In planting choose young healthy single canes, and place them triangularly at about 6 inches apart, and each clump a yard distant from each other, allowing the same space between the rows, which will afford ample room for growth and admit plenty of light and air. When the planting is complete cut away the tops, so as to induce them to push strongly from below, and to encourage a free growth and prevent them suffering from drought during the summer keep the surface well mulched with half-rotten dung, which will shade the ground and keep their roots cool. With autumn-fruiting Raspberries there should be no attempt to get a summer crop, as the whole strength of the plant ought to be concentrated in the young canes, which should be all cut clean away during the winter, and the ground top-dressed, but never dug or disturbed beyond what is necessary to remove weeds or to thin out the suckers, an operation that becomes necessary in the spring to prevent any overcrowding that would otherwise take place. *J. Sheppard.*

The R.H.S. Provincial Show Fund.—I do not think Dr. Denny (p. 246) quite fully states the way in which the first country show was started; but, as I believe he was not at the time a Fellow of the Society, he cannot be expected to know the exact circumstances. When a country show was suggested in the Council, one of the "expenses committee," though approving of the idea, pointed out that as the expenditure would not be connected with the Commissioners' estate it could not be sanctioned. The Council, notwithstanding this, decided on the show being held, but said that, as they took the risk of loss, any profit must be applied to purely horticultural purposes. I believe, had there been a failure instead of a success,

the members of Council would have been personally responsible. I know I considered so at the time, and accepted my share of the risk. The success of the show was, to a considerable extent, due to local efforts, in which Mr. Fish took the lead. I do not agree with all that gentleman writes, but have always thought that the Society owes him a great debt for his unwearying exertions to ensure success in an attempt which, being the first, was a most important one. *George F. Wilson.*

[We owe it to Dr. Denny to correct an unfortunate error into which we fell in the publication of his last letter on this subject. Dr. Denny's contention is, that the Society having, under the treasurership of Mr. Dobree, borrowed from the Provincial Show account, that sum should be considered as a debt due from the Society to the Provincial Fund. Eds.]

Orchids in February. — Promise is still far in excess of performance in the Orchid-house. Nevertheless, the month has been graced by the presence of the following :—

Dendrobium Wardianum	Ada aurantiaca
,, crassinode	Leptotes serrulata
,, cretaceum	Cypripedium villosum
,, Pierardi	,, venustum
,, capillipes	,, niveum
,, Linawianum	,, Sedeni
,, nobile pendulum	Calanthe Turneri
Brassavola glauca	Odontoglo-sum Roezli
Cœlogyne cristata	,, Alexandræ
,, media	,, Cervantesii
,, flaccida	,, Rossi
Vanda Cathcartii	,, pulchellum majus
,, suavis	,, Bictonense
,, tricolor	Pilumna fragrans
Cattleya Trianæ (supposed, one of the lot sold a year ago at Stevens', numbered 1 to 8. This was No. 4. It is a superb flower. Petals pure white, labellum rich purple, large, and of fine form)	Phalænopsis Schilleriana
	,, grandiflora
	,, rosea
	,, amabilis
	Oncidium cucullatum
	,, Cavendishii
	,, sphacelatum
	,, aurosum
	,, Barkeri
	,, pulvinatum
	,, ornithorhynchum
,, Trianæ flammea	,, Insleayi forpardinum
,, chocoensis	,, cheirophorum
Zygopetalum crinitum cœruleum	Angræcum sesquipedale
,, Mackayi	,, eburneum virens
,, maxillare	Epidendrum dichromum
,, Gautieri	,, fragrans
Lælia crispilabia	,, aromaticum
,, anceps	,, cochleatum
,, Dayana	,, recurvatum
Masdevallia polysticta	Sophronites grandiflora
,, Veitchii	Helcia sanguinolenta
,, Nycterinia	Maxillaria luteo-alba
,, melinopoda (not worth growing)	

Edward W. Cox, Moat Mount, Hendon, Feb. 24.

Coronilla glauca.—In the village of Havering atte Bower there are two plants of Coronilla glauca which have been standing out in a cottage garden all the winter, and which are to-day (February 26) in full bloom, and looking quite healthy. The foliage is much better than on many plants grown inside, but the flowers look rather pale as compared with those on plants grown in a greenhouse. *J. Lane, Pyrgo Park.*

An Ancient Pear Tree.—During the late storm a large Pear tree in the orchard of Mr. Robert Hay, Chase Farm, Ambergate, was blown down. Mr. Hay says that when his great-grandfather took possession of the place in 1750, or 127 years ago, it was a much larger tree than when he (Mr. Hay) was born, in 1800, and since then it has lost several large limbs in exceptionally high winds. Mr. Hay believes it to be considerably over 300 years old, and the dimensions taken to-day, as below, will, I think, to some extent bear out his assertions. The tree has been a great favourite with the old gentleman, and last year it bore a large crop of very good fruit. It had two trunks, dividing about 3 feet from the ground line. The measurements are—Circumference at ground 9 feet 6 inches ; at 3 feet above ground, 11 feet ; at largest trunk, 6 feet above ground, 6 feet 6 inches ; at smaller trunk, 6 feet above ground, 5 feet 6 inches ; at largest bough, 4 feet 6 inches ; next largest bough, 4 feet ; height from ground to top, 45 feet. *T. C., Crich Chase, Ambergate (in the "Derby Mercury").*

Spiral Growth of Plants.—I was induced by the article in the *Gardeners' Chronicle* of January 13 (p. 48) on twining plants to look round—though at an unfavourable time to find the generality of twiners—to see what I could find that coiled in different directions. To make plainer my meaning as to the direction the plant takes in twining, suppose you have a statue with the face to the south. Fix a string to the left foot, twine it over the right leg round the body as many times as you may, and the direction of the coil I consider as being from left to right, like the apparent course of the sun, the shadow of the sundial, and the hands of the clock ; but if you face the plant, and follow its growth round, you will perceive it progresses from your right shoulder to your left—no matter from what point of the compass you view it, the coil follows its course round the statue, column, or stake just the same. On the same principle, if you fix the string on the right foot of the statue or to a stake, twining it over the left leg of and round the body, you have the coiling from right to left, contrary to or "against the sun" (as we hear sometimes remarked), and contrary to the shade on the dial, and clock hands, or in this case going from west to east, but in the first from east to west. I have only found one genus that coils from east to west, or from left to right—viz., Lonicera Caprifolium. I enclose two specimens—Lonicera brachypoda and L. flexuosa. I apprehend those twining from west to east, or right to left, are more numerous. I send specimens of them —viz., Akebia quinata, Convolvulus sepium, Great Bindweed, Periploca græca, Stigmaphyllum ciliatum, Mandevilla, Wistaria Consequana or sinensis, Physianthus albens, and Stauntonia latifolia (this fine hardy evergreen climber twines firmly round a stake or other support, and also throws out a curious corkscrew-like tendril as an additional holdfast). Alstrœmeria acutifolia I find no stems of, but in the summer I perfectly recollect it coiled round the stakes from west to east. *W.*

One of the Gardeners' Friends.—By all means kill the slugs—hand-pick them, salt them, and burn them up with unslaked lime, use all and every means to keep them under—but don't destroy the ear-shaped Testacella. This most useful garden scavenger is a slug of a pale-yellow colour, when crawling about 2½ inches long (fig. 48), and carries an external ear-shaped shell a quarter of an inch in length on its tail. It is difficult to persuade gardeners that they are harmless, but they would starve on a seed-bed of the tenderest young Cabbage plants, while the food in which they revel



FIG. 48.—THE EAR-SHAPED SLUG.

consists chiefly of worms and other animal matter, in fact they are exclusively carnivorous. Where these slugs exist they may be met with on garden paths early in the day on any mild morning after rain, especially during the months of April, May, and June. I have seen as many as two dozen at one time on one path in my garden during these months, and the full-grown ones will suck down a worm twice their own length. I would, therefore, urge all who have the opportunity to notice whether their gardens are favoured by the presence of such a useful coadjutor, and if so, to issue an order to have them strictly preserved. *John Miles, Southgate, N.*

Euryale ferox.—This plant is self-fertilised, for some seasons, although the flowers have remained entirely submerged, perfect seeds have been produced —indeed, for the flowers to expand above the water has been the exception rather than the general habit of the plants we have grown here. Last year, however, perhaps owing to the unusually hot, bright weather which prevailed during the time our plant was flowering, a considerable number of the flowers expanded above the water level, and although comparatively small were very beautiful. We had many self-sown young plants of Euryale in our tank up to the end of December last, when, unfortunately, the hot-water boiler failed, and while replacing it with a new one the water became too cold for them, and they perished. *W. H. Baxter, Botanic Garden, Oxford.*

Root Lifting.—This is an operation which has hitherto received much less attention amongst fruit cultivators than it deserves. Success in open air fruit culture hinges upon well ripened wood. The uncertainty of obtaining this end is very great in a climate so fickle and uncertain as ours, especially when the roots are allowed to ramble and get where they please. In dry summers such as the past roots penetrate to a depth too far below the surface to be properly aërated, and fully acted upon by solar heat ; they are therefore feeding upon and forcing up crude sap, to encourage rampant growth and large foliage, which continues to grow too late in the autumn months to become thoroughly matured and ripened. The remedy consequently is to be found in the management of the roots to obviate the existing evil. Root-pruning has been strenuously advocated by some fruit growers to check luxuriant growth, and no doubt some good results have been obtained from it. It has however the disadvantage of requiring repetition, which becomes troublesome and expensive, and does not altogether serve the desired end, as the central root of the tree, which commonly penetrates deepest into the soil, is frequently not reached, and therefore the supply of obnoxious fluids is not entirely cut off ; whereas in root-lifting trees of good size and well established, the large and long roots are brought up near to the surface and are annually acted upon by solar heat, even although a portion of the smaller branching rootlets will penetrate deeper. From long experience of root-lifting at all seasons, even in midsummer when convenient, I am convinced that all fruit trees growing against walls or in the open ground are improved by root-lifting and relaying as near the surface as may be, to admit of thorough drying or forked over for light cropping—a practice in most gardens indispensable, but one which should be avoided if at all practicable, as the roots of vegetables and fruit trees are in constant antagonism. A good mulching of litter or straw over the roots would be much more in accordance with good fruit cultivation, so as to coax and keep up the roots near the surface, thus enabling the wood and buds to ripen with greater ease and certainty, and attaining the not less important end of getting the fruit better ripened and higher flavoured. My practice is, when I have the roots up, to take out a portion of the exhausted soil, put in a good layer of fresh loam, and mix it well in the bottom before laying the roots out. Fresh loam is laid over the roots, and over that about 2 inches of well-rotted manure, which serves to draw the roots up. The remainder of the soil is then covered all over the opened trench. One or two copious waterings will be necessary the first year after lifting, if the summer is a dry one. *J. Webster.*

The Fruit Prospects.—The weather has been extremely mild here all through the winter, and we have had rain almost daily. Vegetation is very forward around us, and we have here, on a west wall, a fine Apricot (Moor Park) in full bloom and leaf. It has been in bloom for some time, and in the Peach-house there is a splendid picture of bloom, without the least aid from fire-heat. Pears are bursting their flower-buds, and promise well, and Apples, especially the earlier varieties, are in a very forward state, and likewise promise an abundant crop. The fruit crop this season promises to be excellent, if the spring frosts do not kill the blossoms. *Henry C. Ogle, Efford Park, Lymington, Hants.*

The Vagaries of Ferns.—The reversion of Athyrium F.-fœmina Friselliæ to the normal type in consequence of transplanting, as mentioned by Dr. Reichenbach at Hamburg, is somewhat out of common experience [Normal fronds have been always occasionally produced by this very abnormal variety. Eds.], but the production of furcate fronds by the ordinary Scolopendrium vulgare is a circumstance quite common both in the wild and cultivated condition. But the most extraordinary of the variations of this protean species that has come within the range of my experience occurred here. In 1859 we raised a form from spores of the beautiful Scolopendrium v. crispum, with fringes along the frills of the fronds. A faithful representation of this was given in Lowe's *New and Rare Ferns*, p. 95, pl. 39. A year or two afterwards a good example of this plant was taken to the Belfast Horticultural Exhibition, where £5 was offered for it, but refused. It was brought back, and it and two others were cut into twelve pieces to make stock, but in the following year all the pieces produced perfectly normal fronds ; not a trace of the former character of the fronds could be detected. After growing for two years more, they were thrown to the rubbish-heap as worthless—all but one. This, in 1874, began to show traces of the original form, and in 1875-6 it assumed the original frill, but with the addition of a magnificent tassel or crest at the end of the frond, consisting of from fifty to one hundred laciniated lobes ; and the basal lobes of the fronds, instead of being of the usual cordate character, were enlarged into small fronds, each terminated by a tassel, the frond thus assuming a trifoliate character. We are in hopes that careful cultivation may render this form permanent. From this it will be seen that a character lost by reversion may be again restored, and this may be the case with Dr. Reichenbach's Athyrium. As a rule, varieties of Ferns have the characteristics and permanency of species. But who can tell us what a species is?

Apogon of this, in 1874 we raised a batch of plants from spores from a frond of Polystichum mucronatum (or triangulum). Among these were some plants of P. ilicifolium. The plate given by Hooker of that species is so good that we could not be mistaken, but, to be doubly sure, we forwarded a frond to Mr. Baker, of Kew, who said it was undoubtedly P. ilicifolium of Hooker. I am sure it will be said, "Oh, but you had P. ilicifolium growing near, and the spores got on to the P. mucronatum." No such thing. P. ilicifolium had never been in our possession, and we did not even know there was such a thing till we saw Hooker's plate. Among the batch was another form, very different from either P. mucronatum or P. ilicifolium, and more beautiful than either of them. The fronds are from 12 to 18 inches long, not more than 1 inch broad, bipinnate, the pinnules linear-lanceolate and acute, the lobes terminated by a long mucro. We had several plants of both these forms; the rest of the sporelings were the common P. mucronatum. Who will tell us which of these three is the species, and which the variety? *A. Stansfield, Vale Nurseries, Todmorden.*

Ants.—I have been very much pestered with an ant's nest in one of our Peach houses, and found them very troublesome when the trees were in flower; but on visiting Mr. Muir, of Oulton Park, Cheshire, he showed me a most successful plan of keeping them at bay, and which was done by tying a piece of brown paper or canvas around the stems of the trees, and painting it over occasionally with gas tar. Having none of the mixture at hand, I used a mixture of lamp-black and oil, which has answered the same purpose. I may mention that the greater number of our trees are grown in pots, and do remarkably well. *Wm. Driver, Gr. to Thos. Wrigley, Esq., Timberhurst, Bury, Lancashire.*

The Organ Plant.—Mr. T. Gould's question respecting the "Organ Beet," reminds me of the days of my childhood in South Wales, where the cottagers make what they call tea (pronounced "tay") "organs" out of the leaves of the Origanum vulgare, or common Marjoram, and the garden cultivated kind, Origanum Majorana, Sweet Marjoram, which is easily distinguished from the wild by its thin compact spines and more elliptical leaves. It really is a valuable herb-medicine in nervous complaints, relieves headaches of this class, and acts as a tonic. Some people throw a small bunch of the dried plant into their beer-casks, and say that it prevents the ale turning acid. The name of Marjoram comes from the Arabic for this herb, "Maryamych," and Organ is a corruption of Origanum I believe, but I never heard it except in South Wales. *Helen E. Watney, Berry Grove, Liss.*

—— The Organ herb is what is commonly known in the west of England as Pennyroyal. It was formerly used there as a beverage by the poorer classes. *Edwin Sandford, The Gardens, Dale Park, Arundel.*

The Influence of the Moon on the Flow of the Sap.—Your correspondent "C. W. D.," asks if there be "any additional confirmation of the theory that the flow of sap was greatest at the full, and least at the new moon?" This is a subject to which I have paid some attention, and I think I have satisfied myself that there is not a tittle of evidence to support the opinion. Many years ago I spent nearly a year in the island of Cuba, and there I found the opinion was held—I may say universally—that wood or any vegetable matter perished speedily if cut during the waxing moon; and a friend at whose house in the country I was staying informed me that "it was a well-known fact" that the Palm leaves used for thatching would not last more than a few months if cut at the one period, though they would last for as many years if cut at the other; but notwithstanding my friend's positive assurance that the fact was so (in which opinion he was backed up by all the friends around him), I still remained a sceptic, and with some difficulty I induced him to make an actual experiment by re-thatching a shed that needed it with Palm leaves, using half that should be cut at one, and half at the other period of the moon's age; and in a letter that I received from him about four years afterwards he frankly confessed that he could discover no difference in the rate of decay, and therefore he had come over to my opinion, "at any rate so far as thatch was concerned"—viz., that this faith in the moon's influence was the relic of an older religion, that was not yet effaced by more modern intelligence. *J. P. G. Smith, Sweyney Cliff.*

Orchids.—Herewith I send you flowers of Phalænopsis amabilis and Dendrodium crassinode. The variety of P. amabilis is the best that has ever come under my notice [Very fine. EDS.], and, considering that the plant has been in flower since December 20, it shows how valuable Phalænopsids are for the decoration of the Orchid-houses during winter. The variety of Dendrobium crassinode, I think, also merits praise, as it is the best coloured flower of the Barberianum section that I have seen. [A very bright flower. EDS.] *J. Mill, The Gardens, Rendlesham Hall, Woodbridge.*

Diospyros Kaki.—I well remember a Tomato-looking fruit in the Canton River, which must have been the Diospyros Kaki mentioned at p. 209. It was sweet and luscious, but had always a slightly astringent part, which I think was near the seed. *H. K.*

Action of Pollen on the Seed of Peas.—Upon reading the letter of your correspondent, "W. E.," I hunted out the various communications of Mr. Laxton on the subject contained in the gardening journals. I find these two articles—one a paper read at the Scientific Committee's meeting of the Royal Horticultural Society, and another in the form of a letter to Mr. Darwin. The first I had read carefully, and upon it my remarks the other day at South Kensington were founded. Mr. Laxton says:—"I have also deduced from my experiments, in accordance with the experiments of the late Mr. Knight and others, that the colours of the envelopes of the seeds of Peas immediately resulting from a cross are never changed;" and "I find, however, that the colour, and probably the substance, of the cotyledons are sometimes, but not always, changed by the cross." The other says, "It seems to me that these phenomena subsequent, and appearing in after generations. In the letter to Mr. Darwin, however, which, strange to say, I had never read, other and very interesting observations occur relative not only to a colorific change of seed, but of the plant also. That very fill at the time this appeared, and conclude I missed it. There is a "certain degree of uncertainty" in the wording, and I should feel greatly obliged if "W. E.," or any competent observers, would send me their experiences, accurately worded, upon this subject, which has long occupied my attention. *T. C. K., Welton Place, February* 28.

—— Referring to the report of the meeting of the Scientific Committee of the Royal Horticultural Society on February 14, 1877 (*Gardeners' Chronicle*, p. 219), when Col. Clarke exhibited a pod of Woodford Marrow Pea from a flower fertilised by pollen from the white-seeded Auvergne, the pod containing seeds of the two colours, it is stated that I had not observed the change; this is a misapprehension, for which I am sure Col. Clarke will forgive me calling attention. At the Botanical Congress in 1866, I exhibited a case containing diagrams illustrative of the various changes, with the actual or parallel representative seeds, one of which diagrams showed the results of fertilising "Evergreen," a round green-seeded Pea, with a round white-seeded variety, the produce being green and bright yellow seeds in the same pod. I also communicated to Mr. Darwin about the same time the particulars of crosses between blue and white Peas, showing the changes of colours in the seeds, but these changes were all in the colours of the cotyledons of the embryo and not in the envelope. I, however, found that by fertilising purple-flowered Peas with the pollen of white varieties some changes took place in the colours of the envelopes. Purple-flowered Peas seem to be permeated with the purple colour all through the plants, as this colour shows itself not only in the flower, but in the seeds, the pods, and at the axils of the leaf-stalks, the grey and brown maple or partridge colours of the seeds being derived from fine diffusions of the purple colour on a yellowish ground, the yellow tone being due to the transmission of the colour of the cotyledons through the translucent envelope. In one case I found that by crossing the purple-flowered "Sugar" or "Mangetout" Pea, which has a grey seed, with a white-flowered and white-seeded variety, some of the Peas in the pod were positively black-seeded, or nearly black, others broadly streaked with the same colour, and others grey only; and although the produce in the following generations showed clearly the results of the cross, some of the seeds being grey and others white, the purple and striated forms only appeared rarely and at intervals, and were never fixed or permanent, and I believe were owing to a running of the purple colour, which cross-fertilisation seems to induce. The same "running" character of the purple colour was also evident in crosses with the purple-podded Pea, the inky colour appearing both on the envelopes and the pods; and I believe the latter change is alluded to by Mr. Darwin, to whom I sent some of the specimens. By crossing, also, the brown maple or partridge Pea with a white-flowered kind, I obtained fixed varieties with grey and purplish striated seeds, but in these cases there was no change in the colours of the envelopes of the seeds from the fertilised flowers. In my paper on the cross-fertilisation of Peas read before the Scientific Committee of the Royal Horticultural Society I showed the results which followed from crossing blue and white round and wrinkled Peas, and that the blue and white wrinkled and blue round varieties threw off, during more than one generation, pods containing seeds in all the four forms, viz., blue wrinkled and round and white wrinkled and round seeds in the same pod; and I have since frequently confirmed this, although a change has not always been apparent in the seeds of the crossed flowers. I have never, however, observed a case where the round white seed after the second generation produced the other forms; from which it would seem that there is more fixity and permanence in the round white-seeded Pea with white flowers than in the blue and wrinkled forms. Perhaps the former may be the original stock of the garden Pea, and the others merely subsequent varieties of it. The subject of changes in the colours of the embryo, the envelope, and the pericarp by the action of pollen is of such interest that I trust Colonel Clarke will continue to follow out what he has so well begun in Matthiola, the Leguminosæ, and especially the Pea, as being practically only self-fertile, affording an excellent field for close and continued investigation. *Thomas Laxton.*

The "Annuaire Belge."—In reply to your correspondent at p. 178, permit me to say that it is a frequent custom on the Continent to send books by post "on approval," to persons likely to be interested in them. These persons retain the books if they please, or they return them. The option of so doing is expressly stated in print on the cover. Many persons are glad to be made acquainted in this way with the existence of such books. The book, moreover, was not accompanied by a post-card, but one was sent twenty days subsequently. *E. Rodigas.* [No one who knows the Editors of the publication in question would for a moment suspect them of "sharp practice," but they were doubtless not aware that it is not the custom to send books in this country in the way above indicated, unless intended as presentation copies. The conditions should be printed in English. Moreover, we insular Britons are apt to consider such unsolicited communications in the light of intrusions. EDS.]

Natural History.

Witch Knots.—The observations of your correspondent "O." on the cause of the Witch Knots of the Birch deserve more credit as a discovery than is claimed for them by the modest statement that their origin is "not so well known." Unless I am mistaken, it was not known at all. It is not very long since the Rev. Mr. Berkeley brought specimens of these Witch Knots to one of the meetings of the Scientific Committee of the Royal Horticultural Society, and on that occasion I believe no satisfactory explanation of their cause was offered. Neither can I find any Phytoptus described as infesting the Birch except one that produces an Erineum on the back of the leaves, described by Schumacher under the name of Erineum betulinum, which is something quite distinct from the one residing in the buds. It may, no doubt, have occurred to many that these Witch Knots were probably due to insect agency; that, however, is something very different from having detected the Phytopti in the deformed buds and traced their growth. Guided by "O.'s" researches, I have examined some of these buds, and had no difficulty in finding the Phytoptus in numbers. It seems to me a little different from the other species that I have seen in other buds. It is more abrupt at the head, and its legs look more clumsy; no doubt it is a distinct species, although it is scarcely possible to formulate a distinctive definition.

The very curious question remains that is suggested by "O.'s" inquiry at the end of the notice, whether the Currant species causes Witch Knots or no. We know that it does not. We know that the Yew Phytoptus does not, that the Hazel Phytoptus does not, that the Sloe Phytoptus does not, in fact that Witch Knots are found on comparatively few species of trees. Why is this, and how comes the Phytoptus in most cases merely to cause enlargement of the buds, whereas in this instance it causes the production of woody fibre?

But we must not confound things. It is only indirectly that it causes the growth of woody fibre, the actual and direct action is the same in all cases. By the irritation its presence and feeding creates, it causes the buds first to swell and afterwards destroys them. In those plants where no Witch Knots appear after it has destroyed the buds, it would appear that the plant accepts the condition and makes no more effort to send out a bud at the same spot. In the Birch it would appear that a new bud in the place of, or new buds close to, the old one, come out to be

again destroyed by the Phytoptus; and after a series of repetitions of this in successive years that it ends in producing the accumulation of arrested buds that finally become a Witch Knot. *Andrew Murray.*

—— May I ask to be allowed to correct an error which by some misadventure has occurred in the measure of the Phytoptus, p. 249. It is given as the two-thousandth, it should have been the two-hundredth of an inch in length. *O.*

The Villa Garden.

SEED RAISING.—He who loves his garden will be led to essay experiments with a view to extending his knowledge and adding to his resources; and his success will in a great measure depend on the fore-thought he exercises, and the intelligence he applies to the overcoming of difficulties. There are thousands of gardeners who purchase seeds to raise them for the sake of having plants they themselves produce; and a varying success crown their efforts. Some succeed wonderfully well, others find themselves as far off from anything like success as they can well be. Happy is the gardener who, though in the very alphabet of his procedure, is not deterred by failures, but accepts them and perseveres till they become changed into successes. A few years ago a soldier exhibited, at one of the meetings of the Royal Horticultural Society, some seedling Pelargoniums he had raised on the mantelshelf of the living-room he occupied. The productions justly received a good deal of praise, and they served as a valuable illustration of what can be done, under apparently unpromising circumstances, when the true gardening spirit rises superior to conditions that scarcely promise desirable results may be forthcoming.

There are those who raise Stocks, Asters, Verbenas, Pelargoniums, Marigolds, Petunias, and such-like in sitting-room windows, and secure plants by this means with which to make their gardens look gay in summer. Such attempts are not at all uncommon, they are being achieved day after day during the spring season; but we are not generally familiar with them, because so seldom recorded, that they are possibilities transmuted into actual results.

Those who find their greenhouse and conservatory only in their sitting-room window use flower-pots in preference to pans for raising seeds. The pots are first of all thoroughly cleansed inside and out. The next proceeding is to fill them nearly or quite one-third full of crocks, made up of broken pots or small pieces of bricks, placing over this draining material a thin layer of moss to prevent the soil being washed down among the *débris* at the bottom. Then the pots are filled with a fine sandy soil to within an inch or so of the rims. This is gently pressed down till the surface is smooth and level, and then the soil is ready for the reception of the seed.

The next proceeding is to place a very thin layer of silver-sand over the top—only enough to give a slightly sanded surface, and then the seed is sown. This is done thinly—much more thinly than is generally done, and that for two reasons worthy of being well borne in mind: 1st, that the plants be not too thick to cause damp to destroy some of them, as will happen in the case of Stocks and other subjects when too much crowded; and, 2dly, as the space for growing the plants is necessarily limited, it is sometimes requisite that they remain in the seed-pots almost till planted out. Room is thus of some importance, for a few strong plants are better than a crowd of weak ones, and therefore thin sowing is an imperative necessity. The seed being sown, and gently pressed into the soil, a very slight covering of sand may be spread over it, and then a gentle sprinkling be given. In the absence of a fine-rose watering-pot the surface of the soil can be moistened by placing the fingers in water and gently sprinkling what adheres to them over the newly-sown seed. Later on, when the soil gets well settled down, the pots can be immersed in a pail or tub of water up to the level of the surface of the soil, and then the water will drained off before they are restored to the place they occupy in the window.

If the pots are in a window having a south or west aspect it is obvious that the effects of the sun will be felt, and the soil will dry quickly; therefore it is a good plan to place a piece of glass over each pot, and over this again a piece of newspaper, to screen the glass from the sun. The glass may be kept down close to the rims of the pots till the seeds begin to germinate, then it should be slightly raised on one side. This will admit a little air and prevent the plants from damping off, which they will sometimes do when too closely confined. Nothing should be allowed to lie on the surface of the soil, such as a piece of leaf, or any similar substance that would hold the damp and spread mildew. It is a somewhat critical time when the seeds are through the soil, and the pots should be inspected daily, to see that no harm is spreading among them. In dull weather the paper covering may be wholly removed, and when the plants grow into size it need only be placed over the pots when the sun shines forth at its greatest heat. In this manner many have raised seeds of choice things, and then during the summer, when they are making their gardens look gay, they are able to point with justifiable pride to what they have so well done.

As the weather grows milder the pots of seedlings can be stood out in the sun for a time, and sprinkled overhead to keep the young leaves clean and free from dust, and now a fine-rose watering-pot is of great value for this purpose. A pot holding half a gallon or so of water will be quite large enough, and it should have a long narrow spout 2 feet in length, at the end of which a fine rose can be fitted on. Watering-pots of this kind are sometimes constructed with a rose which is a fixture, and cannot be removed, but it is much better that the rose be removable, as the pot is then very useful for watering other plants when it may not be expedient to wet the leaves. The exposure of the plants to the sun will prevent them from becoming drawn, and cause the growth to be sturdy, and infuse a certain degree of hardihood into the constitution.

It may be said that all this labour can be avoided by purchasing plants from a nurseryman at the proper time for planting in the open ground. This is quite true, but then it considerably narrows the extent of pleasure to be derived from gardening operations. Some persons are apt to think that all the pleasure of gardening pursuits is confined to the witnessing of plants breaking into flower; but that is a mistake. Our aim always has been to create and foster a love for raising and growing, as well as simply blooming them; and in all our gardening experiences we have ever found that they who raise a few flowers from seed, and assist in maturing their growth till they can be planted out in their gardens, experience a higher sense of enjoyment than those who merely purchase a few plants at the blooming time. Every experiment made in the way of raising seeds, however simple it may be, becomes a pleasant occupation, and a daily source of engaging interest and hopeful speculation; and, let it be recorded to the credit of human nature, failure has proved with many only a powerful incentive to attaining ultimate success; and he who finally conquers in small matters is thereby encouraged to essay larger attempts. The teachings of experience surmount obstacles; the harvest of enjoyment corresponds to the labour spent, and the patience and hopefulness exhibited. As the Eastern poet puts it—

> "Be of good cheer; the sullen month will die,
> And a young moon requite us by-and-by."

SOWING SEEDS OF BEDDING PLANTS.—Now should be sown Lobelia speciosa, Pyrethrum Golden Feather, Salvia patens, Petunias, Perilla nankinensis, and any other things of this character that may be wanted for bedding purposes by-and-by. There is nothing like the old seed-pan, with holes at the bottom to secure drainage. Place some pieces of broken crocks at the bottom, and over these a little leaf-mould, and then fill up to within three-quarters of an inch with a light sandy soil; press the soil down till it is smooth and level, and then sow the seed very thinly, and sprinkle the merest covering of sand over it. Then place the pans away on a shelf or any convenient place, cover each with a piece of glass, and cover the whole with newspapers for a few days, when the seeds will soon begin to germinate.

Obituary.

WE deeply regret to announce the death, on the 20th ult., at Fern Bank, Ventnor, of Mr. HENRY ORMSON, the well-known horticultural builder, of Stanley Bridge, Chelsea.

Mr. Ormson was born at Reed House, Antrobus, Cheshire, on April 18, 1816, and in early life was employed in the Manchester Botanic Garden under the late Mr. Campbell, whom he survived but a few weeks. From Manchester Mr. Ormson went to Alton Towers, Staffordshire, when that garden and princely seat was at its best. Here he distinguished himself by his great aptitude for learning, and the Earl of Shrewsbury's chaplain taught the young man among other things perspective drawing, and this one thing was the turning point of Mr. Ormson's success in business, for when he left Staffordshire and got to London his ready sketching always got him favour and a preference to other competitors. Along with two other young men, Mr. Gray and Mr. Brown, he started his business career about the year 1847, the title of the firm being Gray, Ormson & Brown. At the end of 1850 the business came into the hands of Messrs. Gray and Ormson only, but when in the autumn of 1857 he began to see his way clearly he took the business of horticultural builder entirely into his own hands, and he has stated that however late he might be at night with either business or pleasure he always lighted the gas and opened the works himself to see that he got value for his money in the way of labour. By bold strokes and often repeated, he worked up an extensive connection, and as may be seen by his advertisements he did business with names of note, from royalty downward.

The late Joseph Knight and the late James Veitch, both of Chelsea, were both of them tried friends of Mr. Ormson's, and no doubt greatly assisted in getting him into the high position he attained, but much depended upon his own practical acquaintance with all the details, for he had been well grounded in horticulture under Mr. Campbell and Mr. Forsyth, and could advise as well as execute, which no mere builder could aspire to. His death will leave a blank that will not easily be made good, for he was not only trustworthy with what he took in hand, but spared no pains or cost to give his patrons satisfaction; and it is to be regretted that, having worked up such a business to that pitch of perfection, he has left neither son nor daughter to enjoy it. Those whom he has benefited by beneficial employment as well as by acts of charity will suffer an irreparable loss. He was interred at St. Thomas' Church, Fulham, on Tuesday last.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, FEB. 28, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading corrected to 32° Fahr.	BAROMETER. Departure from Mean of 18 years	TEMPERATURE OF THE AIR. Highest.	TEMPERATURE OF THE AIR. Lowest.	TEMPERATURE OF THE AIR. Range.	TEMPERATURE OF THE AIR. Mean for Day.	TEMPERATURE OF THE AIR. Departure of Mean for Day from 60 Years.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Degree of Humidity. Sat. = 100.	WIND. Average Direction.	RAINFALL.
Feb.	In.	In.	°	°	°	°	°	°		N. : W.	In.
22	29·68	—0·14	49·4	32.4	19.0	36·7	— 2·4	30.8	80	WNW. : W.	0·0
23	29·74	—0·07	46.0	31.5	14 5	37.6	— 1·6	33.1	84	NNE. : NNW	0.15
24	29·44	—0·37	51 3	35.0	16 3	43.0	+ 3·7	40.1	90	W. : WNW.	0.07
25	29·23	—0·58	55.0	44 5	10·5	48.0	+ 9·4	42 5	79	WSW. : S.W. : WSW	0.00
26	29·32	—0·49	46 1	33 5	12 6	40 0	+ 0·3	31 7	72	WSW. : W. : NW.	0.13
27	29·71	—0·09	41 2	28 5	12 7	34 3	— 5·6	26.2	72	WSW. : W. : NW.	0.00
28	30·07	+ 0·26	39 9	24 5	15 4	31 5	— 8·6	21 6	74	W. : NW. : N.W.	0.00
Mean	29·60	—0·21	46 0	32.8	13·2	38·0	— 0·7	32.7	79	W. : N.W.	sum 0.35

Feb. 22. Fine, but dull and very cloudy. Cold.
— 23.—A fine day, cloudy at times. Cold. Rain in early morning.
— 24.—A dull, cloudy day. Rain fell till 11 A.M. Mild. Lunar halo at night.
— 25.—Cloudy and showery, frequently fine and bright, Strong winds.
— 26.—Fine, but frequently dull, with hail and snow showers. Cold day. Temperature at 9 A.M = 44·7°: decreased to 36 at 9 30; and to 31·5 at 9.45. Then increased to 38.5 at noon. The maximum, 46°.1, occurred very early in the morning.
— 27.—Fine day, partially cloudy, cold. Cloudless at night, and very cold.
— 28.—A very fine day, cloudless at times. Cold. Hoar-frost in morning. The lowest temperature in the month occurred on this day.

LONDON: *Barometer.*—During the week ending Saturday, February 24, in the suburbs of London the reading of the barometer at the level of the sea in-

creased from 30.10 inches at the beginning of the week to 30 11 inches by noon on the 18th, decreased to 29.03 inches by the early morning of the 20th, increased to 30.07 inches by the morning of the 22d, decreased to 29.71 inches by the evening of the same day, increased to 29 96 inches by the afternoon of the 23d, and decreased to 29.56 inches by the end of the week. The mean reading for the week at sea level was 29.79 inches, being 0 07 inch below that of the preceding week, and 0.23 inch below the average.

Temperature.—The highest temperatures of the air varied from 51° on the 24th to 42° on the 22d. The mean for the week was 46°. The lowest temperatures of the air ranged from 31° on the 23d to 40° on the 18th. The mean value for the week was 35°. The mean daily range of temperature in the week was 11°, the greatest range in the day was 16° on the 24th, and the least 8° on the 18th.

The mean daily temperatures of the air and the departures from their respective averages were :—18th, 44°.4, + 5°.6; 19th, 43°, + 4°.2; 20th, 39°.4 + 0°.5; 21st, 38°.1 — 0°.9; 22d, 36°.7, —2°.4; 23d, 37°.6, — 1°.6; 24th, 43°, + 3°.7. The mean temperature of the air for the week was 40°.3, being 1°.3 above the average of sixty years' observations.

The highest readings of a thermometer, with blackened bulb in a vacuum, placed in sun's rays, were 98° on the 23d, and 94° on the 19th; on the 18th the highest reading was 57°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 29° on the 21st, 22d, and 23d, and 30° on the 24th; the mean of the seven low readings was 31°.

Wind.—The direction of the wind was W.S.W. and N.N.W., and its strength brisk. The weather during this week was more seasonable, but generally dull and cloudy. A lunar halo was seen on Saturday night, February 24.

Rain fell on five days in the week; the amount collected was 0.66 inch.

ENGLAND: *Temperature*—The highest temperatures of the air observed by day were 56° at Sunderland and 53° at Portsmouth and Cambridge; at Liverpool and Bradford 49° was the highest temperature; the mean value from all stations was 51½°. The lowest temperatures of the air observed by night were 26° at Wolverhampton and 27½° at Eccles; at Portsmouth 35½° was the lowest temperature; the general mean from all stations was 31°. The range of temperature in the week was the least at Liverpool, 15°, and the greatest at Sunderland and Wolverhampton, both 25°; the mean range of temperature from all stations was 20°.

The mean of the seven high day temperatures was the highest at Plymouth and Sunderland, both 49½°, and the lowest at Wolverhampton and Hull, both 44½°; the mean from all stations was 46¾°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 33°, and the highest at Truro, 41°; the mean value from all stations was 36½°. The mean daily range of temperature in the week was the greatest at Sunderland 13½°, and the least at Liverpool, 6½°; the mean daily range of temperature from all stations was 10¼°.

The mean temperature of the air for the week from all stations was 44°, being 2½° below the value for the corresponding week in 1876. The highest occurred at Truro, 44½, and the lowest at Wolverhampton, 38½.

Rain fell on every day in the week at Truro, Cambridge, Sheffield, and Hull, and on five or six days at other stations. The amounts measured varied from 1 inch at Norwich, Manchester, Eccles, and Hull, to seven-tenths of an inch at Truro, Portsmouth, Plymouth, and Leeds. The average fall over the country was seven-tenths of an inch.

The weather during the week was fine and seasonable, but showery, and the sky generally cloudy. A lunar halo was seen on the 24th inst.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 54° at Dundee to 47° at Greenock; the mean value from all stations was 50¾°. The lowest temperatures of the air ranged from 26° at Paisley to 30¾° at Aberdeen; the mean from all stations was 28½°. The mean range of temperature in the week from all stations was 22¾°.

The mean temperature of the air for the week from all stations was 39½°, being 2½° above the value for the corresponding week in 1876. The highest was 40¾° at Leith, and the lowest 39° at Greenock.

Rain fell at Greenock to the amount of seven-tenths of an inch, at Perth two-tenths only fell, and at Dundee no rain fell: the average fall over the country was four-tenths of an inch.

DUBLIN.—The highest temperature of the air was 54½°, the lowest 32½°, the range 22½°, the mean 42½°, and the fall of rain 0.35 inch.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—Bacon.

173 GREAT TREE OF PULO PENANG.—Can any of your readers inform me of what species is the great tree of Pulo Penang? *H. K.*

Answers to Correspondents.

ARALIA SIEBOLDII VARIEGATA: *W. S.* It is not at all an unusual thing for this plant to flower and ripen its seeds in this country.

ARCHIMEDIAN LAWN MOWER: *A Constant Reader.* The London agents are Messrs. J. G. Rollins & Co., Old Swan Wharf, Upper Thames Street, E.C.

AZALEAS: *W. M. R.*—Probably the plants have been kept in too warm and close an atmosphere. See instructions given from time to time in our "Garden Operations."

BEANS: *R. D.* The Seville Longpod Beans have been perforated by the larve of the well-known Bean weevil, Bruchus rufimanus. Is your correspondent's statement, "unknown to English-grown Beans," correct?

BOOKS: *B. D. R.* Paxton's *Botanical Dictionary*, published by Bradbury, Agnew & Co., Bouverie Street, Fleet Street, E.C.

CAMELLIAS: *H. T. C.* We cannot, and do not, undertake to name Camellias which are florists' flowers. Send them to some nurseryman who grows a large collection.

CATTLE POISONING: *H. W. G.* We have no direct knowledge of any case of poisoning by Rhododendron ponticum or Andromeda floribunda, but from what we have read, we should be inclined to think that the cattle doctor is right.

CREEPERS FOR A FACTORY: *A. I.* We are afraid that any plants used to screen hot-water pipes in a vinery will give you a great deal of trouble, by reason of their providing a harbour for insect pests. If something must be done alternatively conceal the pipes we would suggest the formation of some rockwork on which may be planted Ficus repens, the Climbing Fern, Lygodium, and such Aroids as Philodendrons and Pothos scandens, &c.

CYCLAMEN: *R. Collins.* The Cyclamen persicum is a very neat and pretty form, symmetrically double—that is, with the usual corolla lobes supplemented by a second one alternating with them, and of the same form. The colour being a pretty light rose, the specimen mentioned, with upwards of 70 of these showy blossoms, must be very handsome.

CYDONIA JAPONICA *Foy.* No.

DENDROBIUM WARDIANUM: *L. H.* No. 2 is decidedly the best, judging from single flowers. The Odontoglossum was not enclosed.

FUNGUS: *R. K., Newcastle-on-Tyne.* The name of your fungus from dung is Peziza vesiculosa. It is a common plant upon dunghills and hotbeds. *A Plain Account of British Fungi*, Hardwicke & Bogue, 192, Piccadilly, is a good book for a beginner. Its cost is about 6*r.*

GARDENERS' ROYAL BENEVOLENT INSTITUTION: *P. S.* Apply to the Secretary, 14, Tavistock Row, W.C.

GREENHOUSE PLANTS: *R. R.* Plants grown under glass, such as those specified by "R. R.," are subject to minute attention in such a manner that without much more particular details as to the treatment they have been subjected to than are given, it is impossible to determine what is the cause of the bad condition displayed, and, consequently, to prescribe a remedy. We must refer our correspondent to p. 73, vol. ii, new series; he will there find full details as to the cultivation of Azaleas, by following which any one with a very moderate amount of practical knowledge cannot fail to succeed. On the cultivation of Oranges similar instructions are given at p. 591, vol. iii. After the Camellias have flowered place them in a night temperature of about 55°; syringe freely overhead, and keep the soil moist. Shade from the sun, and admit a moderate amount of air till the growth is completed and the buds are set, when give less water and more air. Discontinue syringing, and keep cooler through the autumn and winter. Gardenias require cutting in freely after flowering, and should be kept in a night temperature of from 60° to 70° whilst making their growth in the summer, with 10° or 15° more by day. They never should be lower than 50° in the night through the winter, and if required to flower at this season, 60° or 15° higher. Camellias generally succeed better planted out than in pots. The others we should by no means advise to be planted out. Gardenias must be grown in peat, Camellias in either peat or loam. We do not for a moment suppose that the sea air has anything to do with the plants not growing properly: a probable cause would be either an excess or deficiency of water, but more probably the former.

INSECTS: *C. D. S.* From your speaking of your plant in the singular case, we presume that it is only one. It would, therefore, be no great trouble to go over every leaf, and see whether it is mined or not, and wherever you see the grub or the pupa, give it a squeeze between your finger and your thumb. You need not then pluck them off, unless a few to send to us in a pill-box to try to rear them, as we cannot name it from the materials sent, which have got crushed and dried up. *A. M.*

IVY FOR WALLS: *Ivy.* It will not dry a naturally damp wall, but will protect, in a great measure, a dry wall from becoming damp through rain. Plant any quick growing sort, such as the Irish Ivy, Hedera canariensis.

NAMES OF PLANTS: *J. C. 1*, Cupressus Lawsoniana; 2, Ilex Cunninghamii; 3, Cupressus Goveniana; 4, Thujopsis dolabrata; 5, Thuja gigantea (Lobbii); 6, Pinus insignis.—*Hayes.* Phormia serrulata.—*J. H. Maidenhair* polysticta. The Lastia is noticed by Professor Reichenbach in another column.—*D. Saunders.* Crisus antarctica, probably, but there is very little to judge by.—*J. W., Warminster* Possibly a Dianella, so far as we can tell from a single leaf.

RHUBARB: *D. R.* A vegetable.

SHADING: *E. H.* A mixture of whitening, new milk, and thin paste or starch, will answer your purpose; but you must put it on carefully with a brush, so as not to touch the paint or putty, which the paste causes to curl off.

SLUGS: *Only a Novice.* Dust the plants with soot or fresh slacked lime. Salt would kill the slugs and the plants too, and is a dangerous thing in the garden in the hands of a novice.

VANDALISM IN PICCADILLY: *H. K.* The cutting down of the Elm trees in Piccadilly is no Vandalism at all, but a measure of necessity. The Elm trees were planted alternately with Planes to shelter the latter, and to afford some little shade until the Planes got up, when it was always intended that they should be cut out. The time has now come when to leave the Elms would be to do injury to the Planes, and they have been rightly removed. "A Foot-path" and the Editor who considers "the cutting down of these trees the most extraordinary piece of Vandalism of modern times," no doubt think it would have been more prudent to cut out "the stripling." No one having any knowledge of trees, and of Elms in particular, would dream now-a-days of planting them permanently near to any thoroughfare.

VINE ROOTS: *Amateur Grower.* Your Vine roots are infested with abundant mycelium of some fungus threads and fruits of a Saprolegnia, and a number of living infusorial animals. The two latter point unmistakably to superabundant moisture.

VIOLETS: *G. Lee.* Your seedling, which might well be called Odoratissima, is the finest we have seen. The flowers are large, very finely formed, with broad rounded well-set petals, of a blueish purple, and deliciously fragrant. Judging from the leaves sent, the foliage does not appear to be so coarse as in some of the other larg-flowered sorts.

WOODLICE: *E. H.* Turn a few Toads into the house; or, failing to get them, pour scalding water into the runs of the woodlice, and repeat the application until you have exterminated them.

CATALOGUES RECEIVED.—Messrs. Webb & Sons (Wordsley, Stourbridge), Annual Catalogue of Flower Seeds.—H. Bennett (Manor Farm Nursery, Stapleford, Wilts), Trade List of New Roses.—R. Buist (Rosedale Nurseries, Darby Avenue, Philadelphia, U.S.A.), Catalogue of Select Roses.—Messrs. J. Backhouse & Son (York), Catalogue of Hardy Perennial and Alpine Plants.—Messrs. Ewing & Co. (Royal Norfolk Nurseries, Eaton, Norwich), List of New Roses for 1877.—Messrs. Waite, Burnell, Huggins & Co. (79, Southwark Street, London, S.E., and 10, Rue Aubert, Paris), Catalogue of Agricultural Seeds, &c.—Messrs. Haage & Schmidt (Erfurt, Prussia), Trade List of Young Palms and various other Plants.

COMMUNICATIONS RECEIVED.—D. M., Glasnevin.—J. W., Gordon Castle (best thanks).—E. R.—E. O.—M. S.—G. W. —W. T. D.—J. M. (many thanks).—H. A. B.—Senex.—S.—A. D.—W. (next week).—J. D.—E. M.—W. C.—J. H.—J. L.—J. W. F.

DIED, at Pinefield Cottage, on Thursday afternoon, the 22d inst., Mr. GEORGE MORRISON, seedsman, Elgin, aged seventy-six years. Friends will please accept this intimation.

Markets.

COVENT GARDEN, March 1.

Trade remains quiet in this market, and will be so until we get through Lent and Easter. The supply of Apples is getting very short, and prices are well maintained. Good late Grapes are in demand, and making high prices. Stocks of Kent Cobs appear to be nearly exhausted, and scarcely any inquiries are made for them. *James Webber, Wholesale Apple Market.*

VEGETABLES.

	s. d.	*s. d.*
Artichokes, per bush.	4 0 ..	Leeks, per bunch ..	0 2– 0 4
— Kng. Globe, doz.	4 0– 6 0	Lettuces, Fr., p. doz.	1 0– 2 0
Asparagus, Fr., bun.	20 0– ..	— Cos, per doz ..	6 0– ..
— English, p. bun.	8 0–10 0	Mint, green, bunch	1 0– ..
— Sprue, per bun.	1 6– ..	Mushrooms, per pot.	0 6– 1 6
Beans, French (pea), per 100 ..	4 0– ..	Onions, per bush. ..	8 0– ..
Beet, per doz. ..	1 0– 2 0	— young, per bun.	0 8– 0 10
Brussels Sprts. bush.	7 0– ..	Parsley, per bunch ..	0 3– ..
Cabbages, per doz. ..	1 0– 2 0	Peas, green, per lb.	1 0– ..
Carrots, per bunch ..	0 6– ..	Potatos, new, per lb.	1 0– 2 0
Cauliflowers, per doz.	2 0– 4 0	Radishes, per bunch.	0 1– 0 3
Celery, per bundle ..	1 6– 2 0	— Spanish, doz. ..	1 0– ..
Chilis, per 100 ..	1 0– ..	— New Jersey, doz.	2 0– ..
Cucumbers, each ..	1 0– 2 6	Rhubarb, per bundle	1 0– 2 0
Endive, per doz. ..	1 0– 3 0	Salsafy, per bundle	1 0– ..
— Batavian, p. doz.	2 0– 3 0	Seakale, per punnet	1 6– 2 6
Garlic, per lb. ..	0 6– ..	Shallots, per lb. ..	0 6– ..
Herbs, per bunch ..	0 2– 0 4	Spinach, per bushel	5 0– 6 0
Horse Radish, p. bun.	4 0– ..	Tomatas, per doz. ..	2 0– 6 0
		Turnips, per bundle	0 4– 0 6

POTATOS.—Kent Regents, £5 to £6: Essex Regents, £4 to£5: Kidneys, £8 per ton.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples, per ¾-sieve	3 0	8 0	Oranges, per 100	4 0	10 0
Cobs, per lb.	1 0	1 6	Peaches, per doz.	0 0	0 0
Grapes, per lb.	2 6	12 0	Pears, per doz.	2 0	8 0
Lemons, per 100	4 0	10 0	Pine-apples, per lb.	1 6	4 0

PLANTS IN POTS.

	s. d.	s. d.		s. d.	s. d.
Azaleas, per dozen	24	60 0	Heliotrope, per doz.	6 0	12 0
Begonias, per doz.	6	0 12 0	Hyacinths, per doz.	8 0	18 0
Bouvardias, do.	12	0 18 0	Lily of Valley, each	0	5 0
Cineraria, per do.	9	0 18 0	Mignonette, per doz.	6 0	9 0
Coleus, per dozen	3	0 9 0	Myrtles, do.	3 0	9 0
Crocus, per dozen	3	0 9 0	Palms in variety, each	5 0	21 0
Cyclamen, per doz.	12	0 30 0	Pelargoniums, scarlet, per doz.	6 0	12 0
Cyperus, do.	6	0 12 0	Primula sinensis, doz.	4 0	9 0
Dracæna terminalis	30	0 60 0	Richardia æthiopica, per doz.	9 0	18 0
— viridis, per doz.	18	0 24 0	Solanums, per doz.	6 0	24 0
Ferns, in var., p. doz.	6	0 30 0	Tulips, per dozen	8 0	12 0
Ficus elastica	2	6 15 0	Valotta purpur., doz.	12 0	18 0
Fuchsias, per dozen	9	0 18 0			
Heaths, variety, doz.	9	0 24 0			

CUT FLOWERS.

	s. d.	s. d.		s. d.	s. d.
Azaleas, 12 sprays	0	6 2 0	Lily of the Valley, 12 sprays	0	9 4 0
Bouvardias, per bun.	1	0 4 0	Mignonette, 12 bun.	4	0 9 0
Camellias, 12 blooms	1	0 9 0	Narcissus, 12 sprays	2	0 4 0
Carnations, per dozen	1	6 4 0	Pelargoniums, 12 sprays	1	6 3 0
Crocus, 12 bunches	2	0 6 0	— zonal, 12 sprays	0	9 3 0
Cyclamen, per doz.	0	3 0 9	Primroses, per dozen	1	0 3 0
Daffodil, dbl., 12 bun.	4	0 9 0	Primula, dbl., 12 bun.	2	0 4 0
— sing., 12 bun.	3	0 9 0	Roses, indoor, p. doz.	3	0 12 0
Epiphyllum, 12 blms.	1	0 3 0	Stephanotis, 12 spr.	9	0 15 0
Eucharis, per doz.	6	0 12 0	Tropæolum, 12 bun.	2	0 6 0
Euphorbia, 12 sprays	2	0 9 0	Tuips, per dozen	1	0 2 6
Gardenia, per doz.	9	0 18 0	Violets, 12 bun.	0	9 4 0
Heliotropes, 12 spr.	0	6 1 0	Wallflowers, p. doz.	6	0 12 0
Hyacinths, p. dozen	2	6 6 0			
— Roman, 12 spr.	1	0 4 0			

CORN.

Trade at Mark Lane on Monday was quiet. Fine dry Wheat, either English or foreign, was well held; but the bulk being more or less affected by the weather, the rates of Monday se'ennight were not as a rule exceeded. For Barley prices were hardly so firm. Malt was steady, without much demand. In Oats and Maize the better qualities had an upward tendency. Beans and Peas were in very limited request. There was a quiet sale for all descriptions of flour, at the rates of last week.—Trade on Wednesday was very quiet, and quotations showed no material change. The continuance of cold, frosty weather would improve the condition of the produce, and increase the marketable supply; hence holders were not so firm as might be anticipated from the change in temperature, and with very little doing there was even some difficulty in supporting previous quotations in some instances.—Average prices of corn for the week ending February 24:—Wheat, 50*s.* 1*d.*; Barley, 40*s.* 4*d.*; oats, 25*s.* 7*d.* For the corresponding week last year:—Wheat, 43*s.* 3*d.*; Barley, 33*s.* 4*d.*; oats, 24*s.* 7*d.*

CATTLE.

At Copenhagen Fields on Monday there was a slow sale of beasts, and in some instances rather less money was taken, but there was scarcely a quotable reduction. There was a good demand for sheep, and late rates were well maintained. Choice calves were in request at high rates. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.*, and 5*s.* 6*d.* to 6*s.*; calves, 6*s.* to 7*s.*; sheep, 5*s.* 10*d.* to 6*s.*, and 6*s.* 10*d.* to 7*s.* 6*d.*; pigs, 4*s.* 4*d.* to 5*s.* 4*d.*—On Thursday the supply of beasts equalled the demand, and both were limited; prices were lower than on Monday. Good sheep were readily bought at the figures quoted above, but otherwise trade was not brisk.

HAY.

At Whitechapel on Tuesday there was only a moderate supply, and trade improved. Clover was decidedly firm, the better sorts making from 100*s.* to 128*s.*, while inferior produce was quoted from 85*s.* to 95*s.*; prime meadow hay was held for 90*s.* to 124*s.*; inferior, 70*s.* to 84*s.*; and straw, 40*s.* to 54*s.* per load.—Trade was not brisk on Thursday, at the following quotations:—Clover, best, 98*s.* to 128*s.*; inferior, 85*s.* to 90*s.*; hay, best, 95*s.* to 122*s.*; inferior, 65*s.* to 75*s.*; straw, 40*s.* to 52*s.* per load.—Cumberland Market quotations: — Superior meadow hay, 126*s.* to 135*s.*; inferior, 110*s.* to 114*s.*; superior Clover, 138*s.* to 147*s.*; inferior, 115*s.* to 130*s.*; and straw, 52*s.* to 57*s.* per load.

POTATOS.

The Borough and Spitalfields reports state that the Potato markets remain steady. There are moderate supplies, and no material change is apparent in quotations. Kent Regents, 100*s.* to 125*s.* per ton; Essex do., 90*s.* to 120*s.*; Scotch, 100*s.* to 130*s.*; Flukes, 125*s.* to 130*s.*; Victorias, 140*s.* to 170*s.*; Kidneys, 100*s.* to 120*s.*; Rocks, 76*s.* to 90*s.*—The imports into London last week consisted of 29,514 bags from Hamburg, 16,465 from Antwerp, 5428 from Ghent, 3029 from Bremen, 710 sacks from Bologne, 733 bags from Harlingen, 643 from Brussels, 677 from Rotterdam, 200 from Malta, 175 tons Dunkirk, and 52 Dahouet.

COALS.

The market on Monday was firm, and house coals met with an advance. There was a small supply on Wednesday, owing to the vessels being detained by the stormy weather, and house coals were sold at an advance of about 1*s.* per ton. Quotations:—Bebside West Hartley, 16*s.* 6*d.*; East Wylam, 16*s.*; Hastings Hartley, 16*s.* 3*d.*; Walls End—Hawthorns, 17*s.* 6*d.*; Hartlepool, 18*s.* 6*d.*; Kelloe, 18*s.*; East Hartlepool, 19*s.* 3*d.*; South Hartlepool, 18*s.*; Tees, 19*s.*

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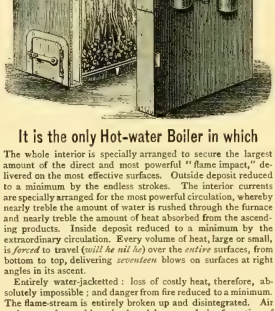
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RETIREMENT OF MR. JOHN LEE

from the Business, they have taken over the entire NURSERY and SEED TRADE so successfully carried on for many years by the late Firm, and they trust the same liberal patronage so long given to Messrs. JOHN & CHARLES LEE will be continued to the New Firm.

CHARLES LEE & SON

pledge themselves to devote all their energy to Raising First-class Stock in every Department, which the large resources at their command will enable them to supply with considerable advantage to the Public both as regards quality and price.

With a view to a more extensive production of STOVE and GREENHOUSE PLANTS of the best quality they intend to almost entirely rebuild their extensive ranges of glass on a new site, a portion of the old Nursery being taken up for building purposes.

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GYMNOGRAMMA LEPTOPHYLLA, six plants, tin box and postage, 2s. 6d.
PARSNIP SEED, hollow crowned, 10z. per bushel.
ELMS, Guernsey, grafted, 6, 8, and 10 feet high, 30s., 40s., and 50s. per 100.
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H. AND F. SHARPE will be pleased to forward their SPECIAL CATALOGUE of SEED POTATOS to those of the Trade who have not yet received one. It comprises all the principal English and American varieties worthy of cultivation; they are all grown from the finest selected stocks, and the prices will be found very moderate. Seed Growing Establishment, Wisbech.

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MUSCAT OF ALEXANDRIA, VENN'S BLACK MUSCAT, WALTHAM CROSS WHITE.

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Has a few of the above, in fine Fruiting Canes, from 1-yr. old eyes. Warranted to fruit six to ten bunches of Grapes.

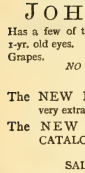
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The NEW DAHLIA and VERBENA CATALOGUE ready.

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The largest Black Grape in Cultivation.

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Ditto ditto ditto second size ... ... 7s. 6d. ,,

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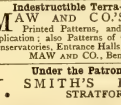
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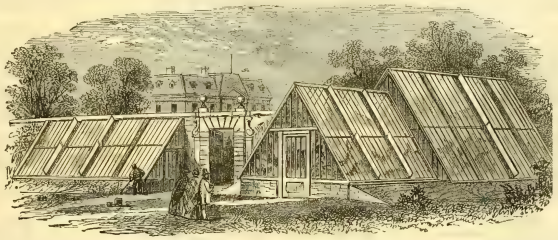
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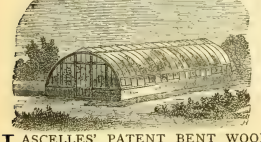
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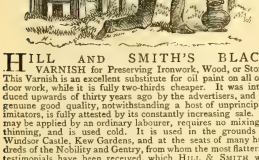
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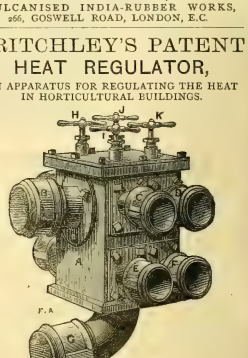
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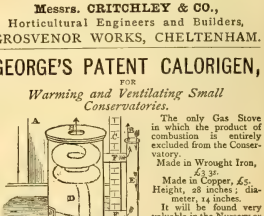
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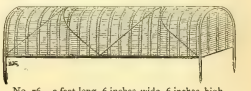
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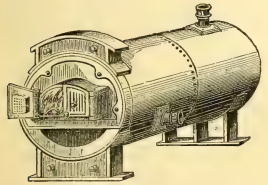


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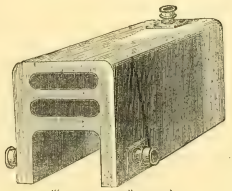


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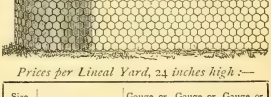
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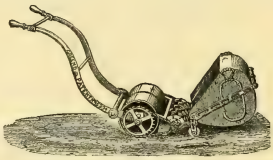
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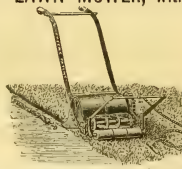
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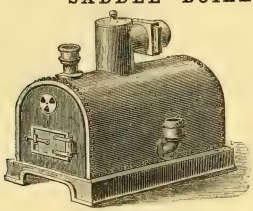
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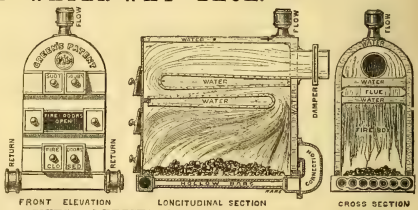
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THE

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A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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VEITCH'S PERFECTION PEAS.—A few Bushels for Disposal, at 20*s.*, clean, good, picked sample. Also WINDSOR BEANS, 14*s.*; cash. Apply to JOHN HOUSE, Eastgate Nurseries, Peterborough.

PROTHEROE AND MORRIS, HORTICULTURAL MARKET GARDENS and ESTATE AUCTIONEERS and VALUERS, 48, Leadenhall Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

NEW REGAL PELARGONIUMS (Two of the Gems of the Season), "PRINCE OF WALES" and "PRINCESS OF WALES." Price 1 guinea each.

To be seen during the first week in May by WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

CALCEOLARIAS, aurea floribunda and Golden Gem, strong, healthy, autumn-struck plants of the above, 5*s.* per 100, 40*s.* per 1000. AURICULA CAMPBELLII, the best of all the Aubrieties, 3*s.* per dozen. Package free for cash.

W. FIELD, Tarvin Road Nursery, Chester.

ALTERNANTHERA AMŒNA, and STORE VERBENAS, in large or small quantities. For price, &c., apply to JOSEPH PAXTON, The Nursery, Green Lanes, Stoke Newington, N.

Winter-flowering Orchids.

CALANTHE VESTITA RUBRA OCULATA. Price, 9*s.* per dozen, or 50*s.* per 100. S. WOOLLEY, Nurseryman, Cheshunt, Herts.

Now Ready,

CHARLES TURNER'S Descriptive CATALOGUE of SEEDS. Post-free on application.

The Finest Dwarf Marrow Pea is

TURNER'S DR. MACLEAN. See CATALOGUE, now ready.

New Early Prolific Pea,

ALLAN'S CHAMPION. Full description in CATALOGUE, now ready.

Schoolmaster

FINEST ROUND POTATO. Description, with testimonials, in CATALOGUE, now ready.

CHARLES TURNER, The Royal Nurseries, Slough.

SNOWFLAKE POTATOS. — Warranted true and free from disease, in cwt. bags, 26*s.*; bag free, and carriage paid to any Railway Station in England on receipt of Post-office Order or Cheque.

DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

SEED POTATOS.—Oxfordshire Kidney, Bresee's Peerless and Prolific, Paterson's Victoria, Cattel's Eclipse, Carter's Breadfruit, Paterson's Princess of Lorne, American Wonder. At a moderate price. Apply to HENRY MINCHIN, The Nurseries, Hook Norton, Oxon.

POTATOS for SEED.—Improved Victorias, Paterson's Flukes, Excelsior, Bresee's Prolific, Dalmahoys, Perfectionone Lisneys, Queens, Bovinias, Climax, Hundredfold Flukes, Eureka, Compton's Surprise. Very low; per ton for cash.

W. COCKS, Monks Hall, Gosberton.

POTATOS.—Choice varieties. Economy in price. Most productive and best qualities known. Snowflake, 22*s.* per cwt., carriage paid in England.

C. R. FREEMAN, Economic Seedsman, Norwich.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden.—"Gee's superior Bedfordshire-grown Plants and Seeds have attained much celebrity."—*Vide Bedford Mercury*, July 29, 1876. "The soils of the district offer facilities enjoyed at few places for bringing sway plants, &c., and under the skill and perseverance of Mr. F. Gee they are turned to good account."—*Vide Agricultural Gazette*, July 31, 1876. See other opinions of the Press, also a Treatise on the Cabbage. CATALOGUES, lowest prices, &c., on application to FREDERICK GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

WANTED, Cuttings of GERANIUMS, Vesuvius, Madame Vaucher, Master Christine, any sort Tricolor, and good Bicolors, also CALADIUMS and ALOCASIA LOWII. ORCHIDS, TUBEROSES, LILY OF THE VALLEY CLUMPS, SEEDS, &c., may be had in EXCHANGE.

W. F. BOFF, 203, Upper Street, Islington, N.

WANTED, 20,000 to 30,000 MANETTI ROSE STOCKS. Samples, with lowest cash prices, to CRANSTON AND CO., King's Acre Nurseries, near Hereford.

Azaleas.

WANTED IMMEDIATELY, FIELDING'S WHITE, large plants preferred, large or small quantities. State particulars to G., *Gardeners' Chronicle* Office, W.C.

WANTED, RHODODENDRON STOCKS, also 200,000 Seedling QUICK. Send samples and price to BENJAMIN CROSLAND, Nurseryman and Seedsman, 37, Norfolk Market, Sheffield.

To the Trade.

PRIMROSES, Double Lilac, 20,000; APPLES, Standard; CHERRIES, Standard; PEARS, Standard; CURRANTS, Black and Red. Price and List of Sorts on application to BENJAMIN CROSLAND, Richmond Nurseries, Handsworth, Sheffield.

SPIRÆA PALMATA.—Fine crowns for forcing, 15*s.* per 100, smaller, 9*s.* per 100, per 1000. CHARLES NOBLE, Bagshot.

RHODODENDRONS. 3-yr. Seedlings, 6 to 12 inches, transplanted; 4-yr. Seedlings (fine), 8 to 12 inches, transplanted; 12 to 18 inches, transplanted. For prices, which are low, apply to HENRY FARNSWORTH, Matlock Bank, Derbyshire.

To the Trade.—Common Ash.

STUART AND MEIN have a quantity of the above to Dispose of, all sizes from 3 to 10 feet. The Nurseries, Kelso, N.B.

YEWS for SALE.—About 2000, from 3½ to 4½ feet high, at 20*s.* per 100; also from 4½ to 5½ feet, at 12*s.* per 100; all in first-rate condition and well-rooted, and grown for Hedges or Ornamental Trees—as fine as any could wish to see. It is a good time to plant now. JOSEPH SPOONER, Goldsworth, Woking.

DOWNIE AND LAIRD have to offer, cheap, a large quantity of ENGLISH YEWS, 3 to 4 feet in height. Royal Winter Gardens, Edinburgh.

HAWS or THORN QUICK SEED.—Sound Haws, fit for sowing at present, or spring coming, guaranteed free from soil or other mixture, and thoroughly well preserved. About 30 tons on hand. For lowest prices apply to GRANT AND CO., Park Nursery, Portadown, Ireland.

OAK and BEECH, English.—About 50,000 1-yr. Seedlings, strong plants of the above for Sale. For price, &c., apply to J. HARTNELL, Bailiff, Houghton Hall, Rougham, Norfolk.

To the Trade.

FIR SEED, Scotch, guaranteed true native. Cheap. W. WISEMAN AND SON, Elgin, N.B.

To the Trade.

HAND F. SHARPE'S Special Priced LIST of HOME-GROWN GARDEN and AGRICULTURAL SEEDS of 1876 growth, is now ready, and may be had on application.

Seed Growing Establishment, Wisbech.

DENDROBIUM PIERARDII. — Good plants, 10*s.* 6*d.* each, 5 guineas per dozen. The plant of this Dendrobium exhibited at the Royal Horticultural Gardens last Wednesday elicited universal admiration.

Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

ORCHARD-HOUSE TREES, Fruiting in Pots :—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

VINES.—Splendid Planting Canes of leading varieties, perfectly ripened without bottom-heat, and a few extra strong Canes for Immediate Fruiting.

JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

Vines, Vines, Vines.—The Planting Season.

THE COWAN PATENTS' COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Canes of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

Vines, Vines, Vines.

B. S. WILLIAMS begs to announce that his GRAPE VINES this year are unusually fine, and are now ready for distribution.

For Detailed List, see Bulb Catalogue.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

Vines, Vines, Vines.

MR. T. C. CLARKE, of Vinery House, Allerton, near Liverpool, has a fine stock of young Vines, nice canes for planting, out of the best varieties, from 2*s.* 6*d.* to 5*s.* each.

Grape Vines.

FRANCIS R. KINGHORN has still to offer strong planting and fruiting Canes of most of the leading sorts. Particulars on application.

Sheen Nursery, Richmond, Surrey.

CUCUMBER PLANTS, Telegraph.— Strong plants now ready.

A. WATKINS, Nursery, Bishop Stortford, Herts.

Cucumber Plants, clean, strong, and healthy.

F. W. COOPER can supply the above: Rollisson's Telegraph, Munro's Duke of Edinburgh, Blue Gown, and Tender and True; also seed of all the varieties grown under his own supervision and guaranteed true. The Trade supplied. Florist, Huntingdon.

Gentlemen's Gardeners, Amateurs, and Others

REQUIRING GARDEN POTS of best quality, are requested to send their orders to J. MATTHEWS, Royal Pottery, Weston-super-Mere. Price List on application.

SALES BY AUCTION.

Edgware, N.W.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Whitchurch Rectory, Edgware, on TUESDAY, March 13, at 12 o'clock precisely, by order of the Proprietor, the Land Wanted required for the formation of a Pinetum, the remaining portion of the remarkably well-grown NURSERY STOCK, comprising a considerable number of Picea, Pinus, Thujopsis, Thujopsis, Cupressus, &c., a quantity of Rhododendrons, Standard Roses, and other flowering Trees and Shrubs, Fruit Trees, &c., together with a choice assortment of valuable Orchids.

On view the day prior. Catalogues obtained on the Premises, and of the Auctioneers.

City Auction Rooms, 38 & 39, Gracechurch Street, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the above Rooms, on THURSDAY, March 15, at half-past 12 o'Clock precisely, a choice collection of English grown double CAMELLIAS, 9 to 15½ feet, beautifully set with bloom-buds, and in perfect health; choice AZALEA INDICA, selected GREENHOUSE PLANTS, a splendid assortment of 500 Standard and Dwarf ROSES of the best varieties, selected FRUIT TREES, hardy AMERICAN PLANTS, CONIFERÆ SHRUBS, together with some fine Bulbs of LILIUM AURATUM and LONGIFOLIUM, GLADIOLUS, RANUNCULUS, ANEMONES, also FUCHSIAS, DAHLIAS, &c.

On view the morning of Sale. Catalogues may be had at the Rooms, and of the Auctioneers, &c., 98, Gracechurch Street, E.C., and Leytonstone, E.

Cheltenham.

HIGHLY IMPORTANT UNRESERVED SALE of the unrivalled Collection of Specimen Exhibition STOVE and GREENHOUSE PLANTS, which for many years past have been exhibited at the leading Shows throughout the country with unprecedented success by Mr. James Cypher, who during the last two years has been the winner of 200 First Prizes and of £1023 in prize money, exclusive of a great number of Cups.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. James Cypher (who is giving up exhibiting in consequence of the want of Premises accommodation) to SELL the above COLLECTION of PLANTS, on the Premises, the Queen's Road Nurseries, Cheltenham, on WEDNESDAY and THURSDAY, April 11 and 12.

Catalogues are now ready, and may be obtained on the Premises, and of the Auctioneers.

Plants and Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 21, at half-past 12 o'Clock precisely, first-class Standard, Half-Standard, Dwarf, and Climbing ROSES, from a well-known English Nursery; SHRUBS, FRUIT TREES, HERBACEOUS PLANTS, CARNATIONS, PICOTEES, and PINKS, CAMELLIAS and AZALEAS, GLADIOLI, LILIUMS, RUSTIC GARDEN-WORK, &c.

On view the morning of Sale, and Catalogues had.

The Unrivalled Collection of Specimen Stove and GREENHOUSE PLANTS of the late F. G. WILKINS, Esq., of Leyton.

MR. J. C. STEVENS has received instructions to offer for SALE by AUCTION, on the Premises, on THURSDAY, March 29, at half-past 12 o'Clock precisely, the magnificent COLLECTION of STOVE and GREENHOUSE PLANTS formed by the late F. G. Wilkins, Esq., of The Poplars, Leyton, comprising Heaths, Aphelexia, Statices, Pleromas, Ixoras, Bougainvilleas, Clerodendrons, Crotons, Anthuriums, Azaleas, Palms, Ferns, Trained Pelargoniums, &c. This collection is without doubt one of the finest in the kingdom, and has been grown and exhibited most successfully by Mr. Ward for the last ten years. Also TWO EXHIBITION VANS.

On view the day prior and morning of Sale, and Catalogues had.

Stamford Bridge, Waltham Green.

To MARKET GARDENERS and OTHERS.

MESSRS. RICE BROTHERS will SELL by AUCTION, on the Premises as above, on MONDAY, March 12, at 1 o'Clock precisely, the MARKET GARDEN STOCK and TRADE IMPLEMENTS, comprising 58 Three-light Boxes, with lights and contents, a 3-ton Market Waggon, three Manure Carts, Ladders, Barrows, and various Tools; about 2 Acres Frames and 4000 Deal-ends Boards, a quantity of Manure, and numerous other items.

May be viewed Saturday previous and morning of Sale, and Catalogues had upon the Premises; at the "Rising Sun" opposite, and of the Auctioneers, 2, Adelaide Place, London Bridge, City, E.C.

Exhibition, Conservatory, Greenhouse, and Stove Plants.

ATTRACTIVE SALE of a splendid Collection of SPECIMEN PLANTS, the property of a leading Firm of Exhibitors in the North of England, who are giving up showing.

ARTINGSTALL AND HIND beg to notify the receipt of peremptory instructions to SELL by AUCTION, on FRIDAY, March 23, at the Cotton Waste Exchange, Manchester, a valuable collection of EXHIBITION PLANTS.

Catalogues in preparation, which may be obtained on March 1 on application to the Auctioneers, 51, Princess Street, Manchester.

TO BE SOLD, by Private Treaty, with immediate possession, in consequence of ill-health, the GRANGE VILLA NURSERY, Didsbury Road, Heaton Mersey, in the occupation of Mr. Thomas Smith. The House contains on the ground floor Drawing, Dining, and Breakfast Rooms, Kitchen, Scullery, Butler's and Store Pantries. First floor: Six Bedrooms, Dressing-room, Bath and Water-closet. It is exceedingly well-built, and is in first-class condition. There is also a Coach-house, Harness-room, with large Loft over, and Stabling for three horses; Piggeries, Cowhouse, and an extensive range of Conservatories, Vineries, and Greenhouse. The site is freehold of inheritance, and free from chief rent, and contains 3 statute acres of land, which is tastefully laid out, and planted with a large assortment of choice trees and shrubs: the trees and plants to be taken at a valuation. Apply to

MESSRS. WILLIAM WILSON AND SON, Auctioneers and Valuers, 73, Princess Street, Manchester.

Midland Counties (2017).

TO BE DISPOSED OF, on advantageous terms, a thriving and increasing NURSERY BUSINESS. Comprises comfortable Dwelling-house with convenient Seed Warehouse and Shop; there are two Nurseries, one called the Home Ground, 3 acres in extent, and a Market Nursery of 60 acres. Aggregate rental for the whole, £154 per annum. Incoming about £2300. Open to an offer, or the Stock to be taken by valuation in the usual way. Apply for further particulars to

MESSRS. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

In the S.E. Suburb of London (2186).

TO BE LET, an old-established NURSERY, SEED, and FLORIST'S BUSINESS, with Immediate Possession. Owner retiring from business. There is an Acre of Ground, with 600 feet of Glass erected thereon. Stock at a valuation. Apply to

PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C., and Leytonstone, E.

To Gardeners, Florists, &c.

TO BE LET, as from Lady Day, a capital NURSERY GROUND, with or without a Residence, situated within 8 miles of Covent Garden Market, comprising seven large Glass Houses, heated, and upwards of an Acre of Land. For particulars apply to

Messrs. RUSHWORTH, ABBOTT AND RUSHWORTH, 22, Savile Row, W.

To Florists, Nurserymen, and Others.

TO BE LET, or the GROUND LEASE TO BE SOLD, a very VALUABLE PROPERTY, with large Frontages to Edgware Road and Church Road, where the business of a Florist has been many years carried on. There is a good House and other suitable buildings on the ground floor.

Messrs. RUSHWORTH, ABBOTT AND RUSHWORTH, 22, Savile Row, W.

TO BE LET, on Lease or Otherwise, the HOUSE, SHOP, and GROUNDS, as Seedsman and Florist's Rent, £65. Been in the same line forty years, and a fortune made. For particulars apply to

Mr. J. MILES, Nurseryman, &c., Wandsworth Road, Surrey, adjoining the London, Chatham and Dover Railway Station, near the property. Stamped envelope for particulars.

MacArdell John Cole, Gardener.

WANTED to know the ADDRESS of the above, who was Gardener for Mr. Weld, of Lulworth, and at Tavistock.—Address, Messrs. YARDE AND LOADERS, Solicitors, Raymond Buildings, Gray's Inn, London.

To Market Gardeners and Others.

S. BIDE has to offer good, strong, pricked-out plants of BATH COS LETTUCE, at 5s. per 1000, or 500 for 3s. Cash with order to

S. BIDE, Alma Nursery, Farnham.

POTATOS.—Red-skinned Flourball, 30 tons, true, at £7 10s. per ton, 18s. per sack.

A. COCKERILL, 20, Drapery, Northampton.

Special Cuture of Fruit Trees and Roses.

THE DESCH, 100 and 101 Grand (LUSTRATED CATALOGUE of FRUITS (by Thomas Rivers) is now ready; also CATALOGUE of Select ROSES. Post-free on application.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Verbenas, Verbenas, Verbenas.

WILLIAM BADMAN offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, 50s. per 100; 12 distinct colours, 10s. per 100. Good rooted Cuttings, 6d. per 100, 50s. per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S.E.

TO PINE GROWERS.—The Advertiser, who is giving up Pine cultivating, has to Dispose of the following QUEEN PINES, viz.:—13 to Fruit this Summer; 18 to succeed; 7 newly potted Suckers, all in healthy condition.—Apply to Southborough Hall, Bromley.

SEEDS—SEEDS—ALL KINDS.—Before ordering your Seeds, send for Illustrated CATALOGUE, which contains full Directions,

Lists of Sorts, and What to Sow.

PENGILLEY AND POOL (successors to the Heatherside Nurseries Company), 59, Queen Victoria Street, London, E.C.

THOMAS S. WARE has pleasure in announcing that his two SPRING CATALOGUES have been posted to the whole of his Friends. If any have not received the same fresh copies will be supplied on application.

Hale Farm Nurseries, Tottenham, London.

STOVE FERNS.—For Sale, six large Stove Ferns, in very healthy condition. For view and particulars apply to

Fawley Court, Henley-on-Thames.

To the Trade.

ASPARAGUS, Giant, 1-yr., 2-yr., 3-yr., 1000.

JAMES BIRD, Nurseryman, Downham.

To the Trade Only.

SEAKALE SETS, ready for Planting, at 10s. per 1000.

WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

Pelargoniums, Pelargoniums.

JAMES HOLDER AND SON have a fine healthy Stock of the above to offer, at the following low prices for Cash, viz.: 35s. per 100, distinct sorts, hamper and package included; also extra strong plants, in 32-pots, 18s. per dozen, in 48-pots, 9s. per dozen, 60s. per 100, basket and packing extra. Crown Nursery, Reading.

Important Notice.

JAMES HOLDER AND SON beg to inform their numerous customers, and the public generally, that the PELARGONIUMS advertised by them are not the Zonal Class, but consist of Show, French, and Fancy varieties. The Stock and Collection is First-class, as certified by numerous testimonials received from various parts of the country.

Crown Nursery, Reading.

Special Offer.—150,000 Vesuvius.

WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, 10s. per 100; or from store-pots, 8s. per 100, 75s. per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S.E.

W. F. BOFF offers magnificent Bulbs of LILIUM AURATUM, 12s. per dozen; easy growing, free-blooming ORCHIDS, 21s., 30s., and 42s. per dozen; LILIUMS, 6s. per dozen, 25s. per 100; LILY OF THE VALLEY, imported clumps, 9s. per dozen. CALCEOLARIAS, yellow, rooted cuttings, 5s. per 100.

293, Upper Street, Islington, N.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LIST for 1877.

Extra Strong SEAKALE, 2s. per dozen.

RICHARD SMITH, Nurseryman, Worcester.

To the Trade.—Mangel Wurzel Seeds, 1876 Growth.

H. AND F. SHARPE invite the attention of the Trade to their fine selected stocks of home-grown MANGEL SEEDS, raised from fine picked bulbs. Special offers and samples may be had on application.

Seed Growing Establishment, Wisbech.

LARGE TREE BOX and EVERGREEN HOLLY.—Handsome, bushy, and well-rooted, will transplant with good balls of earth, 5, 6, 7, and 8 feet high. Tree Box from under trees better than cut grown. Evergreen tree. An inspection invited. Price on application to

T. JACKSON AND SON, Nurseries, Kingston, Surrey.

Herbaceous and Alpine Plants (Illustrated).

THOMAS S. WARE'S CATALOGUE of the above is now ready for the year 1877. It includes New, Rare, and Choice Perennials, Bamboos, and Ornamental Grasses, Bog Plants, and Aquatics; also, a few Bulbs. Forwarded on application.

Hale Farm Nurseries, Tottenham, London.

To the Trade.

STANDARD and DWARF ROSES of the leading sorts—splendid Plants, no better in the Trade, well-rooted worked stock. Standards 1000 Dwarfs, guaranteed true to name. For lowest prices apply to

GRANT AND CO., Park Nursery, Portadown, Ireland.

To the Trade.—Turnip Seeds.

H. AND F. SHARPE are prepared to make special offers in Bulk of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.

Seed Growing Establishment, Wisbech.

VERBENAS, VERBENAS, VERBENAS. —Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 50s. per 1000, 50s. per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, for 8s. Terms cash.

H. BLANDFORD, The Dorset Nurseries, Blandford.

GLOXINIA CRASSIFOLIA GRANDIFLORA.—Magnificent strain, quite distinct; sown now will flower in autumn. Erecta and horizontalis, separate or mixed, 1s. and 2s. 6d. per packet.

PETUNIA, quite new large-flowered—Yashiki, a large percentage of double flowers, 1s. 6d. per packet.

STEPHANOTIS FLORIBUNDA.—Remarkably free-flowering variety from the Mauritius, 1s. 6d. per packet.

CATALOGUES free on application.

JAMES TYNAN, Seed Warehouse, 68, Great George Street, Liverpool.

LEE'S PRINCE CONSORT VIOLET BLOOMS.—As there is little prospect of the above beautiful Violet being "let out" in plants, G. LEE has decided to offer the BLOOMS to the Nobility and Country, for Table Decoration and other purposes, at the following rates:—Single Blooms, with long stems, for mixing with other flowers, 5d. to 6d. per dozen; if three or more dozens are ordered, package and package free. In Bouquets, flat or round (which please state), from 3s. to 30s. per dozen; if three or more dozens are ordered, carriage paid to London.

Orders will still be booked for Plants (conditionally) at 10s. 6d. for four plants and package, or 50s. for twenty-five plants and 12s. for package; less than four plants not sent out. VICTORIA REGINA, 6s. per dozen plants; less not sent out.

GEORGE LEE, F.R.H.S., Market Gardener, Clevedon, Somerset.

CENTROPOGON LUCYANUS. — Fine Stock Plants of this splendid plant, as noticed in last week's *Gardeners' Chronicle*, price 3s. 6d. and 5s. each; also very fine LARGE PLANTS, MOUNTAIN ASH, and AUCUBAS, suitable for London Planting.

N.B.—A few clean, extra-sized, drawf-trained APRICOTS, fit for planting now.

THOMAS BUNYARD AND SONS, Nurseries, Maidstone.

SEED POTATOS.—Myatt's Kidney, Dalmahoy, Red Bog, Walker's Regents, Early Rose, Paterson's Victoria, Scotch Blue, Harry Blue, Early Oxford, and other sorts; all carefully grown and would make an excellent change of seed. Price on application.

KERR AND FOTHERINGHAM, The Exchange, Dumfries, N.B.

CLEARANCE OFFER.—Strong Pyramid FRUIT TREES, 9s. per dozen; strong CURRANTS, 8s. per dozen; GOOSEBERRIES, 6s. per dozen; finest Perpetual ROSES, strong Dwarfs, 6s. per dozen; Standards, 15s.; broad, bushy RHODODENDRONS, 6s., 9s., to 12s. per dozen; large bushy LAURELS, 8s. to 9s. per dozen; ARBOR-VITÆ, 4 to 6 feet, 9s. per dozen; CUPRESSUS, 3 to 5 feet, 12s. per dozen; BERBERIS AQUIFOLIA, 2 to 3 feet, fine, 12s. 6d. per 100.

R. THORNHILL, Bowden Nurseries, Bowden, Cheshire.

Scotch Fir and Black Austrian Pines.

A. E. BARNAART AND CO., NURSERYMEN, Vogelenzang, Haarlem, Holland, have a large quantity of SCOTCH FIRS, 3-yr., 2-yr. transplanted, and BLACK AUSTRIAN PINES, 2-yr., 2-yr. transplanted, which they can offer at very low rates. Samples and prices may be obtained from

Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

Genuine Garden Seeds.

WM. CUTBUSH AND SON have for many years held some of the finest Stocks of SEEDS in the Trade, and they believe that no house can possibly supply better quality. CATALOGUES post-free on application.
HIGHGATE, LONDON, N., and BARNET, HERTS.

To Farmers and Market Gardeners.

SANGSTER'S No. 1 PEA, selected stock, 10s. per bushel. DILLISTONE'S PROLIFIC, the earliest and most productive of all the early Peas, 12s. per bushel. Samples on application to
BALL AND COMPANY, Seedsmen, 4, Mercer's Row, Northampton.

Dickson's Improved

MUSHROOM SPAWN.—This is unsurpassed by the best Spawn. Circulars, with testimonials, prices, &c., on application to
JAMES DICKSON AND SONS, 108, Eastgate Street, Chester.

Good Verbenas, Cheap.

S. BIDE has now a splendid stock of good, strong, healthy VERBENAS, free from any disease, consisting of White, Purple, Scarlet, Pink, and various other colours, at 6s. per 100, or in pots at 8s. per 100, for cash. Send orders early to
S. BIDE, Alma Nursery, Farnham.

THE NEW PLANT and BULB COMPANY beg to call special attention to their NEW LIST (No 31), just published. Contents:—New Hardy Bulbs, New and Rare Lilies, New Hardy Cypripedium, New Ferns, Seeds of New Hardy Flowering Plants, &c. All of sterling merit, and at low prices. Post-free on application.
Lion Walk, Colchester.

Roses, Fruit Trees, Evergreens, &c.

WILLIAM PAUL'S DESCRIPTIVE CATALOGUE is now ready, and may be had post-free on application. The Nursery Stock generally is very fine, healthy, and well-rooted. Early orders are respectfully solicited.
Waltham Cross, Cheshunt, Herts.

Seed List.

CHARLES SHARPE AND CO.'S WHOLESALE LIST of VEGETABLE and FARM SEEDS is now ready, and will be sent post-free on application.
CHARLES SHARPE AND CO., Seed Farmers, Sleaford, and at 31, New Corn Exchange, Mark Lane, London, E.C.

Select Swede and Turnip Seeds.

CHARLES SHARPE AND CO.'S carefully-selected Stocks of SWEDE and TURNIP SEEDS, the produce of their own Seed Farms in Lincolnshire, are offered in their Wholesale Seed List for 1877.

Select Mangel Seeds.

CHARLES SHARPE AND CO. have much pleasure in asking attention to their select Stocks of MANGEL WURZEL SEED, which have been grown under their personal supervision upon their own Seed Farms at Sleckington, and in the adjoining parishes. Quotations and prices are given in C. S. & Co.'s Wholesale Seed List for 1877.

EVERY DESCRIPTION of HORTICULTURAL and AGRICULTURAL SEEDS, SEED POTATOS of finest quality, both Home-grown and Imported.

CHARLES SHARPE AND CO., Seed Farmers, Sleaford, and 31, New Seed Market, Mark Lane, London, E.C. All letters address Sleaford.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, and FLORAL FLOWER, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.
Mr. WEBB, Calcot, Reading.

Lobelia Ebor—Lobelia Ebor.

J. C. PADMAN, Providence Nursery, Boston Spa, near Tadcaster, has pleasure in informing all lovers of really good Bedding Plants that he is propagating his new LOBELIA EEOR to send out the second week in May. Price 6d. each, 5s. 6d. per dozen, 24s. per 100. A writer in the *Gardeners' Chronicle* of February 10, 1877, says:—

"Last season I had the following varieties placed side by side to enable me to compare exactly their various merits:—Bluestone, Ebor, pumila magnifica, Lustrous, pumila grandiflora, Brilliant, Mazarine Gem, Cobalt Blue, Bore-pleno, and Wellsiana. I found decidedly the best of the Lobelia compacta class. It is scarcely known except in Yorkshire, but for effect it certainly eclipses all others. Its colour is so dark and intense that it may justly be called purple, and if planted side by side with pumila grandiflora the contrast is most pleasing and very effective."

See also "Cannell's Floral Guide" for 1877, p. 83.

To the Trade.

JAMES YOUNG, Brechin, N.B., offers the following:—
400,000 LARCH, seedlings, 2-yr.
200,000 FIR, Scotch, seedlings, 2-yr.
3,000 ASH, Mountain, transplanted, 4 to 5 feet.
10,000 BERRIS, transplanted, 3 to 4 feet.
20,000 ,, transplanted, 2½ to 3½ feet.
500 HOLLY, Green, transplanted, 2 to 2½ feet.
500 CHESTNUT, Horse, transplanted, 4 to 5½ feet.
1,000 LIME, transplanted, 3 to 4 feet.
1,000 ,, transplanted, 2½ to 6½ feet.
600 PINUS CEMBRA, transplanted, 3 to 4 feet.
25,000 SPRUCE, transplanted, 1½ to 2 feet.
Special offers on application.

ROBERT AND GEORGE NEAL, Wandsworth Common, Upper Tooting, and Garrett Lane Nurseries.
These Nurseries comprise about 50 Acres of well-grown and a most useful assortment of STANDARD, ORNAMENTAL, FOREST, FRUIT, and ROSES, and SHRUBS, all of which are in a most healthy and fit condition for removal. A personal inspection invited. CATALOGUES free on application.
The Nurseries are within a few minutes' walk of the Clapham Junction and Wandsworth Common Railway Stations.

WEBB'S HOME GROWN SEEDS CARRIAGE FREE
WEBB'S
COMPLETE COLLECTION OF VEGETABLE SEEDS,
Produce the best vegetables all the year round
CARRIAGE FREE TO ANY RAILWAY STATION
PRICE 21/-
FIVE PER CENT DISCOUNT FOR CASH

WE ALSO SUPPLY COLLECTIONS AT
10s. 6d., 15s., 30s., 42s., 63s., and 105s.
The above contain liberal assortments of the best varieties in cultivation.
All Goods of 20s. value and upwards Carriage-free to any Railway Station in England or Wales.

WEBB'S
CHOICE
COLLECTIONS OF FLOWER SEEDS.



Specially selected to produce a splendid and continuous display during Summer and Autumn.

		s.	d.
No. 1.	Collection of Choice Flower Seeds ..	42	0
No. 2.	,, ,, ,, ..	31	6
No. 3.	,, ,, ,, ..	21	0
No. 4.	,, ,, ,, ..	15	0
No. 5.	,, ,, ,, ..	10	6

These Collections contain a liberal assortment of the most superb varieties.
Smaller Collections from 2s. 6d.
ALL FLOWER SEEDS FREE BY POST OR RAIL.
Five per Cent. Discount for Cash.

Webb & Sons
The Queen's Seedsmen,
WORDSLEY, STOURBRIDGE.

CHARLES NOBLE, Bagshot, can offer the following:—
ROSES, Dwarf, 4s. per dozen, 25s. per 100, 210s. per 1000.
PEACHES and NECTARINES, dwarf-trained, 21s. per dozen, 150s. per 100.
RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1¾ to 2 feet, 21s. per dozen, 150s. per 100.
,, ,, ,, for immediate effect, 2½ to 4 feet, and same through, 42s. per dozen, 300s. per 100.
,, Seedling, 1¾ to 2½ feet, 24s. per dozen, 200s. per 100.
,, PONTICUM, 1¾ to 2 feet, bushy, 6s. per dozen, 35s. per 100.
KALMIA LATIFOLIA, 1 to 1½ foot, buds, for potting, 75s. and 100s. per 100.
ANDROMEDA FLORIBUNDA, buds, for potting, 75s. and 100s. per 100.
ERICA CARNEA, very fine, 21s. per 100.

From Paris.—Roses, Pæonies, Camellias.

LÉVÊQUE AND SON, Nurserymen, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand ROSE TREES, in Standards, Half-standards, Dwarfs, and on own root—New and Old sorts.
LÉVÊQUE AND SON respectfully solicit Gentlemen and Nurserymen visiting Paris to inspect their Stock, the largest in Paris.
SPLENDID PYRAMID CAMELLIAS, price 12s. to 50s. each; small, 2s. 6d. to 10s.
CATALOGUES and LISTS on application.

From Paris.—Large Bulbs of Gladioli, Seedlings and named sorts.

LÉVÊQUE AND SON, Nurserymen, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand strong, healthy Flowering BULBS of GLADIOLI. The Seedling Bulbs are particularly recommended—their flowers equal to the named sorts (seeds have been taken from the best sorts of the collection). GLADIOLI, Seedlings, 1st per 100, 4s. 5d. per 1000; mixed white, red, pink. Separate colours, 12s. to 20s. per 100; yellow, 24s. per 100. Named sorts per 100, 10 sorts, 10s.; 25 sorts, 20s.; 50 sorts, 30s.; 100 sorts (the best), 45s. to 56s. less or more, according to the novelty. All good flowering bulbs. English Cheques on London, or Post-office Orders on Paris, accepted in payment.

TO THE TRADE.
ELMS, 8 to 10 feet.
LIMES, Red-twigged, 7 to 8 feet.
ONTARIO POPLARS, 8 to 10 feet.
CHESTNUTS, Horse, 7 to 9 feet.
AUCUBA JAPONICA, 2 to 2½ feet.
YEWS, English, 2 to 3 feet.
Special prices quoted for the above on application to
EDWARD TAYLOR, Nurseryman, Malton, Yorkshire.

ALTERNANTHERAS, by the 100 or 1000, from Stores, including the following varieties:—amœna, amœna spectabile, amabilis, Bonfidia, magnifica, paronychioides, spathulata, tricolor, versicolor, 8s. per 100, 70s. per 1000. For Cash with Order, package included. Special arrangements for large quantities. Strong Stock plants of all the above that would produce an abundance of Cuttings. All other plants suitable for CARPET BEDDING, as used on the West Brighton Est. and other Public Gardens, at the above Prices.
WILLIAM MILES, West Brighton Nurseries, near Cliftonville Station, Sussex.

LYE'S FAVOURITE.—The handsomest and best Potato ever offered. Indispensable for Exhibition. This variety will be the greatest Prize Winner of the season. We have purchased the entire Stock of Mr. James Lye, Clyffe Hall, Market Lavington, and parties wishing to grow this remarkably handsome and beautiful variety should order at once, as the stock is getting very limited. It can only be obtained direct from us. Price 5s. per lb. Orders of 20s. and upwards carriage free.
DANIELS BROS., The Royal Seedsmen, Norwich.

Cabbage Plants.

H. I. HARDY begs to offer a quantity of strong Autumn-sown Plants, all true:—
ENFIELD MARKET, } 3s. 6d. per 1000.
ROBINSON'S DRUMHEAD, }
LETTUCE PLANTS, Autumn-sown—CHAMPION and SIBERIAN COS, 7s. 6d. per 1000.
Package and carriage free for 5000 upwards (or plants equivalent) to any Railway Station in England. Cash must accompany all orders from unknown correspondents. Post-office Orders made payable at Bures.
H. I. HARDY, Stour Valley Seed Grounds, Bures, Essex.

Hardy Plants, well Set with Buds.

CHARLES VUYLSTEKE, Nurseryman, Loochristy, near Ghent, Belgium, begs to recommend his splendid Stock of the following well-shaped, healthy plants for Spring Planting, viz.:—
AZALEAS, 25 named varieties, with buds, 24s. per dozen, 4o per 100.
,, ,, mixed seedling, strong plants, with buds, 15s. per dozen, 4o per 100.
AZALEAS, hardy Ghent, 25 named varieties, very strong plants of first quality, covered with buds, 12s. per dozen, 44 to 45 per 100.
KALMIA LATIFOLIA, strong bushy plants, full of buds, 12s. to 15s. per dozen, 45 per 100.
RHODODENDRONS, hardy, extra fine, best named varieties, with flower-buds, 20s., 30s., and 40s. per dozen, 4l., 5l., and 6l. per 100.
The CATALOGUES and PRICE CURRENT may be had of our Agents.
Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

Special Offer.

SEED POTATOS, warranted True and Free from Disease. In cwt. bags.
RED-SKINNED FLOURBALL, 8s. per cwt.
JERSEY BLUE, 8s. per cwt.
REGENTS, Improved, 8s. per cwt.
DUTCH RED, 8s. per cwt.
EARLY ROSE, 12s. 6d. per cwt.
SNOWFLAKE, 24s. per cwt.
EARLY OXFORD, 10s. per cwt.
Fifty other sorts in stock.
Nett prices for cash with order. No charge for bags, and delivered free on Rail, Norwich.
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To the Trade.

WILLIAM FLETCHER has the following STOCKS to offer :—
CRAB, 30s. per 1000. | PEAR, 40s. per 1000.
CHERRY, 40s. per 1000.
ACER NEGUNDO, 3 to 4 feet, 20s. per 1000. Also APRICOTS, Maiden, 15s. per 100.
Ottershaw Nursery, Chertsey, Surrey.

Morello Cherries.—Special Offer to the Trade.

R. AND G. NEAL, having a very large Stock of Dwarf-trained MORELLO CHERRIES, can offer them very cheap in quantities. Price per dozen or hundred on application.
The Nurseries, Wandsworth Common, S.W.

CHARLES LEE AND SON (Successors to Messrs. John & Charles Lee), of the Royal Vineyard Nursery, Hammersmith, W., beg to announce that, in consequence of the Retirement of Mr. John Lee from the business, they have TAKEN OVER the ENTIRE NURSERY and SEED TRADE so successfully carried on for many years by the late Firm, and they trust the same liberal patronage so long given to Messrs. John & Charles Lee will be continued to the New Firm.
Charles Lee & Son pledge themselves to devote all their energy to raising First-class Stock in every department, which the large resources at their command will enable them to supply with considerable advantage to the Public both as regards quality and price. With a view to a more extensive production of Stove and Greenhouse Plants of the best quality they intend to almost entirely rebuild their extensive ranges of Glass on a new site, a portion of the old Nursery being taken up for building purposes. All orders to be addressed to
CHARLES LEE AND SON, Royal Vineyard Nursery, Hammersmith, W., where the general business of the Nursery and Seed Trade will be carried on ; or to
Mr. DIXON, Feltham Nursery ; Mr. CANNON, Ealing Nursery ; Mr. WEBB, Arboretum, and Mr. MARSLEN, Wood Lane, Isleworth.

Presented (by post) on application,
NEW CATALOGUE for 1877.

MESSRS. CLIBRAN AND SON will have great pleasure in sending their PRICED DESCRIPTIVE LIST for this Spring, free by post on application. Their stock of Florist Flowers, Bedding and Soft-wooded Plants generally, are surpassed by few, if any, either in extent or quality, all the newest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to Purchasers is that none of the plants offered are taken directly from a warm propagating house and sent off, but are all carefully hardened and most of them potted off singly, and are thereby fitted to travel either by rail or post without the slightest injury. A great proportion are autumn-struck plants, and many of the undermentioned can be sent by post :—

Abutilons, in variety, 3s. 6d. per dozen.
Achimenes, in variety, 3s. per dozen.
Ageratums, in variety, 8s. per 100, 2s. per dozen.
Begonias, tuberous, 6s. and 9s. per dozen.
,, non-tuberous, 4s. per doz.
Caladiums, 12s. per dozen.
Calceolarias, Golden Gem, &c., 6s. per dozen.
Camellias, 30s. and 42s. per dozen.
Carnations and Picotees, 12 plants, 6s. ; 12 pairs, 10s. 6d.
Carnations, tree, in variety, 9s. per dozen.
Centaurea ragusina, 3s. per dozen.
Chrysanthemums, near 10,000 now ready, 20s. per 100, 3s. per dozen.
Cineranas, 40s. per 100, 6s. per dozen.
,, to name, 9s. per dozen.
Clematis, in variety, 60s. per 100, 9s. per dozen.
Coleus, in variety, 20s. per 100, 3s. per dozen.
Cyclamens, in variety, 6s. and 9s. per dozen.
Dactylis elegantissima, 5s. per 100, 1s. per dozen.
Dahlias, 25s. per 100, 4s. per dozen.
Delphiniums, splendid sorts, 9s. to 12s. per dozen.
Epiphyllum, 3s. to 18s. per dozen.
Ferns, stove and greenhouse, 3s. to 18s. per dozen.
Fuchsias, 20s. per 100, 3s. per dozen.
Gardenia florida, 6s. to 12s. per dozen.
Greenhouse Plants, 9s. to 18s. per dozen.
Geranium, Tricolor, 3s. 6d. per dozen.
,, Bicolor, 20s. per 100, 3s. per dozen.
,, Silver-edged, 3s. 6d. per dozen.
,, Double, 20s. per 100, 3s. per dozen.
,, Zonals, for bedding, 15s. per 100, 3s. per dozen.
,, Zonals, for pot culture, 12s. to 6s. per dozen.
Gladiolus, to name, 6s. to 9s. per dozen.
,, splendid seedlings, 20s. per 100, 3s. per dozen.
,, Brenchleyensis, 6s. per 100, 1s. per dozen.
Helianthemums, 2s. 6d. per dozen.
Herbaceous Plants, 20s. per 100, 3s. per dozen.
Heliotropes, in variety, 2s. 6d. per dozen.
Hepaticas, 4s. per dozen.
Iresine Lindeni, 10s. per 100, 2s. per dozen.
Iris, German, 3s. per dozen.
Ivies, in variety, 6s. per dozen.
,, Irish, 3s. per dozen.
Lantanas, 3s. per dozen.
Lobelias, 6s. per 100, 2s. per dozen.
Mesembryanthemum cordifolium fol. var., 10s. per 100, 2s. per dozen.
Mimulus, in variety, 3s. per dozen.
Myosotis, 6s. per 100, 1s. per dozen
Pæonies, white, blush, crimson, and other splendid shades, 6s. to 9s. per doz.
Pansies, Show, 25s. per 100, 4s. per dozen.
,, bedding (about 20,000 to select from), 12s. per 100, 2s. per dozen.
Pentstemons, 25s. per 100, 3s. 6d. per dozen.
Phloxes, 25s. per 100, 3s. 6d. per dozen.
Pelargoniums, Show, Fancy, or French, 6s. to 9s. per dozen.
Pinks, 25s. per 100, 4s. per doz.
Potentillas, double, 9s. per doz.
Polyanthus seedlings, 5s. per 100, 1s. per dozen.
,, to name, 1s. 6d. each.
Primroses, double, 4s. to 9s. per dozen.
,, old double velvet, 1s. 6d. each.
,, single, assorted colours, 2s. per dozen.
Pyrethrums, double, 6s. to 9s. per dozen.
Roses, H.P., from ground, 6s. to 9s. per dozen.
,, in pots, established, 12s. per dozen.
Rock plants, 15s. per 100, 3s. per dozen.
Salvias, in variety, 3s. per doz.
Saxifragas, in variety, 3s. per dozen.
Sedums, in variety, 3s. per doz.
,, acre aurea, elegans, glaucum, &c., 8s. per 100, 1s. 6d. per dozen.
Stove Plants, 9s. to 18s. per dozen.
Succulents, 4s. to 6s. per dozen
Tropæolums, 3s. per dozen.
Veronicas, 3s. per dozen.
Violas (an immense stock of all the best sort), 8s. to 12s. per 100, 2s. per dozen.
Vines, all the leading kinds for planting and fruiting, 30s. to 60s. per dozen.
Strawberry runners : our collection contains sixty-five sorts ; 2s. 6d. per 100.
Apples, Pears, Plums, and Cherries, pyramids, 12s. to 18s. per dozen ; dwarf trained, 24s. to 30s. per doz.

The Oldfield Nurseries, Altrincham.

New Roses for 1877.

A DESCRIPTIVE LIST of all the best New Roses of the Season is now ready.
Extra fine plants ready in March.
CRANSTON AND COMPANY, King's Acre Nurseries, near Hereford.

DICK RADCLYFFE & CO.,
SEED MERCHANTS,
GARDEN FURNISHERS
And Horticultural Decorators.



Complete Collections of Vegetable Seeds.

No. 1.—Suitable for a very Large Garden £3 3 0
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Carriage free as per terms of Catalogue.

Choice Collections of Flower Seeds.

Containing only popular kinds of easy growth, which will make a pretty and effective show during the summer months.
5s., 10s. 6d., 21s., 31s. 6d. and 42s. each.
All Flower Seeds sent post-free.

For full Detailed List of Collections, see D. R. & Co.'s Illustrated Flower, Vegetable, Agricultural and Garden Requisite CATALOGUE, sent gratis and post free on application to

DICK RADCLYFFE & CO.,
128 and 129, HIGH HOLBORN, LONDON.

New and Choice Seeds for 1877.



J. SCOTT'S Priced Descriptive ILLUSTRATED CATALOGUE of 52 pages will be forwarded to all applicants. It contains much useful and reliable information to Amateurs.

JOHN SCOTT,
The Royal Seed Stores, Yeovil.



The best New Potato
Hooper's Covent Garden Perfection

Mr. SHIRLEY HIBBERD describes it, after two years' trial, as "the *very model* of a gentleman's Potato."
Price 2s. 6d. per lb., 7 lb. 15s.
HOOPER AND CO., Covent Garden, London, W.C.

SPRING FLOWERING PLANTS :—
PRIMROSE, double yellow, 2s. per dozen, 20s. per 100.
,, double lilac, 2s. 6d. per dozen, 15s. per 100.
,, double purple-crimson, 6s. per dozen, 45s. per 100.
,, double crimson, true, 18s. per dozen.
,, single yellow, flowers in scapes, 9s. per dozen.
CARDAMINE PRATENSIS fl.-pl., 3s. per doz., 20s. per 100.
SISYRINCHIUM GRANDIFLORUM, in pots, 3s. 6d. per dozen.
PANSY, Blue King, strong, 2s. per dozen, 10s. per 100.
VIOLA, Blue Bell, strong, 2s. per dozen, 10s. per 100.
,, lutea Grievei, strong, 2s. per dozen, 10s. per 100.
POLYANTHUS, sorts, strong, 2s. per dozen, 10s. per 100.
DAISIES, white and red, 3s. 6d. per 100.
WALLFLOWERS, double German, 6s. per 100.
,, single dwarf yellow, 6s. per 100.
RODGER MCCLELLAND AND CO., 64, Hill Street, Newry.

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JOHN KEYNES'
STOCK PLANTS are now ready.
Very fine and clean.

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SALISBURY.

RICHARD SMITH'S
GUINEA COLLECTION OF VEGETABLE SEEDS
Contains the following excellent sorts
(Carriage Free):—

PEAS, Ringleader .. .. .. 1 quart
,, Improved Sangster's .. .. 1 ,,
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,, Fortyfold .. .. .. 1 ,,
,, Pentetaker .. .. .. 1 ,,
,, Blue Scimitar .. .. .. 1 ,,
BEANS, Johnson's Wonderful .. .. 1 ,,
,, Broad Windsor .. .. 1 pint
,, Dwarf French .. .. .. ½ ,,
,, Scarlet Runner .. .. .. 1 ,,
BEET, Nutting's Red .. .. 1 pkt.
KALE, Asparagus .. .. .. 1 ,,
,, green curled .. .. .. 1 ,,
BRUSSELS SPROUTS .. .. 1 ,,
BROCCOLI, Adams' Early .. .. 1 ,,
,, Snow's Winter White .. .. 1 ,,
,, Purple Sprouting .. .. 1 ,,
,, Walcheren .. .. .. 1 ,,
CABBAGE, Early Nonpareil .. .. 1 ,,
,, Enfield Market .. .. 1 ,,
,, Worcester Incomparable .. 1 ,,
,, Red Pickling .. .. .. 1 ,,
CARROT, Early Horn .. .. 1 oz.
,, James' Intermediate .. .. 1 ,,
,, Improved Altringham .. .. 1 ,,
CAULIFLOWER .. .. .. 1 pkt.
CELERY, fine Red .. .. .. 1 ,,
,, fine White .. .. .. 1 ,,
CRESS, Broad-leaved .. .. 2 oz.
,, Curled .. .. .. 1 ,,
,, Australian .. .. .. 1 pkt.
CUCUMBER .. .. .. 2 pkts.
ENDIVE, Moss Curled .. .. 1 pkt.
LEEK, Musselburgh .. .. .. 1 ,,
LETTUCE, Paris White Cos .. .. 1 ,,
,, Drumhead .. .. .. 1 ,,
,, Wonderful Cabbage .. .. 1 ,,
MUSTARD .. .. ¼ oz.
MELON .. .. 4 pkts.
ONION, White Spanish .. .. 1 pkt.
,, James' Keeping .. .. 2 oz.
PARSLEY, Extra Curled .. .. 1 ,,
PARSNIP, Hollow-crowned .. .. 1 pkt.
RADISH, Wood's Early Frame .. .. 2 oz.
,, Long Scarlet .. .. .. 1 ,,
,, Red Turnip .. .. .. 1 ,,
,, White Turnip .. .. .. 1 ,,
SAVOY, Green Curled .. .. 1 pkt.
SPINACH, Round .. .. .. 2 oz.
,, Prickly .. .. .. 2 ,,
TURNIP, Early Snowball .. .. 1 ,,
,, Early Red-top .. .. .. 1 ,,
TOMATO, Large Red .. .. .. 1 pkt.
VEGETABLE MARROW .. .. 1 ,,
SWEET BASIL .. .. 1 ,,
SWEET MARJORAM .. .. .. 1 ,,

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BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named sorts in cultivation, will be supplied at from £5 to £10 per 100, and 18s. to 30s. per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or £5 per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded £5 to £7 10s. per 100, or 18s. per dozen.

ANTHONY WATERER,
KNAP HILL NURSERY, WOKING, SURREY.

THE NEW ROSE,
QUEEN OF BEDDERS (NOBLE).

Perhaps the Finest Rose for Bedding ever sent out.

COLOUR OF "CHARLES LEFEBVRE."

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that flowers were cut daily from June to November 20, 1876.

Good Plants will be sent out, in strict rotation, at 10s. 6d. each,
COMMENCING FIRST WEEK IN MAY.

CHARLES NOBLE, BAGSHOT.



JEFFERIES' LITTLE QUEEN COS LETTUCE,

Per Packet, 1s. 6d.,

Is the Earliest, Best Flavoured and Best Coloured Lettuce in cultivation.

MR. EARLEY, *The Gardens, Valentines, says:* — "Your Little Queen Lettuce proved a good selection, although the weather was very adverse to the trial."

MR. MEADES, *Gr. to the* Rt. Hon. Viscount Barrington, *Becket Park, says:* — "Your Little Queen Lettuce is a capital variety, as hard as a stone, and has kept well from running to seed this dry summer."

MR. FARR, *Gr. to* Sir R. Knightley, Bart., *Fawsley Park, says:* — "Your little Lettuce has proved a very useful one, although the season has been very trying for that class of stuff; its early hearting and crisp sweet flavour are sufficient to recommend it to all who are desirous of a small but good Lettuce."

A Packet of this excellent Lettuce will be included in all our Collections of Vegetable Seeds.

JEFFERIES' HALF GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' TWO GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' THREE GUINEA COLLECTION OF VEGETABLE SEEDS,
Are the best obtainable. For particulars, obtain our "Illustrated Garden Guide."

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NEW FUCHSIA,
EARL OF BEACONSFIELD.

Vigorous growing, free flowering, beautiful habit, quite distinct, and described by Dr. Masters as one of the best hybrid varieties of Fuchsia. The blooms, 3 inches in length, are of great substance. The tube and sepals are of a light rosy carmine, corolla deep carmine.

This is a valuable decorative plant. It was awarded First-class Certificates at the Crystal Palace and Royal Botanic Society, Regent's Park, and is figured in the *Floral Magazine* for February.

Orders executed after the 15th March. Price, 5s.

JOHN LAING & CO.,
STANSTEAD PARK, FOREST HILL, LONDON, S.E.

THE ROYAL NORFOLK SEED ESTABLISHMENT
ESTD 1844.

DANIELS' SEED POTATOS.



Our Stocks of POTATOS are warranted True to Name and Free from Disease, all being carefully selected at the time of growth, and afterwards passed through the hands at least three or four times before being sent out, and all inferior, misshapen and forked tubers carefully discarded.

To improve the culture and encourage the diffusion of really good varieties, we have determined to offer at the lowest possible rates COLLECTIONS OF POTATOS FOR EXHIBITION PURPOSES, and trust our efforts in this direction will meet a want so much felt by our Customers and the gardening community generally. The selection in all cases must be left to us; it will be very carefully made, and only those of known excellence and superior qualities included.

COLLECTIONS.

	1 lb. each.		7 lb. each.		14 lb. each.
	s. d.		*s. d.*		*s. d.*
12 varieties	3 6	..	17 6	..	34 0
18 ,,	5 0	..	25 0	..	48 0
24 ,,	7 6	..	32 6	..	63 0
36 ,,	10 6	..	50 0	..	95 0

All carefully labelled and packed.

The above are nett prices for cash, with no charge for packing.

Seed Orders of the value of 20*s.* and upwards, including Potatos, carriage free to any Railway Station in England or Wales.

Price Lists on application.

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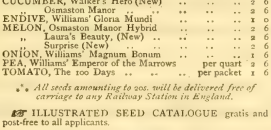


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D. SALMONEA (concinna, × regina).

A tall, slender-growing, and very distinct variety, with the long-stalked, sparsely set, erect, channelled leaves of a narrow lanceolate form, tapered to the point, 3½ inches broad, the ground colour deep green, with the edges distinctly marked with salmony pink, which colour is extended down, and very conspicuous on the edge of the petiole. The salmony tinted, almost flame-coloured leaves, which are paler in the younger ones, are a very distinct feature, and give the plant a very bright-looking aspect. It is of very free growth, and the colouring of remarkable duration.

Fine established plants, price 42*s. each.*

Large specimen plants in full character. Prices on application.

D. SYDNEYI (concinna, × regina).

A striking variety of the narrow-leaved series. The leaves are long-stalked, erectly spreading, a foot long, and about 1½ inch wide, dark green, with a deep purple midrib, and dark rosy crimson edge, the younger leaves being wholly of a rosy crimson colour. The petioles are finely coloured with the same rosy crimson hue. It is a valuable variety for table decoration, on account of its very early colouring and graceful habit.

Fine established plants, price 21*s. each.*

Large specimen plants in full character. Prices on application.

D. TERMINALIS ALBA (nigrescens, × regina).

This is a most important acquisition, having quite the habit and character of the well known favourite, D. terminalis, but with white variegation. The leaves are lanceolate oblong acuminate; the ground colour bright green, with cold pure white variegation, the upper leaves being white, with here and there a bar or band of green, in some cases large sectional patches are coloured white, while the rather elongated leaf-stalks are also edged with white. It will be a useful variety for general purposes as well as table-decoration and for market, being of very free growth and remarkably hardy constitution, and colouring very early.

Fine established plants, price 42*s. each.*

Large specimen plants in full character. Prices on application.

☞ Three Medals were awarded to the above Novelties, including the Grand State Medal, at the Brussels International Exhibition, on April 30, 1876.

The First Prize for the three best Dracænas in cultivation was also awarded to Mr. Wills at the same Exhibition.

THE USUAL DISCOUNT TO THE TRADE.

THE ANERLEY DRACÆNAS.

Extract from the "Gardeners' Chronicle," May 27, 1876.

"Some time since (*Gardeners' Chronicle,* 1875, iv., 615) we gave an account of a marvellously fine collection of seedling Dracænas, which had been raised by Mr. Bausé, at Mr. Wills' Nursery, at Anerley. That account referred to a selection of a considerable number of the finest of the varieties which had at that time broken into colour. As was to be expected, however, amongst the thousands of judiciously crossed seedlings Mr. Bausé had obtained, the first selection by no means exhausted all the gems that were worth preserving, and a subsequent visit has enabled us to confirm Mr. Wills' opinion that a further selection from amongst Mr. Bausé's fondlings should be made."

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ONSLOW CRESCENT, SOUTH KENSINGTON, LONDON, S.W.

March 6, 1877.

By Her Majesty's *Royal Letters Patent*

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SATURDAY, MARCH 10, 1877.

LLEWELYN'S DINGLE.

IT is the fate of forests that they must diminish or disappear before the advance of progressive communities. France, which has always led the van of civilisation, was one of the first countries to invent contrivances for economising the consumption of fuel. Germany, a land once covered by dense and trackless forests, was constrained years since to adopt the uncomfortable expedient of the close stove. New England has economised her comparatively scanty sticks in the same manner for many years, and the classic shout of menaced patriots—*pro aris et focis* ("for hearths and altars")—must now be rendered in all those countries "Fight for your stoves!" Our own case would be similar even in England but for coal.

Many of the attacks upon the forests of these islands took place under Acts of Parliament, for the purpose of dislodging outlaws and wolves from their favourite haunts. In Ireland, Henry II. swept down the forests in pursuit of his scheme of conquest. Edward I. thinned those of Wales with the same object, at the period of his wars with Llewelyn. Yet it happens that the very grove called locally "a dingle," in which the last native Prince of Wales lost his life, still remains. The scene of this tragic event is on the banks of the Wye, near the ancient town of Builth, and not far from the edge of Radnor Forest. Builth was a favourite residence of Llewelyn's, and the old town stood immediately beneath the walls of his castle, as the present town does beneath the mound on which its relics may still be distinguished, though hardly a stone remains of the once formidable stronghold. The position was important, being immediately upon the line of communication between North and South Wales. Builth Bridge spanned the Wye opposite the castle gates, as a more recent bridge does the same part of the river at the present time. A broken ridge of hills, following the long valley, approaches the winding stream on either side, and Oaks and Oak scrub cover the highest level that vegetation of that kind can obtain. The scenery of the locality is smoother than that of North Wales, and wilder and more picturesque than the pastoral yet hilly districts of South Wales, where the land is more valuable and trees are therefore less abundant.

The original stamp of Nature upon the country around Builth was too bold to be easily obliterated, and it probably presents much the same aspect as in the days of Llewelyn. The river makes the same music as of old, and no polluting manufacture at present destroys the salmon. The people have perhaps changed more than their surroundings, which cannot have altered very much in their leading features since the thirteenth century. At the time of our visit to Builth the Brecon volunteers, marching through the street, and their band playing Rule Britannia, seemed a decided incongruity, and was certainly a decided change since the thirteenth century. As to other alterations there is now a pump room — modern Builth being a watering place—and in the hotel was an old gentleman connected with minerals —coal or copper—in Glamorganshire. He had come out for a holiday, and was napping in an

arm-chair till we unfortunately disturbed him, when he bustled off to join the other visitors.

Llewelyn was killed in a skirmish. The astute Edward had besieged Snowdon, and the Welsh Prince had left head-quarters to confer with some of the native chiefs at Builth—potentates of the hills who required to be conciliated and induced to join the army of defence. They were to be met at Llewelyn's Dingle. An English army had entered Wales from the south, and the times were more than critical. Attended by a single squire, Llewelyn repaired to the appointed grove, and was waiting there when shouts and the sounds of a fierce brief struggle reached his ears from Builth. A party of English were storming the bridge, which the Welshmen in vain defended. If Llewelyn had plunged instantly into the woods, the dingle which now bears his name would have remained undistinguished, and would probably have been grubbed up long since and laid in grass. The squire urged flight, and added his entreaties: the patriot paused, and it was then too late—escape became impossible.

The English appear to have been apprised of their enemy's movements, and treachery among his people aided them. The grove was suddenly surrounded, a brave party of friends hung upon the rear of the assailants, and occupied a neighbouring ridge, but they were too few, and Llewelyn fell, thrust through from breast to back with a pike.

The tradition of the neighbourhood, differing somewhat from the historical account, is that Llewelyn was betrayed in the village of Aberdw, below Builth, where a cave is shown in which it is supposed he was some time secreted. An attempt to seize the Prince close to this spot in Enalt Wood, a dense jungle on the precipitous side of the valley, failed. A salmon fisher of the neighbourhood pointed out the exact spot where his great countryman, according to tradition, turned his horse's shoes to baffle his pursuers. The flight continued, if popular belief be true, through the Oak woods into the valley of the Irwan above Builth, where the fugitive was surrounded in the little dingle by the roadside, which has been already noticed as the place where he was killed. A cottage now stands by the spot, and at the bottom of a long strip of garden is the dingle. A woman dipping her bucket in a spring close to the little grove produced a glass. She had disturbed the mud a little with her pail, and therefore in tasting the water of a fountain once stained with royal blood we preferred it second-hand from the bucket.

There are several species of intoxication besides that produced by alcohol. Tourists, for example, are occasionally carried away by a fervent desire for mementos, as in our case, to remind ourselves and friends that at such a date we had seen Llewelyn's Dingle, and had quaffed a glass of water from a fountain once stained with royal blood; we therefore plucked an acorn, a seed of the third generation of Oaks since the thirteenth century. Some Ivy trailed near the spring, which we stuffed into our knapsack, with Hazel, Maple, Withy, Box, all growing hard by, and a Leek from a patch planted in the garden, as in every garden throughout Wales.

Within half a mile is Cefnybedd, "the back of the grave," and at a little distance from the church is a stone-built farm-house with a slated roof and a flagged kitchen, the dining-room of a farmer and his sons who pointed out the pavement near the fireplace beneath which Llewelyn is believed to have been buried. It is said there were four cross roads here, one being the present turnpike-road, passing the door of the farmhouse, while the other was a pack-saddle road, which took a winding course down the valley, and may still be traced here and there. It is to be feared that the only positive information with regard to the disposal of the remains of Llewelyn, is that his head was sent to London, and fixed on a wall of the Tower, crowned with a circlet of Ivy, in ironical fulfilment of a prophecy of Merlin. The farmhouse story, however, has been handed down orally for generations, and it probably reveals the manner of the burial and possibly the exact spot where the brave descendant of the ancient line of British kings found his blood-stained resting-place.

We were several times reminded at Builth that the duties of industrial occupations tend to obliterate in some minds the memory of heroic deeds. The old gentleman whom we mentioned, who had come from the coalfields of Glamorganshire to drink the waters, had managed to entirely forget the existence of the patriot. We pointed to the mound where his castle stood: "Ah!" said the old gentleman, "I wonder, now, what old tump that might be?" Thus a mound on which the castle of the brave Llewelyn—the greatest of Welsh patriots—stood, becomes in the course of time a mere "old tump," steam-engines screech upon the railway close to Llewelyn's Dingle, and the only memorial at Cefnybedd of the last native Prince of Wales is the plumed figure on the signboard of the little village inn. *H. Evershed.*

New Garden Plants.

ODONTOGLOSSUM OERSTEDII, *Rchb. f.**

This is a very interesting plant, described in 1855, and discovered, I believe, in 1848, by Warscewicz, who prepared a rough sketch. Then it was gathered in Costa Rica by Messrs. Oersted, Wendland, Endres—our friend Wendland being the single surviving collector. It has roundish, two-angled, dark pseudobulbs, clothed with brown spathes, growing in dense masses, and having each a single oblong stalked leaf. The pedundle bears one or two flowers in the way of those of Odontoglossum pulchellum, but without the bordered top of the column. It is pure white, with the callus of the lip and the disk before it yellow, with a few red spots. The column has very small, triangular, blunt auricles at each side of the base of the stigmatic cavity. A tuft with many such flowers may have a rather pretty aspect. The only fresh flowers I ever saw are some lately sent by Messrs. Veitch. *H. G. Rchb. f.*

ODONTOGLOSSUM PARDINUM, *Lindl.*

There are certain Odontoglossums which appear to be not generally searched for—and apparently, for instance, as ramosissimum, Lindl.; Lindeni, Lindl.; pardinum, Lindl.; spathaceum, Lindl. The three last are rather constant in colour, while the first is uncertain, but all are very modest and quite superior varieties. In the days when these plants, coming from the highest elevations, were roasted in Europe, a general repudiation of them was very natural; but now, since the advent of cool treatment, we appear to make more and more progress, and then come instances of a splendid development of those plants, giving evidence that they deserve their place in every collection whose possessor likes to stand the *nitrous* of his time. I have just received a splendid branch of this old species, having flowers far better developed than those of my numerous wild-grown herbarium specimens. A wide panicle of those wavy flowers of purest golden yellow, with numerous brown blotches, must be a very good sight; and since Mr. Ortgies has just informed me that poor Odontoglossum cirrhosum is exterminated, there will come the day when we may be fortunate to see this one. What is very encouraging in this case is, that its grower, Mr. Mill, tells me that the plant has been four years in his care, and at first flowered very poorly; now it has a panicle of forty very good flowers. Hence we have the case of an establishable plant, whereas many Orchids begin by developing their first breaks best, and then fall into decline. This species has flowered very seldom in Europe. Messrs. Backhouse, of York, had it once in a very good state, when it was represented in the *Botanical Magazine*. The branch at hand was sent, as already stated, from Lord Rendlesham's gardener, Mr. J. Mill, Rendlesham Hall, Woodbridge, Suffolk. We should decidedly all feel pleased if Mr. Mill would kindly inform us at once how he proceeded in order to attain his success. *H. G. Rchb. f.*

The Odontoglossum which Professor Reichenbach notices above, is one of a few imported lots that were sold at Stevens' Rooms about four years ago, under the assumed name of O. spathaceum, which I am told it somewhat resembles. As regards its culture, I may say that it thrives admirably in the coolest house in company with O. Alexandræ and O. Pescatorei, and others, and receives no special treatment different from that which those species delight in. When it first flowered with us it had a small spike of five flowers; last year it bore a panicle of over twenty flowers, and this season it has a fine branched spike of forty bright golden flowers spotted with brown. The plant appears to grow freely, and I have no doubt but that it will prove, when well established, a very desirable species. *T. Mill.*

NOTES FROM A SOUTH SHROPSHIRE GARDEN.

February 29.—Returning home after a fortnight's absence in town, I am pleased to find that no material advance in the development of vegetation has taken place in that interval. The Snowdrops are fading off, but the Crocus beds are as brilliant as when I left; the buds of the Apricots were all but open then, now a few blossoms only are fully in flower. Hepaticas, Primroses, Waliflowers, Mezereons, the crimson Fyrus, are well out; a few Crown Imperials are just expanding their wreaths, and the large weeping Willow that droops over the river is greener than I like to see it; but though an extraordinary mild winter I cannot describe it as an unusually early spring, for, taking the Crocus as an index of the season, 1872, '74, and '75 were more forward. We have been favoured by the absence of sunlight this year, for had there been the usual February allowance of clear sky, vegetation would have been stimulated to a dangerous point. From the Greenwich Observatory we are now receiving most interesting statistics on this important influence, and any one who takes the trouble to combine the observations of temperature with the amount of sunshine will learn much on the subject of the variations in the times of flowering of plants—why in some seasons one kind of plant opens earlier or later relatively than another—*Felix qui potuit rerum cognoscere causas*—but until now we have had no trustworthy observations to guide us in such investigations. The mildness of the winter has been such that the Fuchsias, gracilis and coccinea, which usually die back, are now putting out a liberal growth from last year's wood; the Roses have not lost their leaves, and the Laurustinus shrubs have been unusually bright and gay, and the Verbenas, the Calceolarias, and Clianthus puniceus have been healthy and vigorous throughout, and are now growing actively; still I fear the month of March and his customary cruelties of east winds and nipping frosts.

The bullfinches have made a clean sweep of all hopes of fruit from our Gooseberries, notwithstanding the war we wage with these pretty pests; our Plums will go next, and then the Wistaria will be shorn of its beauty—an annual mortification we have to endure, in return, I suppose, for the shelter afforded to us by the thick woods that surround us.

Last year was to us unfavourable for the ripening of fruit, and the Pears, of which we had a large crop of many good sorts, did not keep. Apples were a total failure. Potatos did well on the whole. Acting on the experience of previous years we have increased the quantity planted in the autumn, and I believe that we shall not be disappointed in the result. We were led to adopt this practice by noticing the abundant produce of tubers left by accident in the ground. At the same time I do not counsel the general adoption of the practice, because our soil and climate may be more suitable to this than others less sheltered. All the different kinds of shrubs made luxuriant growth last year, and we find it very necessary to make energetic use of the saw and knife to keep the Laurels within reasonable dimensions. It is very gratifying

* *Odontoglossum Oerstedii*, Rchb. f in Seemann's *Bonplandia*, ii. 274; *Xenia Orchidacea*, i. p. 189, t. 68, I., 1—3; *Walp. Ann* vi 85; *Beitr. Orch Cent. Am.* 15, 47, 71.—Juxta Odontoglossum crispum, Lindl.: sepalis triangulis; tepalis obovatis retusiusculis; labello flabellato apice quadrifido; sinu medio profundo; callo depresso ante basin angustam cordatam rhombeam apice bilobo; tumore veluting papuloso in centro; columna minutissime juxta foveam triangulo alata sive aptera. Pseudobulbus rotundulus anceps. Folium tripollicare—quadripollicare; basi petiolato angustatum; lamina cuneato oblonga acuta. Pedunculus gracilis paucivaginatus uniflorus seu biflorus. Flos albus callo aureo maculis purpureis picto lineatis tribus flavis seu disco flavo antepositis; illi Odontoglossi pulchelli Bat. æqualis. In monte Irasú ad St. Juan, Costa Ricæ, 9000 ped. Warscewicz, Oersted, Wendland, Endres! *Rchb. f.*

to see how freely everything that is planted grows in this sheltered spot. A Wellingtonia that was less than 6 feet in 1871 is now 23 feet, and Deodars that were then 24 feet are now 38 feet, expanding laterally in like proportion.

In the stove we have some charming Ferns; the lovely Adiantum Farleyense expands its ample fronds in great perfection, and, favoured by the warmth and moisture, other kinds multiply in all directions. A pretty variety has established itself among the miniature rocks at the back of the tank, in which a jet often throws up a fine spray supplied from a spring that rises half-way up the cliff behind us. This Fern partakes of the character of A. concinnum, A. concinnum latum, and A. Farleyense, but is identical with neither; and I am inclined to think will prove an interesting subject of study, and may throw some light upon the variations in Ferns. The Eucharis amazonica has been lovely, so has a plant of the elegant Thyrsacanthus, and now we have all the Caladium tribe rushing out with beauty from their short but necessary rest.

The Tecoma venusta, which gave great promise of flowering in the autumn, has disappointed us, probably from the want of sun, but it is so healthy and vigorous that it may make another effort.

In the greenhouse the Brugmansia, the scarlet Salvia, the Callas and Habrothamnus, with an abundance of Primulas, Hyacinths, and other bulbs, kept us gay in the mid-winter; and now we have the Cinerarias, Deutzias, Spiræas, Libonia floribunda, Azaleas and Camellias, to cheer and carry us on till April brings the Pelargoniums and all the other favourites of the year.

In the vinery we began to fire up on February 26, and planted the early Potatos in the frame on the same day.

We have not yet seen any salmon passing up the river, but it has been so full of water that they might easily escape notice. We did not suffer any inconvenience from the floods which were so disastrous above and below us, but the sight of the rapid torrent at these times is very fine—

> Vidimus flavum Tiberim, retortis
> Litore Etrusca violenter undis
> Ire——

From observations made from time to time, I have been led to estimate that upwards of 1,250,000 cubic feet of water per minute flowed past this garden—a stupendous volume, which one can easily understand would flood all the low-lying ground before it reached the sea.

The pretty-water hens now visit us daily; they come from the pool in the river upon our lawn, in search of food, stalking about close to the windows, with their coquettish jerk of tail. I see them sometimes perched in a Laurel, but they hardly seem at home in a tree. The great green woodpeckers are now beginning to startle us with their loud wild laughing cry as they fly across the garden, and the thrushes make the trees echo with their songs; but, all these signs notwithstanding, we must remember the words of the poet:—

> "Mindful of disaster past,
> And shrinking at the northern blast,
> The sleety storm returning still,
> The morning hoar and evening chill,
> Reluctant comes the timid spring."

S.

THE GENUS AGAVE.

(*Continued from p. 171.*)

Series I.—Coriaceo-carnosæ.—Texture of the leaf rigid, not at all fleshy or yielding to the touch when mature. End spine large, hard, and pungent.

Group I. Filiferæ.—Edge of the leaf splitting off into distinct threads.

1. *A.* (*Littæa*) *filifera*, Salmdyck; Jacobi, Mon., pp 55 and 198; Lemaire, Ill. Hort. vii., t. 243; fig. 40.—Acaulescent; leaves 60—100 in a dense rosette, stiff, straight, ensiform, 6—9 inches long, 1 inch broad at the middle, narrowed gradually to a grey pungent tip, flat on the face, pale green, not at all glaucous, the continuous grey edge splitting off copiously into irregular spreading grey wiry threads, the centre ½ inch, the base ¼ inch thick, the back rounded, marked with conspicuous grey vertical lines where the edge of the other leaves have pressed against it; outer leaves of the rosette not at all recurved, but spreading stiffly. Scape 3—4 feet long, its bract-leaves subulate, the lower ones ascending, the upper squarrose. Flowers in a dense spike 2—3 feet long; bracts purplish-brown, linear, about as long as the unexpanded flowers; pedicels very short and stout. Perianth greenish, about 2 inches long; ovary oblong, ½—¾ inch long; tube funnel-shaped, about as long as the ovary, suddenly dilated in the upper half; segments brownish, spreading, obtuse, half as long as the tube. Filaments 1¼ inch long, inserted at the base of the segments; anthers yellowish-red, ligulate, ¾ inch long. Style reaching to the top of the anthers.

Var. *filamentosa*—*A. filamentosa*, Salmdyck; Jacobi, Mon., pp. 36 and 199; Baker, in Saund. Ref. Bot., t. 164; *Gard. Chron.*, 1879, p. 8.—Leaves larger, attaining a length of 18—22 inches, and a breadth of 1¼—1½ inch. Scape, including the spike, attaining a length of 10—12 feet.

A native of Mexico; a plant which has been long well known to all collectors. The two varieties named by Salmdyck, and kept up by Jacobi as species, differ from one another in size only, and run into one another most gradually. An excellent coloured figure of the large one, from a specimen that flowered with Mr. Saunders, will be found in the *Refugium*, as just quoted. The plant flowered at Kew in the summer of 1875. There are three forms represented in Mr. Saunders' set of photographs, one very dwarf and stiff, with leaves under half a foot long.

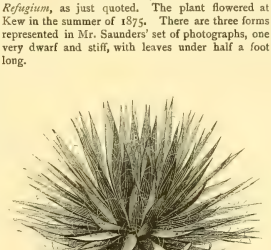


Fig. 49.—A. filifera.

2. *A.* (*Littæa*) *schidigera*, Lemaire, Ill. Hort., vol. ix., t. 330; Jacobi, Mon., pp. 36 and 200; Bot. Mag., t. 5641.—Acaulescent; leaves 50—80, in a dense rosette, stiff, ensiform, 12—15 inches long, ¾—1 inch broad at the middle, similar in colour and texture to those of *filifera*, but the grey margin broader, and splitting off into flat shavings half a line broad, not mere threads. Scape about 3 feet long. Spike dense, as long as the scape. Perianth and stamens just like those of *filifera*.

A native of Mexico, introduced by Verschaffelt in 1861. It cannot be considered as more than a variety of *filifera* in a broad sense, the flowers being just the same, and the only appreciable difference between the two being in the character of the threads that split off from the edge of the leaf. There is a good coloured figure in the *Botanical Magazine*, as just cited. It is to be seen in all the best English collections. The variety *Ortgiesiana*, which I have seen at Mr. Peacock's and at Kew, is a dwarf form of *schidigera*, with a pale central band to the leaf. The type is well represented in Mr. Saunders' set of photographs.

3 *A.* (*Littæa*) *Schotti*, Engelm., Notes, p. 17; *A. geminiflora* (?) *var. Sonoræ*, Torrey, in Bot. Mex. Bound., p. 214.—Acaulescent; leaves linear, 6—12 inches long, 3—4 lines broad, rigid, flat or concave on the face, convex on the back, ending in a terete pungent brown tip ¾ inch long, the margin splitting off into copious fine whitish fibrous threads. Scape 5—6 feet long. Flowers spicate; primary and secondary pedicels each about a line long. Perianth 1¼ inch long; ovary under ¼ inch long; tube funnel-shaped, gradually widening from the bottom to the top, ½ inch long; segments linear-oblong, erecto-patent, ½ inch long. Filaments scarcely protruding beyond the segments, inserted a little below the throat of the tube, 8 lines long; anthers ½ inch long. Style reaching to the top of the stamens.

A native of Southern Arizona, where it was discovered by the late Dr. Arthur Schott in 1855. It is known only from his dried specimens, described by Dr. Engelmann, from whose notes mine are entirely taken.

4. *A.* (*Littæa*) *parviflora*, Torrey, in Bot. Mex. Bound., p. 214; Engelm. Notes, p. 18.—Acaulescent; leaves linear-lanceolate, from a broad deltoid base, 2½—3 inches long, 4 lines broad above the base, ending in a pungent finally grey spine ¼ inch long, the edge below the middle furnished with minute brown cartilaginous teeth, above the middle splitting off into a few short stout white threads. Scape 4—5 feet long. Flowers spicate, not more than ½ inch long; ovary oblong, over ¼ inch long; tube campanulate, a little longer than the ovary; segments oblong, suberect, half as long as the tube. Filaments 4 lines long, inserted low down in the tube, like the style, scarcely protruded beyond the tip of the segments. Capsule subglobose, shortly cuspidate, 4—5 lines long.

Like the last, a native of the Sierras of Southern Arizona, and discovered in the exploration of the Mexican boundary by the late Dr. Schott. It has not been yet brought into cultivation, and is a most curious and distinct little plant, forming a connecting link between the Filiferæ and Striatæ.

A fifth species of this section, as yet known very imperfectly, is *A. angustissima*, Engelm. Notes, p. 18, gathered by Dr. Gregg near Montillo, in Western Mexico, which is said to have narrow linear leaves 2—3 feet long, 2½—3 lines broad, convex on the back, filamentose on the edges, ending in a brown spine under ¼ inch long, and a scape 5—6 feet long. *J. G. Baker.*

MELONS FROM CENTRAL ASIA.

Since communicating to the *Gardeners' Chronicle* the result of M. Naudin's trials of the Melon seeds from Turkistan, p. 303, I have received through the kindness of Dr. Hogg the accompanying report on the results obtained from those grown at Chiswick. *W. T. Thiselton Dyer.*

Report on Varieties of Sweet Melons from Yarkand, received from Dr. Hooker, May 16, 1870:—

The seeds were sown in the end of May, which proved somewhat late. The plants grew well, but only five of the varieties fruited satisfactorily. Several varieties never produced any female flowers. Of the five which fruited, the following notes were taken:—

1, Jorikand; 4, Lablyi; and 14, Na-shakar, were identical. Fruits of fair average size, roundish ovate, even surface; skin pale green, changing to pale greenish yellow, covered with a fine down; flesh pale orange, very tender, juicy and sweetly flavoured, with a very thin rind. Distinct from any known variety: very promising.

6. Chilka.—More ovate in form, but otherwise very similar to No. 1.

8. Chighdah.—Fruits of medium size, roundish ovate, deeply ribbed; skin pale green, changing as the fruit ripens to a splashed greenish yellow, and covered with a fine down; flesh pale scarlet, tender, juicy, and sweetly flavoured. A distinct variety.

It may be noted that, for reddish-fleshed Melons, the flesh was far more tender than is usually found in those of that class.

ASPECTS FOR PLANT HOUSES.

If "Aqua Calida" had taken a little more notice of the altitude of the sun at mid-day during the months of December and January, he would not have spoken of his (the sun's) rays striking perpendicularly or even comparatively perpendicularly—whatever that may mean—on any side of a house, at that period of the year, but he would have seen rays of light thrown from a low elevation casting long shadows where obstructed and reaching far into an interior where no obstruction exists; and even now (March 5) the shadow thrown by the ridge of a house standing ends north and south is rather longer than the height of the ridge, and every bar and rafter throws a corresponding shadow, so that the light is rather diffused than direct till afternoon, when the sun works round to the west.

It follows, then, that the sun shining full on the south side of a house sends his rays as far through the house as a shadow would fall in case an object intervened; hence it arises that the north side of a span-roofed house, with a face to the south, receives the full force of what little sunshine there is during the dead of winter, and is brighter even than the south side, which receives the shadow of the framework or front wall, as the case may be, and the elevation of temperature consequent on the sunshine melts the ice on the north side before even the west side of a house standing the other way feels any benefit, and the eas face is rarely touched by the sun in the depth of winter.

It might perhaps have struck "Aqua Calida," if he

had given it a thought, that to modify the heat from the sun on a summer's morning so early as 5 o'clock air must be "left on" over night, which is not always desirable, for instance, when the wind is either rough or cold, or some one must be up to pay attention to the matter before the early hour named—not always an agreeable alternative.

Then, again, with respect to closing the houses on a summer's evening: without either directly or by implication finding fault with the course of the sun, I most undoubtedly prefer the soft diffused light of a house shaded by its own framework to the gloom of a house shaded by a drawn blind.

"Aqua Calida's" remark about a tall bank of plants in the centre of a house obstructing light applies to both aspects, but much more forcibly to the one where the blinds are much used, as in that case the plants on both sides lose the reflected light they receive when not artificially shaded.

I wrote the original paper with a view to encourage amateurs who had not a site in the fashionable position. The one I recommend is quite as good, at any rate, as that generally adopted; as I said before, I think a great deal better. Its advantages are a greater amount of sunlight in the winter, when it is most needed, and a less amount in summer, when we take pains to keep it out.

I might perhaps tell "Aqua Calida" I should greatly prefer a lean-to facing the south for mere winter work to a span in his fancy position, but it was more for houses of general utility I was writing.

I am no mouthpiece for hothouse builders, few of whom know anything of practical gardening, and build the structures ordered upon any site selected by the proprietor. I do not think any one of them (the builders) would refuse an order on account of the unsuitability of a position assigned to them.

The rest of "Aqua Calida's" remarks call for no answer from me; the mere business details may be safely left to the persons most concerned; still I do not see if the man who has to pay for the work desires the woodwork unpainted any reason why he should not have it. I fancy the conclusion was an effort of wit, which some people may understand, but I candidly confess I do not. *J. Bester.*

LANTANAS FOR BEDDING.

As a most useful and durable bedding plant the Lantana deserves more attention than it actually receives at the hands of gardeners. It is a more desirable plant than the Verbena in this respect, the varieties have been multiplied so much of late that they are now very varied in point of colour; they flower for a long time—it is computed by some for eight months in the year—and they are much less liable to those attacks of insects, &c., that will frequently convert a bed of Verbenas into a most unsightly floral expression.

Some of the most charming beds seen in the pretty circular flower garden at Lockinge Park, Wantage, during the past summer were those formed of Lantanas, and it did appear to be a happy accident which had resulted in these beds being planted with varieties of different colours instead of one variety only, as was originally intended. Mr. B. S. Williams has expressed the opinion that the Lantana has been much neglected, owing to its having strongly scented foliage, "the peculiar tone of which is not grateful to most people," but this peculiar scent is not very apparent unless the plants are handled.

There are two uses to which the Lantana can be put. To one, viz., for bedding, reference has already been made; the other is that of being grown in pots for conservatory decoration and exhibition purposes; and especially by those who have but scant accommodation for growing choice plants. Sometimes at country shows admirably grown specimens of Lantanas can be met with, and the plants always appear to be well done and flowered and singularly clean. "Lantanas," says Mr. B. S. Williams, "are rapid growers, and will soon form large specimens; and, wherever space can be given, a few should be grown for the sake of the bright coloured and abundant summer and autumn flowers."

A goodly number of species have been introduced from time to time from South America and the West Indies; but the main of these now cultivated are improved garden hybrids, and in point of variation in colour they range from pure white to rich orange-crimson and purple. Plants are easily raised from cuttings struck in a brisk moist heat in spring; and those so obtained, after being sufficiently hardened off, make most useful subjects for bedding-out. The most effective beds are formed by pegging down the young shoots till the surface of the bed is covered and then permitting them to flower, which they do almost if not quite as freely as the Verbena; and as a bed of mixed Verbenas is generally much more attractive than one wholly composed of one variety, so a bed of mixed Lantanas is to be preferred to beds wholly of one colour or variety.

A warm well-drained spot appears to suit the Lantana best when bedded out, and it is perhaps owing to this that beds of this plant on raised terraces are generally so effective. A good light loam, some peat and leaf-mould make an excellent compost for the Lantana.

The plants grown in pots for house decoration require to be kept partially dry during the winter, and be cut-in in the spring time and repotted. The soil recommended by Mr. B. S. Williams is loam, peat, and sand in equal parts. Plenty of pot-room is requisite, as the Lantana puts forth a great number of roots.

There are now a large number of varieties: some of the best are Auguste Wilhelm, white and orange; Distinction, rich orange-yellow, changing to rose; Mine d'Or, orange and red; Madame Thibaut, orange-scarlet; Nec Plus Ultra, purple and yellow; Mons. Rougier, yellow bordered with scarlet, a fine bedding variety; Magenta King, bright purplish scarlet; Dom Calmet, pink, with peach and yellow centre; and Princess Louise, dark maroon-red with white centre. *R. D.*

CATASETUM SCURRA.

This curious plant, which was described by Professor Reichenbach in our volume for 1872 (p. 1003),



Fig. 50.—Catasetum scurra.

was exhibited by Sir Trevor Lawrence, Bart., M.P., at the meeting of the Royal Horticultural Society on the 14th ult., and attracted a good deal of interest on account of its curious aspect. It is comparatively a small plant. The pseudobulbs are ovate, acute, from an inch to an inch and a half long. The leaves are stalked, oblong-lanceolate, and the flowers are in drooping racemes, each bearing five or more blossoms, of a pale straw-colour or waxy white, the chief peculiarity of which resides in the lip. The sepals are oblong, blunt; the petals broader, shorter, and rounder, and the lip trifid, its "side laciniæ erect, with bent borders, rhomboid, denticulate, the middle lacinia with a very short, broad, linear stalk, expanded into a subreniform blade, with crisp and toothletted margins." The species comes from Demerara, and was first flowered in the collection of W. Wilson Saunders, Esq., whose plants furnished Professor Reichenbach with the materials for his description.

The flowers have a peculiar scent, Reichenbach even calls it a most beautiful perfume. Mr. Saunders, it appears, compared the odour to that of Lemons, while Reichenbach could not detect the Lemon-scent, but found that of essence of Roses. The subject did not escape notice at the meeting of the Floral Committee on the occasion of its being recently exhibited, and both ourselves and many members of the committee, as well as our artist, compared the scent to that of stale or somewhat mouldy Lemons, not disagreeable, but certainly not particularly fascinating. The plant was awarded a Botanical Certificate, and furnished our artist with materials for the accompanying woodcuts (figs. 50, 51). It is said to be very nearly related to C. Warscewiczii and C. roseum, both of which have a fringed labellum.

RELATIONS BETWEEN PLANTS AND INSECTS.

(*Continued from page 273.*)

Sleep of Plants.

I have elsewhere ventured to suggest that the so-called "sleep" of flowers had reference to the habits of insects, on the ground that flowers which are fertilised by night-flying insects would derive no advantage by being open in the day; while, on the other hand, those which are fertilised by bees would gain nothing by being open at night. I confess that I suggested this with much diffidence, but it may now, I think, be regarded as well-established.

Silene nutans, the Nottingham catchfly, is a very instructive species from this point of view, and indeed illustrates a number of interesting points in the relations between plants and insects. Its life history has recently been well described by Kerner. The upper part of the flowering-stem is viscid, from which it has derived its local name, the Nottingham catchfly. This prevents the access of ants and other small creeping insects. Each flower lasts three days, or rather three nights. The stamens are ten in number, arranged in two sets, the one set standing in front of the sepals, the other in front of the petals. Like other night flowers, it is white, and opens towards evening, when it also becomes extremely fragrant. The first evening, towards dusk, the stamens in front of the sepals grow very rapidly for about two hours, so that they emerge from the flower; the pollen ripens, and is exposed by the bursting of the anther. So the flower remains through the night, very attractive to, and much visited by, moths. Towards three in the morning the scent ceases, the anthers begin to shrivel up or drop off, the filaments turn themselves outwards, so as to be out of the way, while the petals, on the contrary, begin to roll themselves up, so that by daylight they close the aperture of the flower, and present only their brownish-green undersides to view, which, moreover, are thrown into numerous wrinkles. Thus, by the morning's light, the flower has all the appearance of being faded. It has no smell, and the honey is covered over by the petals. So it remains all day. Towards evening, however, everything is changed. The petals unfold themselves, by 8 o'clock the flower is as fragrant as before, the second set of stamens have rapidly grown, their anthers are open, and the pollen again exposed. By morning the plant is again asleep, the anthers are shrivelled, the scent has ceased, and the petals rolled up as before. The third evening again the same process, but this time it is the pistil which grows, and the long spiral stigmas on the third evening take the position which on the previous two had been occupied by the anthers, and can hardly fail to be dusted by the moths with pollen brought from another flower.

An objection to the view that the sleep of flowers is regulated by the visits of insects, might be derived from the cases of those flowers which close early in the day, the well-known Tragopogon pratense, or "John Go-to-bed at Noon," for instance; still more, such species as Lapsana communis, or Crepis pulchra, which open before 6 and close again before 10 in the morning. Bees, however, are very early risers, while ants come out much later, when the dew is off the grass; so that it might well be an advantage to a flower which was quite unprotected to open early for the bees, and close again before the ants were out, thus preserving its honey for another day.

Action of Plants on Insects.

So much for the first part of my subject. I must now pass to the second—the action of plants on insects. It would here, perhaps, be most natural to discuss the modifications which have been produced in insects by the search after honey and pollen, especially the gradual lengthening of the proboscis in butterflies, moths, and bees, to enable them to suck the honey, and the adaptation of the legs of bees to enable them to carry off the more or less dry and dusty

pollen. Having, however, already treated of them elsewhere, it will be better for me to take other illustrations, and fortunately there is no lack or difficulty.

Many of the cases in which certain insects escape danger by their similarity to plants are well known; the leaf insect and the walking-stick insect are familiar and most remarkable cases.

The larvæ of insects afford also many interesting examples.

I will not, however, refer to isolated cases—however interesting in themselves—on the present occasion, but will take a group and see how far we can explain its various colours and markings, and what are the lessons which they teach us. For this purpose I think I cannot do better than select the larvæ of the Sphingidæ, which has just been the subject of a masterly monograph by Dr. Weismann, the learned Professor of Freiburg.

Colours of Caterpillars.

Let us begin with the Charocampa elpenor, the elephant hawk-moth. The caterpillars, as represented in most entomological works, are of two varieties, most of them brown, but some green. Both have a white line on the three first segments; two remarkable eye-like spots* on the fourth and fifth, a very faint median line, and another more than 4 inches long. I will direct your attention specially, for the moment, to three points:—What mean the eye-spots and the faint lateral line? and why are some green and some brown, offering thus such a marked contrast to the leaves of the Epilobium parvum, on which they feed? Other questions will suggest themselves later, for I must now call your attention to the fact that, when they first quit the egg, and come into the world, they are quite different in appearance, being, like so many other small caterpillars, bright green, appear on the fourth and fifth segments. There is also a second pale line running along the side. Please remark these two lines. After another five or six days, and when about half-inch in length our caterpillars moult again. In their third stage the commencement of the eye-spots is more marked, while, on the contrary, the lower longitudinal line has disappeared. After another moult, the eye-spots are still more distinct, the white gradually becomes surrounded by a black line, while the centre becomes somewhat violet. The subdorsal line has almost, or entirely, disappeared, and in some specimens faint diagonal lines make their appearance. Some few assume a brownish tint, but not many. A fourth moult takes place in seven or eight days, and when the caterpillars are about 1¼ inch in length. Now, the difference shows itself still more between the two varieties—some remaining green, while the majority become brown.



Fig. 51.—Catasetum scurra. Nat. size. Flowers white.

The caterpillars are very different in colour—green, white, yellow, brown, sometimes even gaudy, varied with spots, patches, streaks, and lines. Now are these merely casual and accidental, or have they a meaning and a purpose?

In many, perhaps in most cases, the markings serve for the purpose of concealment. When, indeed, we see caterpillars represented on a white sheet of paper, or if we put them on a plain table, and focus the eye on them, the colours and markings would seem, if possible, to render them even more conspicuous, as, for instance, in this diagram of Deilephila galii; but amongst the intricate lines and varied colours of foliage and flowers, and if the insect is a little out of focus, the effect is very different.

and almost exactly the colour of the leaves on which they feed. That this colour is not a necessary or direct consequence of the food, we see from the case of quadrupeds, which, as I need not say, are never green. It is, however, so obviously a protection to them, that the explanation of the green colour of small caterpillars suggests itself to every one. After five or six days, and when they are about a quarter of an inch in length, they go through their first moult. In their second stage they have a white subdorsal line stretching along the body, from the horn to the head; and after a few days, but not at first, traces of the eye-spots

* The shaded portions, which replace the eye-spots on the other segments, are an instance of the general rule that a character which appears on every two segments has a tendency to develope itself on every other segment.

The eye-spots are more marked and the pupil more distinct, the diagonal lines plainer, while the subdorsal line is only indicated on the first three and the eleventh segments. The last stage has been already described.

Now, the principal points to which I desire to draw your attention are (1) the green colour, (2) the longitudinal lines, (3) the diagonal lines, (4) the brown colour, and (5) the eye-spots.

Uses of the Colour and Markings.

As regards the first—the green colour—I think I need say no more. The value to the young insect, the protection it affords, is obvious. We must all have observed how difficult it is to distinguish small green caterpillars from the leaves on which they feed.

When, however, they become somewhat larger their form betrays them, and it is important that there should be certain marks to direct the eye from the outlines of the body. This is effected, and much protection given, by longitudinal lines, such as those occurring in the second stage of our larvæ. These lines, both in colour and thickness, much resemble some of the lines on leaves (especially those, for instance, of grasses), and also the streaks of shadow which occur among foliage. If, however, this is the explanation of them, then they ought to be wanting, as a general rule, in very small caterpillars, and to prevail most among those which feed on or among grasses. Now, similar lines occur on a great number of caterpillars belonging to most different groups of butterflies and moths, as you may see by turning over the illustrations of any monograph of the lepidoptera. We have seen that they exist among the hawk-moths, as, for instance, in Ch. elpenor; they occur in many butterflies, as, for instance, in Arge galathea, which feeds on the Cat's-tail grass; and among moths, as, for instance, in Pyrophila tragopogonis, which feeds on the leaves of the "John Go-to-bed at Noon" (Tragopogon). Now you will find that the smallest caterpillars rarely possess these white streaks. As regards the second point also, the streaks are generally wanting in caterpillars which feed on large-leaved plants. The Satyridæ, on the contrary, all possess them, and all live on grass. In fact we may say, as a general rule, that these longitudinal streaks only occur on caterpillars which live on or among narrow-leaved plants. We have seen that in a later stage these lines disappear on certain segments, and are replaced by diagonal lines.

THE DIAGONAL MARKINGS.

In this particular species these diagonal lines are faint, but in a great many other caterpillars belonging to the most distinct families of butterflies and moths, they are conspicuous and no doubt important. Now these diagonal lines come off just at the angle of the ribs of leaves, and resemble them very much in general effect. They occur also especially in species which feed on large-leaved plants, and I believe I may say that though a great many species of caterpillars present these lines, they are rarely if ever present in species which live on grass. In the diagram are represented three of such caterpillars, one belonging to each of the three great divisions of lepidoptera, namely, that of the purple Emperor (Apatura iris), which feeds on the Oak, as representing the butterflies; that of the Privet hawk-moth; and lastly, that of a moth, the Kentish Glory (Eudromis versicolor), which feed on large-leaved plants, and I believe I may say that, though very frequent, they rarely occur in species which live on grass. It might at first be objected to the view that there are many cases, as indeed in our elephant hawk-moth, in which caterpillars have both. A little consideration, however, will explain this. In small caterpillars these oblique lines would be useless, because they must have some relation, not only in colour, but in their distances apart, to the ribs of the leaves. Hence, while there are a great many species which have longitudinal lines when young, and diagonal ones when they are older and larger, there is not, I believe, a single one which begins with diagonal lines and then replaces them with longitudinal ones. You will also observe that the longitudinal lines still remain in our caterpillar on those segments which have no diagonal ones. This also often occurs, and it is striking where the lines are marked. This is also an advantage, because white lines crossing one another at such an angle have no relation to anything which occurs in plants, and would make the creature more conspicuous. It is an advantage, therefore, that when the diagonal lines are developed, the longitudinal ones should disappear. There is one other point in connection with these diagonal lines to which I must call your attention. In our species they are white, but in some cases, as for instance in the beautiful green caterpillar of the Privet hawk-moth, the white streak is accompanied by a coloured one—in that case lilac. At first we might think that this would be a disadvantage, as tending to make the caterpillar more conspicuous; and in fact if we put one in full view out, for instance, on a table, the coloured lines are very striking. But we must remember that the habit of the insect is to sit on the inside of the leaf, generally near the midrib, and in the subdued light of such a situation the coloured lines beautifully simulate a line of soft shadow, such as must always accompany a strong rib, and I need not tell any artist that the shadows of yellowish green must be purplish. Moreover any one who has ever found one of these large caterpillars will, I am sure, agree with me that it is surprising, when we consider their size and conspicuous colouring, how difficult they are to see.

The next point is the colour of the mature caterpillars. We have seen that some are green and others brown; and the green ones are obviously merely those which have retained their original colour. *Sir J. Lubbock, in the Society of Arts Journal.*

(*To be continued.*)

CLIMATE AND PRODUCTIONS OF TURKISTAN.

M. A. REGEL, son of Dr. Regel, Director of the St. Petersburg Botanic Garden, is travelling in Turkistan, where he will make a stay of some years to investigate the flora. Already Dr. Regel has published many of the novelties sent home by his son, and he expects a rich harvest in the future. The following notes we have extracted from a narrative of considerable length in the *Gartenflora* for January:—

Taschkend is a town of the extent of St. Petersburg, consisting entirely of one-storeyed houses surrounded by gardens. Nearly all the streets in the Russian part are planted with Poplars and Willows, and parallel to the pavements are ditches of running water, by means of which the gardens are irrigated, without which no crops can be raised. The heat in the summer months rarely descends below 88° Fahr., even during the night, and for six months very little rain falls. In winter the temperature is sometimes as low as 10° Fahr., but the spring is so warm that the first Grapes are ripe in June, and the first Apples by the end of May. Beyond the town, where artificial irrigation cannot be effected, the country has a burnt and desolate aspect.

From Taschkend to Vernoje the traveller traversed nearly a thousand miles, and he has some 250 miles further to go to reach Kalscha, his destination, where he will stay some years. The results of his journey so far include many very interesting new plants, and he has sent seeds of upwards of 400 species to St. Petersburg, and the collection of dried plants is much richer. The number of bulbous plants secured is also large: the pretty Lycoris Sewerzowi is one of them. A peculiarity of the flora of the highlands of Turkistan is the total absence of Ericaceæ. On the other hand, it appears to be the native country of many of our old garden plants. Thus Rosa gallica, the progenitor of R. centifolia and of R. alba, from which the hardy double white Roses of our gardens have descended; Eremurus robustus, Kaufmanni, Olgæ, Korolkowi, &c.; Tulipa Greigi, Fritillaria pallidiflora, Seloua sogdiana, are other gains of this expedition. The flora is particularly rich in bulbous plants and the salt-loving plants of the Chenopodiaceæ. Of Allium seventy species are known to occur in Turkistan, of Gagea fourteen, Eremurus ten, Tulip eleven, including five mostly very showy new species; Fritillaria four, &c. Only one species of Lilium, L. Martagon, is found, and that on north-eastern confines. Rhinopetalum Karelini and R. stenopetalum are two interesting bulbous plants not yet introduced. A charmingly pretty new genus of Campanulaceæ, Cylindrocarpa Sewerzowi, was collected at Karatan. Ten species of Primula are endemical, among them the lovely and variable P. nivalis. P. Fedtschenkoi rivals the finest species of the European alps, and P. Kaufmanniana is likely to become one of the most favoured garden plants. Kaufmannia Semenovi is an interesting new genus of Primulaceæ, with the habit of Cortusa Matthioli, and has yellow flowers. Finally, the beautiful and often magnificent species of Astragalus and Oxytropis may be counted by hundreds; and the Salsola tribe are represented by an incredible number of different forms, many of them exceedingly ornamental.

Florists' Flowers.

THE FANCY POLYANTHUS.—The determined set that so well-known a cultivator of the Auricula as the Rev. Mr. Horner has made against the introduction of self alpines into competitions, shows how technically conservative it is possible for persons to become even in relation to so apparently progressive a vocation as that of gardening. It seems impossible to believe that the introduction of another section of a beautiful flower can in any way affect the status of recognised varieties, and one is at loss to perceive why self alpine Auriculas should not receive the some attention that has been bestowed upon their shaded brethren. In this strict floricultural conservation lies the danger for the fancy Polyanthus, for florists have hitherto only recognised the gold-laced section as exhibition flowers, and by the majority of at least the Northern school a "fancy" flower would be looked upon as decidedly heterodox. If the hard-and-fast lines of this school have not exterminated the gold-laced kinds, it is certain that really good forms are rarities, and that, further, these perfect flowers seem chiefly to be allied to growths of the most delicate kind, for propagation seems to kill rather than to increase. Well enough in their way, the gold-laced Polyanthus lacked size of pip, variety of colour and marking, and robustness of habit; but all these merits and more are found in the fancy strain, whilst in form and substance they can also, as compared with the gold-laced kinds, more than hold their own. Here, then, are offered at once the elements of a class of exhibition plants that are far more worthy the attention of florists than is the old show Polyanthus, whilst adding so greatly the charm of variety—for that appears to be endless. The committee of the new Auricula Society have admitted the Polyanthus to a place in their schedule for their show next April, but with two of the judges out of the three named men of the old school, and possibly full of prejudices for the old gold-laced forms, what sort of a chance will the fancy kinds possess at their hands? This is not a question as affecting that particular show, but is one that has a wide bearing, as these fancy kinds have been dispersed far and wide for show purposes, and, of course, the growers expect to find them duly recognised as show plants by judges. The fancy Polyanthus is so easily cultivated that it may well become a favoured flower for those myriads of amateur growers whose means are confined to a frame or two and a few rods of ground. It does not require one tithe the attention and labour required by the Auricula, yet is so productive of beautiful kinds that even the Auricula may soon have to "pale its ineffectual fires" before its less pretentious compeer. For exhibition purposes the Polyanthus should be classed in gold-laced, self, and fancy sections, and then all kinds of good flowers would receive due encouragement. *Thrum Eye.*

Foreign Correspondence.

ATHENS: *Feb.* 14.—It is very pleasant to find the hills already covered with flowers, Anemones, Calendula, Arum Arisarum, Crocus, &c., and as one looks at the white buildings, and the blue sea and sky, to find these little gems around one's feet. My object in coming here is to visit Mycenæ, and some of the large Asiatic tumuli; it may not accord with the subjects in your paper to mention it, but I search for special Apples and Asphodel as I go along. It is curious that the Apple—rare in the Ionian Islands—is found about the mountain of Cressida in Corcyra, Corfu—the place where Ulysses was received by Nausicaë and her maidens, and where to this day an annual festival is held at midsummer, or, as a native described it, "When the Melons are ripe," apparently in honour of Pomona or Flora, and where the Pyrrhic dance is still kept up. The festival is now, however, much Christianised. The Greek priests of the little chapel are habited in robes covered with flowers; the chapel is situated at the foot of the little hill, which has been artificially levelled, and now forms a truncated cone, the summit of which is inhabited by a Sibyl-like old crone. Inside the chapel, and above the paintings of the flower-robed priests, who are represented life-size, and occupy what would in our old churches be called the rood screen, are two carved semi fish, semi-dragon like figures, each of which balances a saint on the tip of his tongue. They are very similar in device to some of the dragons in Brittany, who are about to swallow saints. The dragon is here evidently identified, as is so often the case, with the limpid fountain, which issues from the rock, and whose secluded waters are approached through a grove of unusually large and lofty Olive trees, whose matted and perforated trunks look like lacework against the sky. This feature in the trunk of the Olive is not seen about Athens, nor have I elsewhere seen it so marked as in Corfu.

I have delayed this letter till Feb. 18, the last day of the Carnival, and outside the Greek cathedral are being sold bundles of Narcissus. There are no other flowers for sale but this. *P.*

Garden Operations.

PLANT HOUSES.

The cultivation of stove plants necessitates a more continuous war with insect pests than in the case of those that are grown in a lower temperature ; here heat, the essential element to their existence, favours their rapid increase to such an extent that if continuous attention is not paid to their destruction, the condition of the plants on which they live can never be satisfactory. Some growers attempt to deal with the worst species, such as mealy-bug and scale, by occasionally going over the plants and destroying all that can be found, and then for a time leaving them unmolested until they again abound. Comparatively few manage to thoroughly eradicate that worst of indoor plant insects, mealy-bug, when once it has got established, although perseverance in its extermination is far the most economical in labour in the long run. Where it exists from this time through the summer, unless it is kept down by going over such things as are affected with it weekly, the infested plants will never succeed as they ought, as when they are allowed to get so smothered with it the operation of cleaning injures the young tender foliage and newly-formed flower-buds, to the disfigurement of the former, and often the destruction of the latter. This work should, as far as possible, be done early in the morning, before the temperature gets high. Working in a hot moist stove with the sun upon the glass, in the middle of the day, is neither pleasant nor conducive to health, and where there is proper management never need be resorted to. Wet cloudy days also should be taken advantage of for the like operations. But under any consideration, unless stove plants are kept well free from insects, it is almost better never to attempt their cultivation, as nothing tends more to the improved appearance of a plant-stove than a moderate number of well-managed hanging baskets ; where there is sufficient head-room a few may occupy the space over the side paths, as also at the ends of the house : where there is not enough height over the sides, some can be hung from the rafters nearer the centre of the house, as well as from the ridge, in no case allowing them to occupy a position immediately over any other plant, so that the water necessarily given them would drip into it. To produce the best effect they should be hung at different heights, so as to avoid a formal appearance. A few of the most suitable plants for the purpose are the drooping Hoyas, bella and Paxtoni, the flowers of which so suspended are seen in their natural position to the best advantage. The species of Æschynanthus are equally suitable, and most of the many-leaved Begonias of medium growth. In the case of these latter plants, the edges of the baskets ought to be well furnished with the blue Lycopod (Selaginella uncinata), for, independently of the effect it produces here, it is one of the most useful of all plants for cutting to furnish tall vases of flowers for room decoration, its colour and form associating well with floral arrangements of any kind. Allamandas that have made a good length of shoot and which do not show bloom ought to have these wound round the trellis ; by so doing, and keeping the points down, they will be induced to break freely, and will generally bloom sooner from the second growths caused by this means, than they would if the first were left to go on extending. Cuttings may now be got in of such things as Aphelandras, Gardenias, Rondeletias, Ixoras, &c ; these will strike well now, and if kept on growing will by autumn be nice plants. They will not root so readily if their propagation is not attended to till further on in the spring, and so the season gets far advanced before they are fairly at work. Take the cuttings off with a heel, not bruising the bark at all, if this is done it renders them much more likely to die off. As decorative plants for summer and autumn, Vinca rosea and V. rosea oculata are very useful, not at all difficult to grow, and little troubled with the attacks of insects. Small plants occupying, say, 6 inch pots, ought to be moved on into larger ones, potting them in a mixture of good loam, rotten dung, a little leaf-mould and sand ; they will be hot enough at the coolest end of the stove. Climbing Hoyas, such as H. Cunninghami and the strong-growing H. imperialis, ought to be grown where there is not such a deal of moisture in the atmosphere, as this often causes their flowers to drop off without opening. Withhold the syringe directly the bloom can be seen pushing up, or a like result will follow. The shoots of Bougainvillea glabra started some time ago will by this time have attained a good length, and will need supporting to keep them erect. Any plants of Rondeletia that have during the winter been kept cool, ought to be cut in now, and put in the stove. So treated they will bloom about July, and will be found very serviceable. Let Tillandsias, Bilbergias, Æchmeas, and all plants of a similar light-loving nature have a place where they will get plenty of this essential element, without which they cannot be expected to bloom satisfactorily ; there is no better position for them than close to the front lights. The rest of the stock of Gloxinias and Achimenes may now be started. By starting them at two different times a succession is obtained. *T. Baines.*

FLOWER GARDEN, ETC.

The late frost having broken up the walks to a considerable extent, they will require to be swept and well rolled, which will again make them smooth and solid. The grass will also want attention, and as soon as the rough work is well forward the walks may be turned over and fresh gravelled, which adds greatly to the appearance of the grounds, for nothing tends more to give a finish to any place than good walks well kept. Hardy annuals may soon be sown in the open ground, either in lines or patches according to taste, or as may be most suitable. Many of the half-hardy kinds can be sown in pots, pans, or boxes, and hardened off before being pricked out preparatory to final planting. Bedding Dahlias, where used in the flower garden, will also require looking to, and any of the sorts which may be wanted in quantity potted, and started in mild bottom-heat. As soon as the young shoots are 3 or 4 inches long they may be inserted in small-sized pots, and plunged in bottom-heat. When sufficiently rooted, the plants can be shifted into larger pots or frames as may be most convenient. The varieties of Fuchsias that are used for decorative purposes, and have been kept under plant-stages or other out-of-the-way places, will soon require looking over, and all the dead points of the shoots cutting back to where they are sound, and the plants should receive a little more attention. Evergreens may soon be pruned and trimmed for the season, and all tying and nailing finished. Persevere in propagating by cuttings, and sowing seeds until a sufficient stock of all the usual bedding plants are obtained, they can be potted and had in readiness for the planting season. Sticks and supports for plants and trees can be got ready when the weather is unfavourable for outdoor work, and all rotten plants will require to be carefully looked after. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

Cherry House.—The roots of trees which are in borders confined to the area of the house, are in general in a more state of growth by the time the flowering period is over ; therefore a satisfactory condition as regards moisture in the border is now indispensable, and should any doubt on this point exist it should be ascertained practically. The visits of the bees to this department this season have been exceptionally few, and the only flowers we have as yet only observed two or three of them at work. The effect produced by the lack of these busy workers will in early started houses this year materially depend upon artificial operations ; see therefore that the means and opportunities are adopted to effect the setting when the pollen is in a dry state. The foliage in forward houses is now sufficiently advanced for the attacks of grubs : this intolerable pest can only be completely extirpated by a tedious search over the leaves occasionally. Another formidable enemy is the black-fly, to these appear fumigate the house without delay, or they will quickly establish themselves in places where their destruction is not so easily accomplished even by repeated applications. Persist in the treatment as before advised. Forty degrees should be the artificial night temperature, and from 50° to 55° by day. Stop all growths which are not required to run at the fifth or sixth bud. Syringe the trees twice every day after the fruit is well set, the only exception to this rule being when, from the effects of frosty or cold nights, the temperature in the morning does not exceed 45°. It should then be withheld. Ventilate constantly at 55°, and admit a current of air into the house at 75°. The foregoing remarks will in the main be applicable to Plum trees, the shoots however being more thickly placed it will be necessary to remove some of them : none should be exercised in this matter, because it is injudicious to divest the trees of too much foliage at this period ; stop the shoots precisely in the same way as indicated for Cherry trees.

Strawberries in Pots.—As the early crops of these are finished off, additional space will be at command for the next succession of plants to take their place, and others from the store ground should be introduced to replace these ; with an increase of light and solar heat the business will proceed much more satisfactorily. Keep the plants which are placed in dry and airy places well syringed twice every day until the fruit is nearly ripe, when such plants should be taken to cooler places and the fruit, if it is to be firmly preserved for a few days, should be kept from sunshine. At the shutting-up time a syringing over of the plants occasionally will be very beneficial to those which are advancing in pots. A copious supply of water at all times when needful is indispensable to ensure successful results with these subjects, and should contain some stimulating agent in it when applied to plants which are swelling off the fruit. The time which is occupied in thinning the fruit on these plants, though it may be tedious, is more than compensated for by the increased size and quality of the fruit. The advantage of securing an early supply of runners of these plants cannot be overestimated for forcing purposes ; for this object, therefore, some of the best plants of the earlier kinds after they have fruited should be preserved, hardened off, and then planted out. *G. T. Miles, Wycombe Abbey.*

HARDY FRUIT GARDEN.

Truly the weather has for some time well deserved the appellation of "pickle," and March is proverbial for being in that particular mood—a circumstance that will render it all the more difficult to preserve the blooms of Apricots, Peaches, and Nectarines, which unfortunately are in a more advanced state than is usual at this season. Snow and wet are even more fatal than frost unless very severe, as with the latter we generally get some hours' sunshine to ripen the pollen and dry breezes to scatter it, whereas during a rainy time, with a dull state of the atmosphere prevailing, little if any comes to maturity and therefore fecundation cannot take place. It is therefore the utmost importance that the trees should be protected as far as possible from every passing shower, not only to protect the flowers, but to keep the wall dry—a condition in which it has much less attraction for frost. Although no advocate for wide permanent copings, they are most valuable as a temporary means of shelter, and by far the best appliances that can possibly be used, affording as they do not only perfect dryness, but intercepting in a large degree the radiation of the heat absorbed by the bricks during the day, and which would escape were it left without some barrier between it and a bright clear sky. Frosts, too, drop straight down and settle on the tender blossoms, so that in every way a coping is very desirable. Were it not for the breakages that inevitably occur in the annual removal of such as are glazed, these are the most to be preferred, as they afford but little obstruction to the light, the principal drawback in the use of boards, which otherwise are equally effectual as a means of protection, and which, by having them in 15 feet or 20 feet lengths, can be put up and removed in a short space of time, without involving much labour. Fixed from the outer edge of these, scrim canvas blinds are fixed that can be let down or rolled up at pleasure, any amount of wet, and such frosts as usually prevail at this season, may almost be put at defiance. In cases, however, where such appliances are not had, the next best are old fishing nets, hung so as to depend straight down from the coping to a rail run along the foot of the wall at a short distance from the ground and strained sufficiently tight not to flap against the trees to injure the blooms, to prevent which a few forked sticks should be used to strut them away. By using the nets double or treble the meshes will so cross and intersect each other as to stop all snow, hail or rain from reaching the trees, and will screen and sift the air in such a way as to render that part between them and the wall much colder and darker than the outer portions, as may readily be seen by hanging a thermometer in each place. One great advantage in using nets is, that they afford so little obstruction to the light that they may be left on till the fruit is set and all danger of frost is over, and although they may not be so efficient as blinds, there is no further labour in attending to them. Where neither of these is ready to hand, a few twigs of Hornbeam, with their dry leaves adhering, or bits of Spruce or evergreen Oak tied on to the main branches of the trees, afford an excellent protection, by breaking the full force of wind or wet, or warding off frost, but the more effectually to do this they should be placed with the tips downwards, and not be so thick as to weaken the flowers by keeping them too much from the sun. Even hexagon netting or thin mats strained over a tree will often save a crop, but whatever means is adopted with a view to ensure a good set should be applied at once, before any injury occurs to either anthers or pistils. Owing to the wet, mild state of the weather during the winter months Strawberries are getting forward, and require protection from cold cutting winds, that are always more or less severe at this season. Short stable manure shook in amongst them now will so much enrich the beds as to add materially to the strength of the plants, besides affording the requisite shelter to the young tender leaves and incipient crowns, and encouraging the formation of fresh feeders, on the annual renewal of which so much depends in obtaining good crops of this favourite fruit. On no account should the plants be dug between or the ground disturbed in any way beyond what is necessary to hoe and clean it, as the principal roots would be destroyed in so doing, and the Strawberry always succeeds best in firm solid ground. If the crowns are far above the soil give a good dressing of rich mould before putting in the manure, for which labour and trouble the plants will make a liberal return. *T. Sheppard.*

THE

Gardeners' Chronicle.

SATURDAY, MARCH 10, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Mar. 12	Sale of the late Mr. E. Brown's Collection of Insects at Stevens' Rooms.
WEDNESDAY,	Mar. 14	Sale of Roses, Shrubs, Fruit Trees, Bulbs, &c., at Stevens' Rooms.
THURSDAY,	Mar. 15	Linnean Society: Meeting at 8 P.M. Sale of several Collections of Insects at Stevens' Rooms.
FRIDAY,	Mar 16	Sale of Shells, Insects, &c., at Stevens' Rooms.
SATURDAY,	Mar. 17	Sale of Hardy Plants, Bulbs, &c., at Stevens' Rooms.

A LONDON SQUARE, viewed as an example of gardening, may, as a rule, be set down, in general terms, as one of the worst examples of taste and of unfitness—to say nothing of ugliness—that could possibly be found; and much the same might be said of the public squares in most other cities and towns. Very few indeed of them fulfil their requirements in even a moderate degree. Too often they are altogether unsightly in their aspect; and the very best examples frequently lack most of the essential requirements of such gardens in such situations. In some there is to be seen little besides an unsightly ridge of raw earth near the railings surmounted by a row of shabby half-dead or drawn-up spindly shrubs, supposed to represent a hedge, but which does not in any way serve the purpose of a hedge; and inside of these perhaps are a few beds of shrubs or flowers thrown up in such a style, that during half the year the plants are positively starved for the want of the moisture which it seems to have been the one object of the workman to carry off away from the roots as rapidly as possible. If there is an attempt to secure a refreshing green lawn, the grass is either patchy and ill-kept, or conspicuous by its absence; and not unfrequently so little supervision is exercised that the surface is a receptacle for *rejectamenta* of every kind. Truly in many cases these town squares are in a miserable plight.

But the objectionable features are not always in this direction. Some can boast of being well-kept or fairly well-kept so far as routine manipulation goes, but nevertheless from errors of design fail to fulfil their purpose. The boundary hedge has been carefully planted, and good trees and shrubs introduced, but the shrubs and trees have been intermixed with the hedge plants, and allowed to encroach on their space, and consequently they have long ceased to secure the end for which the hedge was introduced, namely, shelter and privacy. Besides this, the general style of the planting is too often promiscuous and objectless.

Now, what are the chief requirements in a private town square, which it must be remembered has to do duty mainly as a substitute for gardens to the neighbouring residents? The first consideration is to secure dry paths for promenading in damp weather, and shady paths for promenading in hot dry weather; a good open space of well-kept grass is required, as an exercise ground or playground for children, and to serve also as a pleasant promenade when required; seats need to be conveniently placed as resting-places, and a few flowers or flowering shrubs should come in to enliven and diversify the scene. To this should be added a certain—and that at least a considerable—amount of privacy, which will protect those who may have the right of *entrée* from obtrusive gaze.

In the accompanying plan (fig. 52), supposed to represent a moderate-sized London square, Mr. EYLES has, as we think, judiciously met the objections which may be urged against the modes of arrangement which have hitherto been in use, and to which we have pointed in the foregoing observations; and we commend his plan and explanations to the serious consideration of those who have to take action in matters of this kind.

"The accompanying plan represents a square of about 1¾ acre in extent. It is oblong in shape, being about 84 feet longer than broad. One of the great objects of a London square being to provide a place for recreation secluded from the public gaze, it is proposed to plant this square upon a principle which will secure this privacy for its occupants. I would commence this by planting a Holly hedge close to the iron railings, leaving a border in front of this 9 feet wide for evergreen shrubs, with a few neat-growing flowering shrubs intermixed; and by adding a group of evergreen shrubs in front of each entrance gate, I think this effect will be produced. It is also intended to have a grass promenade 24 feet wide between these shrubs and the principal walk. This walk is to be 12 feet wide, and is to have a row of Lime or Plane trees planted on each side of it. The trees are to be planted 12 feet apart, and they are intended to grow so as to form a complete arch over the walk. These will also eventually shade the grass promenade, and so as to give in summer-time and in sunny weather an abundance of shade either on the gravel or grass. Seats would have to be introduced between the trees at intervals when necessary.

"By this arrangement the whole of the centre will be left open, allowing the grass to grow freely, as I consider a good greensward one of the greatest desiderata in a London square.

"In the centre it is proposed to erect an ornamental summer-house, and to contrive, in a portion of the interior, a place to store away the mowing machine, roller, and such other tools as may be necessary for the proper keeping of the square. The other portion could be furnished with seats in the ordinary way, and would provide a place of retreat from hasty showers of rain.

"It is proposed to plant the four borders on either side of this summer-house with the better kinds of shrubs—the two large ones with those kinds of Rhododendrons which are known to be adapted to the London climate, and the two smaller ones with hardy Azaleas. The four round beds are intended for summer-flowering plants; and, if desirable, the larger borders also may be furnished with flowering plants.

"By this arrangement of the trees and shrubs and flowers, each is placed in the best manner to ensure success. No trees being planted amongst the shrubs, there will be nothing to hinder them from making a good screen; and as they consist for the most part of evergreens, they will render the square private both in winter and summer. In early spring, and in autumn, when it is desirable to promenade in the sun, the walks in the centre of the garden will be ample for the purpose. The outside borders might be planted with the different varieties of Aucuba and Euonymus; nothing can be more beautiful or diversified than the numerous green and variegated forms of the former. The green form, when covered with its bright shining red berries, is especially an object of beauty. There is also great diversity in the form of the leaves, and also in the arrangement of the berries in the several varieties, quite sufficient to prevent monotony, and to render the border interesting. The different forms of the Euonymus may also be formed into effective groups, by arranging the gold and silver variegated forms with the deep green varieties of recent introduction. This would give light and beauty to the whole, and we know these plants will grow and thrive in a London climate, and especially when planted under such favourable conditions as those here indicated. In the front of these borders a few free-growing showy herbaceous plants, intermixed with Ferns and bulbs, may be planted with effect, and with proper care may be made to thrive even in a London atmosphere. *George Eyles*, 44, *Eardley Crescent, South Kensington.*

—— XANTHORRHŒA MINOR is flowering for the first time in this country in the Succulent-house of the Royal Gardens, Kew. It is an acaulescent species, producing numerous tufts of wiry leaves about 18 inches in length. The scapes of this specimen are a foot long, and the spikes extremely short, scarcely exceeding an inch, while those of native growth attain about 9 inches. The flowers are white and star-like, emerging from a dense mass of delicate narrow bracts tipped with brown, about twenty-four of which were detached with a single flower. Many of the leaves twist from base to apex, forming a single coil, and the scapes also have a twisting tendency. It is a native of New South Wales and Victoria, occupying large tracts near Yorktown, east of Georgetown, and the top of Grass-tree Hill, near Hobart Town. In the *Flora of Tasmania* it is mentioned as flowering only occasionally, being very abundant one year and but sparingly found the next in the same place. It is also described as covering the ground to the exclusion of everything else, and the country appears white from the abundance of its flowering stems. A figure with description will be published in the *Botanical Magazine*, making the third species of that work all flowered at Kew. X. hastile, tab. 4722, bloomed in 1853, and X. quadrangulata, tab. 6075, not quite four years ago. X. minor has long been cultivated, and the above is a flourishing specimen.

—— We are informed that the business of horticultural engineer and manufacturer of hot-water apparatus carried on so successfully by the late Mr. ORMSON, at Stanley Bridge, CHELSEA, will be carried on as heretofore under the same name.

—— On the Hampshire coast, between Calshot Castle and Leap, large quantities of excellent SEAKALE are obtained, according to the *Gardener*, by covering the wild roots with shingle during the winter months. The crop is fit to cut in March, and realises about *6d.* per lb. "I have seen fresh succulent heads 9 inches in length, and weighing 19 or 20 ounces each, the flavour being far more delicate than that forced with the aid of manure or leaves." This simple plan of Seakale culture is well worth adoption along our coasts, where any beach exists above high-water mark.

—— The extreme maximum TEMPERATURE in the shade at Melbourne from 1858 to 1874 is 112°.2 Fahr., the extreme minimum temperature being 27°. The yearly rainfall is 26 3 inches.

—— The last number of the *Athenæum* states that the *Boston Daily Globe* (U.S.) of February 13, 1877, contains "the first newspaper despatch sent by a human voice over the wires." It consists of a report, 110 lines long, of a lecture delivered at Salem, 18 miles from Boston, Massachusetts, by Mr. A. GRAHAM BELL (son of Mr. A. MELVILLE BELL, author of *Visible Speech*), explaining his TELEPHONE, or apparatus for transmitting speech sounds, and musical sounds of all kinds, through the electric telegraph wires, by means of the vibrations of the armature of a permanent magnet. This invention was spoken of in the highest terms by Sir W. THOMSON at the Glasgow meeting of the British Association last year. It had, up to the 13th of this month, been used only for experimental purposes; but, after all the experiments and illustrations of sending musical notes, songs, and words, from Salem to Boston and back, and actually hearing the applause of the Salem audience at the Boston end, the Salem reporter sent his report to Boston by means of the instrument.

—— The FLORA OF MAROCCO formed the subject of a most interesting paper by Mr. JOHN BALL, F.R.S., at the last meeting of the Linnean Society. Within almost a couple of days of London the plants of the region in question and indeed the country itself are little better than a *terra incognita* to Europeans. The fanaticism of the descendants of the Berbers, and fear of Christians taking possession of their land, form a barrier to exploration. Dr. HOOKER, Mr. G. MAW, and Mr. BALL, in 1871, however, managed to penetrate the lesser Atlas at several points, and the record of their journey was contributed to this journal in 1874, by Dr. HOOKER. The collections then made have now been worked into form by Mr. BALL. A number of new and highly interesting forms have been brought to light, and in all some 1618 species described. It would seem that the proportion of Compositæ, Leguminosæ and Liliaceæ is unusually large, whereas Gramineæ and Ranunculaceæ are exceptionally small. Such natural orders, as Rosaceæ, Saxifrageæ, Primulaceæ, Gentianeæ and Cyperaceæ, so characteristic of the mountainous countries of the north temperate regions, are but poorly represented in the hilly Marocco area. A kind of medley of several temperate floras is represented, viz.: 1, peninsular; 2, Mediterranean; 3, desert; 4, African mountain flora; 5, Macaronesian; and 6, cosmopolitan, or widely spread European species.

—— At the Grange, near Chorley, the residence of ALFRED HEWLETT, Esq., there is now in flower a magnificent mass of CHELOGYNE CRISTATA. The mass is somewhat like a flattened cone in shape, and measures 7 feet 8 inches over; and it bears 180 spikes,

with four, five, and six large blossoms on a spike, and certainly not less than 900 blossoms altogether.

—— We learn from the report of the Royal Botanic Garden, Edinburgh, that the funds granted for the ordinary expenditure of the garden are only £1400, a sum very inadequate, and that for the bare support of the garden £200 more of annual income is required. Additions to the plants in the garden are only effected by voluntary contributions, and there is no Government allowance made for the payment of a Curator for the herbarium, library, and museum.

—— A description of a portion of the rich collection of the late Dr. Welwitsch's Angolan herbarium was given by Mr. J. G. Baker, of Kew, at the Linnean Society on March 1. The groups which this indefatigable worker has brought his knowledge to

—— In some notes on the Effects of the Mild Weather on Vegetation (*ante*, p. 177-8) we mentioned the ornamental foliage of some species of the genus Ferula so early in the year as the beginning of February. We very much feared that the sharp frosts of last week would have injured them and more or less destroyed their beauty, but it is worthy of note that they do not appear to have suffered in the least. It has long been known to those who admire beauty and elegance in leaves as well as brilliantly coloured flowers that the leaves of most species of Ferula appear in the middle of winter, or at the latest in early spring, in the climate of London; but it may not be so well known that they will bear a sudden change from very mild weather to 10° to 15° of frost with impunity. Certainly there is no class of herbaceous plants deserving of cultivation more for the imposing habit of vegetables, flowers, and fruit, and that is an intense degree of cold during a usually long winter. If we get a continuous frost of from 15° to 20°, especially if accompanied by a sharp wind, it is as much as the boilers can do to perform the task allotted to them of keeping up the temperature of one or more houses, according to their area. But what must it be when the thermometer stands 50° below zero, and wood the only kind of fuel to be had? Such, according to a writer in the *Revue Horticole*, are the conditions under which the gardeners of Moscow manage to grow excellent Cucumbers, for instance, during the months of November, December, January, and February. Mild as we have had the weather, Reaumur's thermometer stood at 37° below zero at Moscow on Dec. 10 last, which is more than 50° below Fahrenheit's zero, or 83°.5 of frost!—not far short

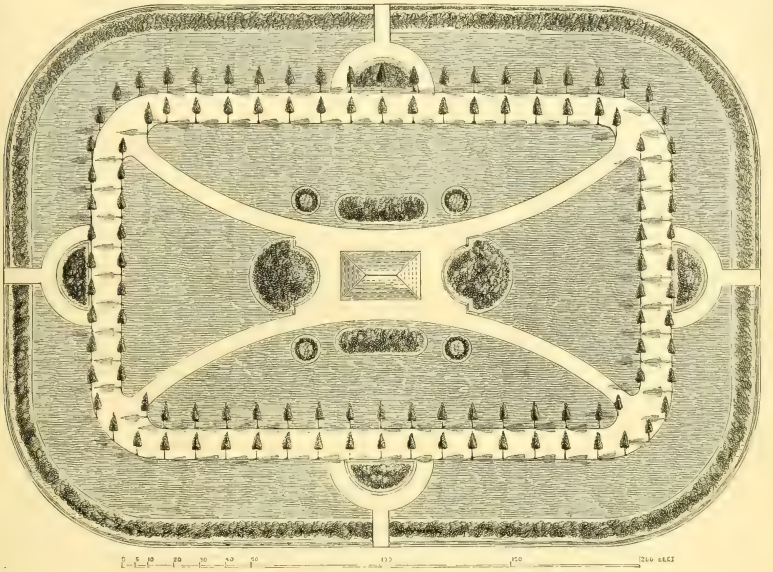


Fig. 52.—Plan for town square.

bear upon, are the Liliaceæ, Iridaceæ, Hypoxidaceæ, and Haemodoraceæ. A very large number of entirely new species and two new genera of Liliaceæ are described. Notwithstanding this large accession of specific forms, Mr. Baker believes they will not alter materially what is already known of the character of the Central African facies of vegetation.

—— The Council of the Royal Horticultural Society having decided to receive provincial horticultural and floral societies into association with it upon an annual subscription of five guineas, they offer them the following privileges:—One silver Knightian Medal, one silver Banksian Medal, one bronze Knightian Medal, one bronze Banksian Medal, to be given as prizes at the shows of the provincial society; one members' ticket for the secretary, and twelve single tickets admitting the bearer to any meeting or show of the Royal Horticultural Society. Horticultural societies already in union will retain their present privileges.

growth and elegance of foliage than for the brilliancy or fragrance of their flowers that should be more strongly recommended than the Ferulas. As single specimens, when once properly established, they are exceedingly effective from early spring to midsummer, when their striking inflorescence is the signal for the beginning of the decay of the foliage. F. communis is one of the best; it makes fine clumps of foliage as finely cut as that of Fennel, and the candelabrum-like inflorescence reaches a height of 10 feet or more, according to the conditions under which it may be growing. F. glauca, F. tingitana, and F. Ferulago are also handsome plants, quite distinct from each other in their general aspect.

—— The Fourteenth Annual Exhibition of the Leeds Horticultural Society will be held in the Horticultural Gardens, Hyde Park Road, Leeds, on June 27, 28, and 29.

—— The Gardener at Moscow has one great difficulty to contend against in supplying the table with of the intense cold experienced by our latest arctic explorers. Of course, in so rigorous a climate, few of the fruit trees that flourish with us can exist; but on the other hand the summers are more favourable than ours to the rapid growth and maturation of many plants. The writer alluded to treats more particularly of Cucumber forcing. The kind of house used for this purpose is a very low lean-to, with a slope of 20° to 25°, and from 12 to 15 feet wide, consisting almost entirely of wood and glass. The heating apparatus is a massive brick flue some 2 feet or 2 feet 3 inches in thickness on all sides, and wood is the only available fuel. In a house of this kind, 65 feet long, a skilful cultivator will raise from 4000 to 5000 Cucumbers per annum. But even then it is not a very remunerative industry, because wood becomes scarcer and dearer every year. These Cucumbers, the writer adds, must be at least 10 centimetres (about 4 inches) in length. Is this a misprint, or do they cultivate varieties of what we term the ridge type?

—— We understand that the Hurlingham Club has made arrangements with the Messrs. JOHN WATERER & SONS, of Bagshot, Surrey, for an exhibition of Rhododendrons in the gardens at Hurlingham during the month of June next.

—— The last part of COHN'S *Beiträge zur Biologie der Pflanzen* contains two additional articles on BACTERIA, one by COHN himself—relating more particularly to the development of the germs in various infusions, and the question of spontaneous generation, and the other by Dr. KOCH, on the etiology of the cattle distemper (*Milzbrandkrankheit*), founded upon the development of Bacillus Anthracis. With regard to spontaneous generation, COHN says that his investigations have removed the last support which the phenomena in connection with boiled infusions of hay gave to the hypothesis of spontaneous generation. In reference to the connection between these organisms and contagious diseases, KOCH'S researches, as far as they go, seem to prove that they are actually the medium in which the contagion is conveyed.

—— It is well known that WALNUT TREES sometimes attain prodigious size and great age. An Italian architect mentions having seen at St. Nicholas, in Lorraine, a single plank of the wood of the Walnut, 25 feet wide, upon which the Emperor FREDERICK III. had given a sumptuous banquet. In the Baidar Valley, near Balaclava, in the Crimea, stands a Walnut tree at least 1000 years old. It yields annually from 80,000 to 100,000 nuts, and belongs to five Tartar families, who share its produce equally.

—— Mr. ISAAC DAVIES, Brook Lane Nursery, Ormskirk, Lancashire, has arranged to exhibit his sweet-scented Rhododendrons, Azalea mollis, and other novelties, at the Winter Gardens, Southport, at about the end of the present month. We hear that the plants are now a mass of flower-buds, and will certainly be very interesting when in bloom.

—— Dr. A. FAMINTZIN has published in detail in the *Bulletin de l'Academie des Sciences de St. Petersbourg* his researches on the DEVELOPMENT OF wha he formerly termed the EMBRYONIC MEMBRANES OF PLANTS, but which he now proposes, in order to avoid ambiguity, calling the initial layers. He professes to have traced these initial layers through every stage of development in several organs of a number of Leguminosæ, and he finds that each of the initial layers into which the cellular substance of the embryo is differentiated in a very early stage of its existence is the foundation of, and developes only, its characteristic tissue. This being so, Dr. FAMINTZIN maintains that animal and vegetable embryos are perfectly identical in their mode of development. The paper is illustrated by eight quarto plates of anatomical details.

—— The Grand Summer Rose Show of the LEICESTER AND LEICESTERSHIRE FLORAL AND HORTICULTURAL SOCIETY is fixed for Tuesday and Wednesday, the 3d and 4th of July.

—— Dr. H. DINGLER describes (*Botanische Zeitung*, 1877, p. 74) a NEW SPECIES OF LATHRÆA, L. rhodopea, a native of the dense shady Beech forests of Rhodope, in Thrace. It is intermediate in character between L. squamarium and L. intermedium, having the flowers and fruit of the one and the habit of the other.

—— The other day the first number of a new "NATURAL HISTORY JOURNAL" was put into our hands, the scope and object of which entitle it to more than the passing notice of it given here. It is the production of the teachers and scholars of the Friends' schools scattered over various parts of the country, and is intended to encourage the study of natural history among the scholars from the youngest to the oldest, not merely for the sake of cultivating their powers of observation, but more especially for the ennobling and purifying influence it is believed to exercise on the development of the mind and disposition. Among other things it contains a list of wild flowers in bloom out-of-doors in various places, from Devon and Cornwall to Wigton and York, from December 20 to January 31, and also a list of garden plants in bloom during the same period. The former includes seventy-one species, and the latter no fewer than 122. Judging from the part devoted to botany the journal is ably and carefully edited, and seems calculated to add to the number of distinguished botanists belonging to the "Society of Friends." Meteorology, ornithology, school reports, abstract of a lecture on carnivorous plants by A. W. BENNETT, &c., occupy the rest of this number. We wish it every success, and heartily recommend it for imitation in other educational institutions.

—— The following prices were realised at the SALE of the collection OF ORCHIDS formed by the late F. G. WILKINS, Esq., Leyton, which took place at Stevens' Rooms on March 1 and 2:—Oncidium Lanceanum, 210*s.*; O. ampliatum majus, 241*s.* 6*d.*; two plants of O. Phalænopsis, in 12-inch pots, 580*s.* each; Cattleya gigas, 220*s.*; Lælia elegans Turneri, 220*s.* and 690*s.*; Lælia anceps Dawsoni, 210*s.*; Odontoglossum vexillarium, 882*s.*, 483*s.*; Epidendrum vitellinum majus, 283*s.* 6*d.*; Odontoglossum Bluntii, 200*s.*, 273*s.*, 294*s.*; Oncidium macranthum, 210*s.* and 325*s.* 6*d.*; Dendrobium Wardianum, 252*s.* Total amount of sale, between £1300 and £1400.

—— M. ROTHSCHILD, of Paris, is well known for his enterprise, not only in the publication of magnificent *ouvrages de luxe* like that on the parks and promenades of Paris, but also for the good service he has done in diffusing useful information by means of small low-priced but well-composed and well-illustrated books. Two such are now before us—*Les Ravageurs des Forets* and *Les Ravageurs des Vergers et des Vignes*, devoted especially to the insects injurious to forests, avenue and fruit trees and Vines. These little books are the work of M. H. DE LA BLANCHÈRE, and may be strongly commended to those who read French as excellent epitomes of the subjects on which they treat. With reference to the devastation caused by the Phylloxera in France, the author attributes the destruction indirectly to the practice of cultivating the Vinyear after year, for centuries perhaps, on the same soil.

—— The usual monthly dinner of the HORTICULTURAL CLUB was well attended on Wednesday evening last, and the following new members were admitted:—Benjamin R. Cant, Colchester; William Lee, Brandenburg Road, Gunnersbury; Charles Lee, Croxby House, Hounslow; H. J. Elwes, Preston, Cirencester; James F. West, Lynemouth Lodge, Reigate; H. G. Quilter, Birmingham; and John Smith, Royal Gardens, Kew.

—— Mr. BURRELL, in the course of an exhaustive paper on INDIAN TEA CULTURE before the Society of Arts, alluded to the splendid services of such men as SCOTT, WALLICH, JAMESON, FALCONER, ROYLE, and others, and made some remarks which illustrate the advantages of a progressive system of botany rather than a purely artificial one. Alluding to the discovery of the wild Tea plant in Nepaul about 1816, and by other observers in other parts of India, such as Assam, Mr. BURRELL asks:—

"It naturally occurs to me to ask how came it that all the information was neglected? It all went before the authorities at Bengal, and reached England. Well, the answer is this:—At that time the Linnean system of botany was in the ascendant, its great author had made Tea a separate species, parting it from the Camellia, to which it was nearly allied. The great botanical authority at Calcutta, Dr. WALLICH—a Dane—was a pupil of that school, and whenever any of these Tea plants were submitted to him he decided they were Camellias, and not Tea plants at all, and pooh-poohed the possibility of any Tea being found wild in India."

It is only fair to add that subsequently no one was more zealous in the matter than Dr. WALLICH.

—— One remarkable branch of HORTICULTURAL INDUSTRY is the extent to which plants of various kinds are grown for supplying those who publicly hawk them in the streets. The fine open weather has made the trade quite active, and Carnations, Hollyhocks, Polyanthuses, Daisies, Pansies, and many others are being bought up by the costermongers. Large breadths of these are grown in the neighbourhood of London, and being of inferior strains, are sold at a cheap rate. One London grower sends consignments of Carnations all the way to Newcastle-on-Tyne, where the fine vigorous plants he cultivates find a ready sale. Everything is sold as of a double character—that is, Carnations, Hollyhocks, &c., in the habit of throwing double flowers; but whether the main bulk of the plants deserve this designation when they bloom is open to some doubt. But every year finds them being grown and sold by thousands, and, it may be presumed, to the satisfaction of buyers.

—— Several SPRING FLOWERING SHRUBS are coming into beauty AT KEW. Nuttallia cerasiformis is one worth individual mention. It is of small size, and bears on erect branches a multitude of depressed racemes of white flowers in company with young leaves of the freshest green. It is a native of California, and though introduced long ago, does not seem common. A nice specimen may be seen near the Fern-house, and another near the Temperate-house. The fine example of Prunus divaricata near the new range is now in its finest condition.

—— Mr. DANIELS, lately gardener to Lady FITZGIBBON, Mount Shannon, Limerick, has been appointed to the management of Fornham Park, Bury St. Edmunds; and Mr. PYPER, formerly gardener to Lord HASTINGS, Melton Constable, Norfolk, is appointed to the management of the gardens of Colonel PINNEY, Somerton Erleigh, Taunton, Somersetshire.

—— Mr. ANDREW MURRAY has addressed a letter to the Government on the desirability of adopting measures to extirpate INSECTS INJURIOUS TO AGRICULTURE. Mr. MURRAY'S letter was suggested by an article in the *Times*, which we here reproduce:—

"'Our knowlege—that is, the knowledge of our men of science—is in a sufficiently advanced state to know what to do to check insect ravages. The life history of nearly all crop pests has been worked out. The time of egg-laying, the places selected for their deposition, the habits of the larva, the condition of the chrysalis, when there is one, the life of the fully-developed insect, are all known. The most effective way of destroying the insects, selecting either the egg, larva, or chrysalis state, are also known, and much of this has been known for years. It is to be hoped that this collection [the Collection of Economic Entomology at Bethnal Green] will direct attention to this question—"How is it that with so much knowledge we annually suffer such great losses?" The question has been asked in America, where in many States there is a State entomologist; and the answer has taken this form—"The individual application of the knowledge is of no good; it is useless for one property to be cleared of pests while surrounding properties still breed them. Combination is needed, and the interference of Congress can alone secure this." Dr. LECONTE, in his address before the American Association for the Advancement of Science, at the Detroit meeting, suggested that the importance of combination should be urged upon farmers, and that information as to probable benefits should be supplied to them. Bills have been introduced into Congress on the subject, but the report for 1867 of Mr. RILEY, which has just reached England, does not show more than that earnest attention is being given to the question. That Mr. MURRAY'S hopes do not end with the arrangement of his collection as a means of usefulness is foreshadowed by a paper on insect damage he read before the Royal Horticultural Society a year ago. He wishes to see some united active steps taken for clearing whole districts at once of pests. If united action could by any means be secured, the work would be simple. A scientific inspection of a district would decide with regard to a particular pest the condition of development in which it would be on certain days. Instruction would be given as to the course to be adopted, and if this were simultaneously acted on throughout a district, the pest might be checked, if not entirely removed. It is sincerely to be hoped that either some society or the Department will take so important a matter up.'

"The attempt is not new. It has been already tried on a greater or less scale, in various ways, and with more or less success both in this country and on the Continent—the degree of success being almost invariably correspondent to the care taken and the extent of the district subjected to the experiment.

"General and simultaneous voluntary efforts have been tried in many countries by offering prizes for the destruction of the injurious insects, enlisting school children in their search, &c., and where this has been done under the auspices of some central authority it has had good results. The difficulty, however, has usually been to get a central authority of sufficient weight and autho-

rity and extent of influence to charge itself with the task.

"I would humbly submit that some such permissive measure, conducted under the authority and direction of the Government, would be best suited to the requirements of this country. Compulsory legislation is probably premature, and at any rate could be more effectively demanded if the permissive action had been tried and failed. A central directing authority is absolutely essential; if the experiment is to be tried let us use our best means.

"I would suggest that next year the attempt should be made in two or three counties to begin with. Cheshire, Lancashire, and Derbyshire have suffered greatly for some years past from the Onion and Carrot flies. Let the diminution or extirpation of these flies in these counties be the first experiment. A trial to that extent would neither be troublesome nor costly, and it would to a certain extent serve as a test and guide for further proceedings. All that would be necessary would be the circulation in these counties through the clergymen, schoolmasters, municipal authorities, and local papers of an appeal urging every one to pull up and burn his infected plants (which are easily distinguished) on a particular day about a certain date, and to get the parochial authorities to take some trouble to see that this is done. Some brief lectures or explanations of what is wanted should also be given in as many parts of the counties as possible a few weeks previously.

"Two or three years' perseverance in such a course should gradually diminish the numbers of the insects; and the process, if successful, should each year be extended to other insects and other counties until the whole kingdom is embraced.

"It may not be irrelevant to notice a rumour that the Colorado Potato Beetle has reached Europe in more places than one. In the event of that scourge finding its way into this country, it would surely be very convenient that some preparation for, or experience of the machinery suitable for, stamping out such pests should have been previously acquired."

—— In Garden Roots, as well as in those common to field culture, it is so much the fashion to appraise size at the expense of other qualities that it may not be out of place to draw further attention to the facts demonstrated in relation to the value of large roots by Professor Armstrong, at the London Institution last week. The Professor said that roots were specially benefited by phosphatic manures as adding to them valuable nutritious constituents. It was well known that the largest roots contained proportionally the least nutritious matter—a fact of practical importance to the Beetroot sugar refiners of Germany, who paid duty on the roots they imported. This illustration might well be applied nearer home, where big roots are so highly and evidently so injudiciously favoured at our root exhibitions. If in a ton of Mangels of medium size there is more real nutriment or flesh-forming matter than there is in a ton of large roots, it is evident that the growth of large roots is a mistake and a waste of labour, equally if applied to such a popular article of human consumption as the Potato. We see evidenced the mistake made in cultivating kinds of great size, or rather in growing for tubers of great size. Primarily the Potato is an article of food, and its merits as such are not to be judged by the bulk eaten or grown, but by the amount of actual good found in the crop. Viewed in this light, and in accordance with Professor Armstrong's experience, it is more meritorious to raise a crop of medium-sized, thoroughly nutritious tubers than to produce a crop in which great size is attained at the expense of nutritious qualities. These things are worthy the attention of all root cultivators.

—— There is at the present time a magnificent display of Phal.enopsis in the Orchid-houses of Messrs. Low, at Clapton; some idea of the extent of which may be gleaned from the statement that there are about 1000 spikes on the small plants, and each with from four to six flowers.

—— Another case of Poisoning by Leaves is recorded as having taken place at Copdock Hall, near Ipswich; twenty sheep had eaten some half-decayed Yew leaves, and of this number eight died. So often are cases of this kind occurring, that it is strange no better precautions are taken to keep cattle from such dangerous food. In this case the Yew branches had been used for church decoration at Christmas, and were not removed until just prior to the beginning of Lent. It may be worth the attention of churchwardens to inquire as to whether the continuance of these decayed branches in places of worship for so long a period may not be detrimental to human life, as it is notorious that whilst much of certain kinds of leafage may be eaten almost with impunity by animals whilst fresh and green, yet it becomes most dangerous and comparatively poisonous when in a state of partial decay.

—— At the last meeting of the Linnean Society Dr. Masters exhibited a very interesting series of "Burrs" and Bud Variations on various trees, sent by Mr. Webster, gardener to the Duke of Richmond and Gordon. These excrescences appear to be reducible to two main divisions—viz., those in which the precise modes of origin are not known, as in the so-called sports or bud variations, and those wherein the peculiarities arise from some injury to the terminal bud from frost, the attacks of insects, damage inflicted by birds, the agency of the wind, &c. In connection with the arrest of growth in the terminal bud is the increased development of lateral buds and a swollen condition of the main branch. In this way are formed the curious tufts and nest-like excrescences, as in

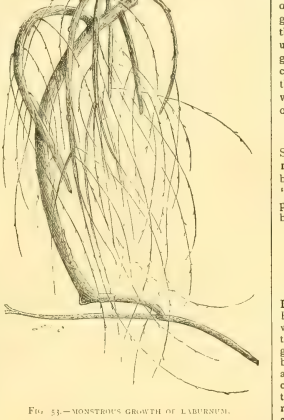


Fig. 53.—monstrous growth of laburnum.

the Birch, wherein, as recently shown by Miss Ormerod, the injury is due to a species of Phytoptus (see p. 249). Mr. Webster's specimens were numerous, and of a very interesting character, and have been deposited in the Kew Museum. The specimens exhibited showed outgrowths of this character in the Birch, wild Cherry, Poplar, &c. A branch of Scots Fir was shown bearing a tuft of shortened contracted shoots and densely clustered leaves, forming a condition analogous to that known as the Clanbrassilian Fir. Dr. Masters stated that he had seen in Switzerland a similar contracted form both as a sport and as a seedling. The Laburnum branch, of which we give a figure (fig. 53), was of very singular nature, the upper portion of the branch being thicker than the lower end, while the smaller branches curve downwards, as in the Weeping Ash.

—— While the Royal Horticultural Society shows a tendency to waste what little strength it has in the attempt to conciliate the fashionable world of South Kensington, it is instructive to see what is done in Germany, in Belgium, and the United States, in the way of Educating Practical Horticulturists. We have before us the reports of thirty-nine agricultural colleges in various of the United States, in almost all of which instruction in the practice as well as in the principles of horticulture is given. The number of students is nearly 4000, the prevalent idea being, that it is better "to educate a few thoroughly than many superficially." Model farms and experimental gardens are connected with most of these institutions, and special lines of inquiry and research are pursued in many of them. We cite as an illustration one extract from the report of the University of Minnesota, which ought to open our eyes as to the probable consequence of our own tardiness in these matters. The course of lectures for the present year embraces agricultural botany, horticulture, arboriculture, landscape gardening, and economic entomology. The following are some of the special topics discussed:—The botanical characters, properties, and peculiarities of the natural orders containing plants of interest to the farmer and horticulturist, with a special study of the most important individuals of these orders; the relations of heat, light, moisture, and food to plant growth, and the means of controlling their supply and intensity; plant-houses and hotbeds; soils and manures, and their manipulation; propagation of plants; grafting, budding, pruning and training; planting and transplanting; hybridising, crossing, and selecting; cultivation of the Apple, Pear, Plum, and other large fruits; cultivation of the Currant, Strawberry, Raspberry, Cranberry, and other small fruits; kitchen-gardening, market-gardening, and floriculture; seasons for planting forest trees; what trees to plant; methods of propagating; care in the nursery; special culture of each species; the different systems of landscape-gardening, and their applications; the principles of the art; desirable effects, and how to secure them undesirable effects, and how to avoid them; a brief general view of the animal kingdom and the general characters of insects; characters and peculiarities of the families containing useful or injurious members, with a special study of the most important individuals of the families.

—— The next meeting of the Institution of Surveyors will be held on Monday evening, March 12, when the adjourned discussion on the paper read by Mr. J. Lucas, at the last meeting, entitled "Hydrogeology: one of the developments of modern practical geology," will be resumed. The chair to be taken at 8 o'clock.

Home Correspondence.

Whale Oil a Cure for Scale.—Many years ago I had under my charge, amongst others, a very large Ribston Pippin Apple tree on a wall facing the south, which somehow or other got so affected with scale that it ceased bearing fruit, and afterwards almost gave up producing foliage. At this time I was visited by an old gardener, who advised me to paint the tree all over with whale oil. I thought at the time the cure an extreme one; however, I had it painted about the middle of December, and waited patiently for the result, when, to my astonishment, by the following autumn the tree had much more healthy foliage than it had borne for several years previously. The second season the tree was covered with fine healthy foliage, and made shoots from 6 to 9 inches long, and there was not a trace of scale to be seen, and the tree afterwards continued to bear fine crops of fruit. Two years ago we received into our nursery 400 standard Apple trees from the South of England, which were literally covered with scale. On discovering this I had them planted in a quarter by themselves, and every one of them painted all over with the oil, as above, and I must confess they were a shining lot. However, this process cleared them wholly of scale, and the second season after the above dressing a healthier set of trees could hardly be found. Some months ago I received from a gentleman in this neighbourhood a few Camellias of a pretty large size, but not in very good health, and to my surprise I found them very much affected with scale. I confess I had my doubts about applying such a remedy to such plants, but at length I made up my mind to either kill or cure them, and I set a young man to paint the stems and branches all over, but he went further than I had bargained for, as he painted the foliage also, and I must say they have had rather a sombre look all winter. I had them placed in a gentle heat for about four weeks, and I find they are beginning to push out young wood as freely as the others, which gives me hopes that I have cleared them of the scale without killing the plants. Should any one be tempted to try the above remedy, care must be taken that it is not any kind of mineral oil that is used. *John Downie, West Coates, Edinburgh.*

× Centropogon Lucyanus.—I can fully endorse all that your correspondent "J. S." writes as to the decorative qualities of this plant. It has been cultivated at Chiswick for some years, and a few well-grown specimens in 48 or 32-sized pots often grace the conservatory at South Kensington during the winter and spring. Still I believe it is rarely grown by decorative florists generally, and I do not at the moment remember seeing it in any English trade list. That it really is a free-growing and reliable winter decorative plant when well grown (as I have seen it under Mr. A. F. Barron's care at Chiswick) there can be no doubt whatever. An excellent coloured figure is given in the *Revue Horticole* for 1868, pl. 291, together with a description by M. Houllet, whence I learn that, as stated in your last issue, the plant was obtained or raised in 1856 by M. Desponds, of Marseilles, the seeds being borne by a plant of Centropogon fastuosus, Decne., fertilised with pollen from Siphocampylus betulæfolius, D.C., and that the name Lucyanus was given as a compliment to M. Lucy, some time President of the Marseilles Horticultural Society. It was sent out in 1857-8 by M. Geoffre, a nurseryman of the last-named city. I think the plant is a hybrid, and if so, doubtless this production, or other experiments in the same direction, must lead to Centropogon and Siphocampylus being merged together, as has been done already in the case of Libonia and Sericographis by Hooker and Bentham in the *Genera Plantarum*, but whether on structural grounds, or on the authority of the hybrid Sericobania ignea, Linden and André (*L'Illustration Horticole*, 1875, pl. 39 and 64, Libonia penrhosiensis, Hort. Bull), I cannot say. The last-named hybrid was raised between Libonia floribunda and Sericographis Ghieshreghtiana a few years ago by, I believe, Mr. H. Rowland, at Penrhos Castle, North Wales. To refer to the × Centropogon, however, I may say that I am just a little sceptical as to its hybrid origin, my only reason, however, being the plate of Lobelia surinamensis (= L. lævigata, Linn. fil., Supp. pl.) in vol. vii. of the *Botanical Magazine*, tab. 225 (Curtis, 1793), which so nearly resembles the plant exceptional in habit and foliage as well as season of blooming, that if it is not really the same it is another singular coincidence, wherein a hybrid closely resembles a natural species, that is, a plant imported as such direct from its native habitat. It is possible that this old Lobelia surinamensis may have been one of the parents of the Centropogon, but however, I may say that I am just a little sceptical as to its hybrid origin, my only reason, however, being the plate of Lobelia surinamensis (= L. lævigata, Linn. fil., Supp. pl.) in vol. vii. of the *Botanical Magazine*, tab. 225 (Curtis, 1793), which so nearly resembles the plant exceptional in habit and foliage as well as season of blooming, that if it is not really the same it is another singular coincidence, wherein a hybrid closely resembles a natural species, that is, a plant imported as such direct from its native habitat. 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I have not yet referred to the figure of the latter plant in the *Revue Horticole*, 1853, 10, nor yet to the figures of Centropogon (Lobelia) surinamensis (Presl) in *Paxton's Magazine*, vol. xiii., p. 149; and *Annales de Gand*, 1846, p. 96, but shall do so the first opportunity, as so doing may clear up the doubt pointed out above. —>

The Lindley Library.—The value of the Lindley Library is much impaired through the want of access to it on the days of committee meetings of the Royal Horticultural Society. Could no arrangement be made that, on these days above all others, when nurserymen and gardeners are congregated, and would often be glad to avail themselves of the privilege, the library should be available the whole day? Frequently have I endeavoured to make use of the books, as these are the principal opportunities I have of getting to South Kensington. To-day I made an effort to look up the question of the Christmas Roses, but was shut out by the various meetings held in the library room. A valuable collection of books which is represented in the Lindley Library might be made a feature in connection with the Royal Horticultural Society, and might be kept in a room, where reference might be made at all times, without the expense of a permanent librarian, by including the office of the Society and the library in one room. There appear to be plenty of empty apartments at South Kensington at present. *P. Barr.* [This matter rests with the Council of the Society. The Trustees are most desirous that every facility should be given to use the library, but South Kensington and Council labour under the disease of impecuniosity. EDS.]

The Provincial Shows and Fund of the Royal Horticultural Society.—There have been various references, by Mr. Wilson and others, to the personal or collective risk incurred by the Council in starting these shows. There must be some misunderstanding in relation to this matter, for the Council incurred no risk whatever. When there was a risk of loss, or great responsibility, the Council declined holding the show. The important facts that the Council sent down Mr. Eyles to reconnoitre the ground and confer with the town authorities of Bury on the prospects of success—that these were so problematic as to involve much risk, and that the idea of holding the show was given up by the Council in consequence—seem to be wholly ignored. It was not until the refusal of the Council of the Royal Horticultural Society to hold the show was announced, and the enterprise was so far discredited and local enthusiasm—what little could be spared from the great work of organising the Royal Agricultural Show—had begun to be aroused in favour of a local horticultural show in connection with the Bury society, that I took the matter up, and undertook four things—to ensure a good show, a liberal local and special prize list, a fine and suitable site, and a guarantee against all loss up to £600. The Society accepted these terms, and as it also took the money for admission, your readers will see that it ran no risk whatever. So real, however, did the risk seem to me that I worked away at the guarantee fund till it reached £1200, in order that should it all have been to pay—and every pound of it would have been forthcoming if wanted—those who had kindly trusted me so generously for a public object might not have had to pay more than ten shillings in the pound. It was not until all those objects were secured that a local committee was formed, and the Society agreed to visit Bury. Though there was the rival attraction of the Royal Agricultural Society of England, and the weather was wet the second day, the Society's share of the profits reached £200, which was, I believe, invested in a new glasshouse for horticultural purposes at South Kensington. From Bury to Manchester we went with high hopes, but there the blundering of the Council had alienated local support, and the grand show was held in an out-of-the way place, and neglected. Almost equal misfortune followed the Royal Horticultural Society at other places; but it had a triumph at Bath, and saved, it is said, £1000. That, one would have thought, might have kept it on the road for years. But no; the money was absorbed or frittered away, and for some years past the Society has been going, going into the country, but has not gone. I never could understand why the guarantee principle was given up. It was simple, safe, wise; an equal share of risk and profit, with an excellent secretary and local zeal, interest, and enthusiasm; and that, with a husbanding of these profits for special expenses, prizes, &c., would have gone far to restore the wasted fortunes and revive the waning credit of the Society. I had hoped to the last for its resuscitation, but recent events seem to show that it is not to be accomplished, that was to drag it out of the Kensingtonian slough of despond is little better than a rope of sand and conflicting interests. *D. T. Fish.*

Saxifraga hypnoides.—Lovers of carpet bedding will find in Saxifraga hypnoides a very useful subject in the flower garden. It may be used either for designs or for edgings, will bedge, or for groundwork of succulent beds. I planted five succulent beds last summer, and the groundwork consisted of the above and Mesembryanthemum cordifolium, and the effect was very pleasing. It will also be found as useful for winter bedding as in summer, as it is perfectly hardy, and when fully known it cannot but fail to be more largely used for the purposes mentioned. *J. Clarke, The Gardens, Melton Constable, East Dereham, Norfolk.*

Cheap, Simple, and Efficacious Guard for Fruit Trees.—Fix under the coping, if any, or on the top of the wall, holdfasts projecting from 5 to 7 inches, with hooks at 12 inches apart in the end, on the outside of the tree, one in the centre, which may project an inch beyond all the others. Prepare a curtain for the whole length of the tree, with 1½ inch rings, at intervals of about 12 inches along the top; smaller rings at longer intervals would do for the bottom. Thread galvanized wire through the eyes, or place small iron rod on the hooks; thread half the curtain, with strings, and tie them close to the wall or to the adjoining curtain. The bottom rod should be fixed on posts 6 inches from the ground, 1 foot to 1 foot 6 inches from the wall; the centre post to be rather further from the wall than the outside one. Five minutes will cover or uncover an indefinite number of trees, untying the sides, passing the curtain to the centre, and tying all together. I have used Frigi Domo or coarse half-wool netting, which I obtained at E. T. Archer's; the netting I do not see advertised this year. These I have used on alternate trees, Frigi Domo on the earliest. Netting has one advantage, it does not require daily uncovering, and is a shelter against occasional storms. *R. B.*

The Organ Plant.—Pennyroyal in Devonshire is known by the name of "Organs," or "Organ herb." It is, or was, very generally used there by the cottagers as a substitute for tea, and is considered by them to contain valuable medicinal properties. In various complaints and diseases "Organs" are largely used, and believed to perform wonders with those who have in a great measure to doctor themselves. The "Organ herb" is used externally as a discutient, and is taken internally with great benefit in asthma, hysteria, and chronic catarrh. Scarcely a cottage could be found in North Devon without a bed of "Organs" in the garden thereunto belonging. I do not believe the word is a corruption of Origanum or Marjoram, but solely applies to Pennyroyal. *John Cole Mr.Ardell.*

Persian Melons.—Some years ago we received here fifteen varieties of Melon from Kashgar; some of them answered to the names given at p. 270. They were all tried, and the best was one that bore the name of Cocoa-nut, a good Melon to keep after ripening. The next best was a small yellow smooth-skinned fruit, the chief merit of which was its earliness and the easy way in which it could be forced for March or April. They all proved difficult to keep pure, and many of them were large and most handsome in appearance, but had no flavour, which I have often since considered was our fault. These large Melons are strong and gross in growth, and require a house like a vinery to fully develope and mature them. In the small pits we used the growth was stunted and pinched; and under the circumstances it is hardly possible they could have been otherwise than watery. *J. F., Cliveden, Maidenhead.*

The National Rose Show.—Will you permit me to say, with reference to your notice of the various events which are announced to come off on July 4, that, with the exception of the committee meetings of the Royal Horticultural Society, I believe I am correct in saying that the Rose Show was fixed before the others. We do not think that a mere fashionable promenade, such as the Botanic *Fête*, can possibly interfere with us; but we should be exceedingly sorry if the Gardeners' Benevolent Institution were in any way to suffer. The excellent secretary of that valuable institution (not knowing that the Rose exhibitors contemplated a dinner) thought it would be a good plan to have both on the same day, and now it seems almost impossible to alter. We endeavoured to change our day to the 3d, but we could not get the hall for that day—and I believe Mr. Cutler is in a like difficulty with respect to the "Albion." We must therefore only hope that in this large metropolis there will be found enough to patronise all. *The Hon. Sec., National Rose Society.* [Why not lunch with the Roses and dine with benevolence? EDS.]

Lunar Influence on the Felling of Timber.—The inhabitants of Cuba are, according to Mr. Smith's note, quite at variance on this point with English, French, and Germans, who say that trees ought to be cut when the moon is on the decline. The forest laws of France did, and I believe still do, interdict the felling of timber during the increase of the moon. The same idea is acted on in Brazil—a well-known agriculturist, Signor Francisco Pinto, having affirmed that wood must be cut at, or after the full, would to his own knowledge (derived from experience) always be full of worms, and soon decay. The ascending force of the sap is said to be greatest during the increase of the moon, therefore the vessels are more spongy and liable to the attacks of worms, more prone to split and warp, being more difficult to season. But recent experiments have proved that timber cut in different parts of the lunar month possesses exactly the same qualities, provided the soil on which it grew and the age of the trees be the same. *Helen E. Watney, Lias, Hants.*

——Does the moon influence the flow of sap? Yes; sometimes. In what way? By means of the tides. Above thirty years ago we, the members of the West Kent Gardeners' Association, settled the above questions to our satisfaction in the following manner:—The first question having come before us, the great majority of those present treated the subject with complete scepticism, some even with ridicule; but two or three members strenuously held out in defence of the moon's influence. The latter were persons living within the basin of the Thames, consequently within the influence of tidal waters. Among other arguments they told us the market gardeners in their vicinity all believed in it and acted on their belief. On the other hand, all those who were against the doctrine were residing within the basin of the Ravensbourne, the waters of which are not tidal. It was then agreed that we should make further inquiries among the market gardeners of Deptford, Rotherhithe, &c. We thus found they held a very general belief in the moon's influence on vegetation, and we concluded at the next meeting that this influence was not direct, but secondary, through the flow of the tides. Those market gardens are now nearly covered with bricks and mortar; what influence the moon has on them at present I know not, but would by no means advise the sale of house property in some parts of the neighbourhood to be fixed to come off at the period of a spring tide. *John Haily, Turner Road, Lee.*

The Weather.—Abundance of snow and slight frost here. *J. F. Johnson, Royal Botanic Garden, Belfast, Feb. 27.*

—— Last night we had 13° of frost, and the ground all around North Staffordshire is covered with snow. We hope to get ice to-morrow. I find Roses, Clematis, &c., are cut with the frost last night and bright sun to-day. Fruit trees are not forward enough to get injured. We have a fine show for Apricots under glass again, and most fruit trees look promising. *W. Hill, Keele Hall, Newcastle, Feb. 28.*

—— We have enough snow to keep us off the land, and a temperature of from 14° to 17° below freezing at night, but I do not think vegetation is forward enough here to receive any injury, perhaps the reverse. *J. W. Laurence, Newstead Abbey, Nottingham, March 1.*

—— On February 28 and March 1 the thermometer registered here 12° and 14° of frost respectively. A heavy fall of snow on February 26 covered the ground to the depth of 6 inches, and this has preserved some early vegetables and seeds just vegetating. Although January and February have been such mild months, the soil has been so cold and soddened with water that vegetation is not so far advanced at this date as might have been expected. Apricots, Peach and Nectarine flower-buds are far advanced, but being well protected on glass-cased walls are safe. Some pyramid and bush Pears on the Quince stock are, however, I am afraid, much injured in the flower-buds, for they seem quite brown on the outside. The shoots of the unpruned Roses are likewise all blackened and destroyed, as well as some of the earliest Gooseberries nearly in leaf. The icehouses here were filled on March 1, the latest date I ever remember, and just in time, for a thaw commenced on March 2, and the weather since has been mild and wet. *William Tillery.*

Saxifraga Burseriana.—This beautiful little alpine is again in full flower, and has been so for some weeks past. Its neat habit, forming as it does compact hillocks composed of small rosettes of greyish leaves, makes this species specially adaptable for cultivation in pots. The flowers are pure white, borne on slender scarlet stems 1 to 1½ inches high. Messrs. Backhouse & Son, of York, have a large quantity of this lovely little plant. I took the trouble to measure one specimen and to count its flowers—the little tuft was only 3½ inches in diameter, on which was produced sixty flowers. *R. P.*

Fruit Prospects.—Judging from present appearances, fruit trees of all kinds promise an abundant bloom this season. Apricots, as yet only partially in flower, are very fine, and perfect in the formation of the blossoms. Peaches and Nectarines recently nailed in have a fine crop of buds, but will not be in flower for a fortnight. The present cold winds will be beneficial in retarding the early flowering kinds of fruit trees generally, which, owing to the extremely mild winter, are on warm soils somewhat more forward than is desirable with a probability of late spring frosts. There is, however, one advantage, that the wood having been so well ripened last season, as a natural consequence the blossoms will be more vigorous and better able to bear severe weather than when the wood is imperfectly matured. And with favourable weather we may anticipate a heavy fruit crop this season. *W. Cox, Madresfield Court.*

Lobelia Emperor William.—At p. 215 Mr. Davidson speaks in favour of a variety of Lobelia called Emperor William, every word of which I can fully endorse, insomuch that I can unhesitatingly recommend it to every one who may require a first-class Lobelia in preference to any I have ever seen. As to its origin Mr. Davidson is quite correct, it being raised here by a friend of mine, Mr. Brownsell, late gardener to J. Aspinall, Esq, who finding it to be an acquisition soon worked up a large stock of it, and his good nature induced him to distribute some cuttings amongst his neighbouring gardeners and friends, under the name of Emperor William. In the meantime Mr. Bester, late manager of the Pine-apple Nursery Co., happened to call upon him, and was so struck with its effectiveness as a bedder, that he offered to take the entire stock, but whether ignorant of the fact that it had been distributed in the neighbourhood or not, I am unable to say, at any rate the remaining stock passed into his hands, after which it was advertised for sale by him, in the *Gardeners' Chronicle*, under the name of L. pumila magnifica, at 1*s.* each, and described as the finest of all blue Lobelias (see No. 83, vol. iv). Any one, therefore, possessing L. pumila magnifica (true) has the variety Mr. Davidson so justly describes as the best he has ever seen. *E. Morgan, The Butts, Harrow-on-the-Hill.*

The Season.—In reference to the unusual forwardness of the season, allow me to mention that on February 25 I picked two stalks of sweet-scented yellow Jonquil in bloom in my garden here, and several more have come into flower since. Almond trees were seen in blossom here on February 10, and on the 26th I saw a standard Plum tree in full bloom. A gentleman who had resided here for thirty-two years never remembers anything approaching to the precocity of this season here. He informs me that the cuckoo has been heard in the Isle of Man before the expiration of last month. *Mary E. Hume Rothery, Merton Lodge, Tivoli, Cheltenham.*

Garden Walks.—I bear in mind an inquiry in a late *Gardeners' Chronicle* from a correspondent to your readers, as to the best way of making garden walks. He will have seen, subsequently, abundant instruction on this art, with suggestions of a great variety of materials. I can very strongly recommend to your correspondent the siliceous gravel beds in the neighbourhood of Reading, after more than thirty years' experience in a carriage drive and garden walks. The former was laid out as soon as the Great Western Railway was opened to this town. My grounds lie immediately over the great oolite, which affords a natural drainage; the broken stone of the district for a depth of 5 or 6 inches formed a sufficient foundation for the gravel. This varies much in size, from flints the size of an ordinary Potato to mere grains. The coarser may be readily separated for the carriage-drive, and the residue used for garden walks. My carriage-drive was carefully formed with a gentle fall from the centre to either side, with a coat of the gravel about 6 inches in depth over the foundation of stone before-mentioned. This being the regular road from the turnpike road to the house and offices, has necessarily been in use occasionally for the heavy carriage of coals, manures, hay, straw, &c., and cartage for various purposes. A considerable portion of this drive has not required any repairs or additions during the period I have mentioned. Some addition of gravel has been made in some places where it was found the centre had been laid too flat; but I think I may safely say that has not exceeded a truck-load of the gravel. The walks were formed for the most part of the same gravel passed through a coarse screen, and have been equally successful in point of wear and colour. The cost of this gravel at Reading is 4*s.* a ton placed in a truck on the railway. The distance from Reading is a material point as respects expense—this brings the cost to this place to about 6*s.* a ton in addition. The distance from Reading to Cirencester is, I believe, about 60 miles by the road. I am informed that the firm which now supplies this gravel is Messrs. Brinkworth, contractors, Reading. *Charles Lawrence, The Querns, Cirencester.*

Reports of Societies.

Royal Horticultural: *March* 7.—At the general meeting held on this occasion, the Treasurer, H. Webb, Esq., in the chair, some formal business only was transacted. The committee meetings, as on the last occasion, were held in the large conservatory, and although the weather was very cold and winterly, the contributions of choice plants were both numerous and good, and another bright and cheerful little show was the result.

Scientific Committee.—Dr. Hooker, C.B., Pres. R.S., in the chair.

Diseased Barley.—A letter was read from Rev. M. J. Berkeley, relating to the samples of Barley referred to him on a previous occasion. Mr. Berkeley confirmed Dr. Masters' opinion as to the absence of fungus, except that in some cases there was a trace of the ubiquitous Cladosporium herbarum, but this had nothing to do with the blue colour of the grains.

Mummy Wheat.—A letter was read from Mr. E. Falkner on this subject—a subject generally discredited by the committee.

Coffee Disease.—A letter, accompanied by specimens, was laid on the table from Mr. W. W. Saunders, and the matter was referred to Mr. Berkeley.

Prunus cerasifera.—Dr. Hooker showed flowering branches of the beautiful Plum now in full bloom at Kew, near the Succulent-house. Dr. Hooker remarked that the tree never bore fruit, although there was plenty of pollen.

Plants Exhibited.—Mr. Green exhibited flowers of Marica cœrulea and Æchmea glomerata from the gardens of Sir George Macleay. Colonel Trevor Clarke, Rev. H. Harpur Crewe, and Mr. Elwes showed numerous bulbous plants in flower, and commented on them.

Action of Pollen on Seed.—In reference to this matter, which occupied the attention of the committee on the last occasion, Colonel Clarke made the following statement:—

"At the last meeting of this committee, when I brought before you an example of the direct influence of foreign pollen upon the seeds of Peas, I remarked that Mr. Laxton had not observed any case of this kind. I found, however, subsequently, that in a very valuable and interesting paper of this gentleman's, which I had not before seen, facts of this kind had been accurately noted and described. My information was derived from a letter of Mr. Laxton to the Scientific Committee, in which he certainly seemed to give his decided opinion that the colour of the seed was not directly affected. I desire to make this statement, as the last thing I should desire would be to detract in any way from Mr. Laxton's very valuable investigation of the subject."

Crocus.—Colonel Clarke further stated that—

"The pale blue Crocus exhibited by me is one which I have had for many years as vitellichensis. I received it from the Oxford Botanic Garden under that name as one from Herbert's collection. I have been inclined to believe, however, latterly, that it is true Crocus vernus, and in fact the long-lost and remarkable C. vernus leucorhynchus of Sabine. It has the involucrum of Herbert (basal spathe of Baker), and seems to conform generally with vernus proper. A bunch of three or four varieties, scarcely distinguishable generally amongst each other, of Crocus lagenæflorus, Herbert. One, however, has indications of lineation at the base of the flower outside, thus approaching the old garden form called by Ker mœsiacus."

Floral Committee.—H. Little, Esq., in the chair. First-class Certificates were awarded to Messrs. James Veitch & Sons for the fine Eurycles australasica shown by them at the last meeting, figured at p. 277 in our last issue; for Dennstædtia davallioides Youngii, for Osmunda palustris, an evergreen Brazilian plant, with the aspect of O. spectabilis, and for × Rhododendron Taylori, a valuable early flowering variety, aised with several other good things from the descendants of a cross between Rhododendron jasminiflorum and R. javanicum: the colour is a deep pink shaded with carmine. To Mr. B. S. Williams for a hybrid Azalea named Mrs. Carmichael, a variety of the amœna type, but having larger flowers of a dark rose purple colour; a very fine decorative plant. To Sir Trevor Lawrence, Bart., M.P., Burford Lodge, Dorking (Mr. Spyers, gr.), for a distinct and well marked variety of Dendrobium crassinode Barberianum. To Mr. John Wills, South Kensington, for × Dracæna terminalis alba, a very distinct and well marked white variegated hybrid between D. nigrescens and D. regina—one of the valuable set of seedlings raised by Mr. Bausé and fully described in our vol. iv., 1874, p. 615. To Mr. Turner, Slough, for Tree Carnations Guelder Rose, a very fine full white, and Rose Perfection, a large, full, bright rose-coloured, and deliciously scented flower; and to W. F. Watson, Esq., Redlees (Mr. James, gr.), for Cinerarias Mary and Thomas Winter—the former a charming flower of a clear bright rose colour, of great substance, and exquisite form, and the latter a little larger, of a fine purple shade of colour, and grand form. These varieties were selected from a remarkable group of seedlings, a decided advance on anything seen before, and which gained from the committee a very high commendation for the strain. The demands on our space to-day forbid our giving other than a summary of the various subjects which were acknowledged by the committee by the awards of medals, &c. To His Grace the Duke of Westminster, Eaton Hall, Chester (Mr. Selwood, gr.), the committee awarded a silver-gilt medal for a magnificent example of Vanda teres hybrida. It had twenty-two well-clothed spikes of flowers, averaging about 3 feet in length, the total number of fully developed blossoms being 1124—an example of cultural skill highly creditable to the grower. A silver-gilt medal was also voted to Messrs. James Veitch & Sons for a miscellaneous group of plants, which included a charming collection of Orchids, numerous examples of a good strain of Cyclamen persicum, and a showy collection of hybrid Amarylls. Small silver medals were awarded to W. H. Michael, Esq., Cholmeley Park, Highgate (Mr. Newman, gr.), and Sir Henry Peek, M.P., Wimbledon House (Mr. Ollerhead, gr.), for admirable groups of Orchids, the examples of Phalænopsis Schilleriana from the first-named gentleman being specially attractive. Small silver medals were also awarded to Messrs. William Paul & Son, Waltham Cross, for a remarkably fine display of cut blooms of Camellias, consisting of a dozen boxes of fine blooms; and to Mr. Turner, Slough, for a fine group of white Camellias and standard Aucubas, finely berried. Votes of thanks were accorded to Mr. B. S. Williams and Mr. John Wills for admirable groups of miscellaneous flowering and fine-foliaged plants, the contribution from the last-named exhibitor including bright and well-grown medium-sized specimens of several of his new Dracænas; to W. Terry, Esq., Peterborough House, Fulham (Mr. Roberts, gr.), for a small but select group of Orchids; to Mr. S. Dean, Ealing, for an attractive display of hardy Primroses, Polyanthuses, Primulas, and Hepaticas; to J. L. Tyerman, Esq., Tregoney, Cornwall, for cut specimens of some fine hardy flowers, principally Narcissi; and to Sir George Macleay, Pendell Court, Bletchingly, for cut flowers of Æchmea glomerata and Marica cœrulea. Messrs. Paul & Son, The Old Nurseries,

Cheshunt, exhibited flowering plants of the valuable, old, but sadly neglected Fortune's Yellow Rose, and the "striped" variety of which we have heard so much but seen so little, named Beauty of Glazenwood, and drew attention to the apparent identity of the two plants. The committee having examined the plants in different stages of growth and bloom, resolved, on the proposition of Mr. C. Noble, seconded by Mr. C. Turner, "That in the opinion of this committee the Rose known as Fortune's Yellow and Beauty of Glazenwood are identical." The old Fortune's Yellow, generally, is of a bright orange colour, and occasionally it is seen of the buff tint, as shown to-day, and sometimes, too, it has a tendency to come faintly striped, but that is no excuse for its being sent out as a novelty. The best example we can call to mind of the bright orange form was the remarkable plant which occupied the roof of the old ridge-and-furrow Paxton-house at Chiswick, that was pulled down a few years ago to make room for the orchard-house.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair. The only subjects that came under the notice of this body was a fine dish of Garibaldi Strawberries, from Mr. Edward Bennett, Rabley Nursery, Barnet; and examples of St. Michael and Maltese Blood Oranges, grown by Messrs. T. Rivers & Sons, Sawbridgeworth, to both of which Cultural Commendations were awarded. A letter received from Mr. D. P. Bell, with reference to the cancelling of the name of Clive House Seedling, as applied by him to a Grape which the committee had certificated, was read; and it was decided to associate with the certificate the name of Alnwick Seedling.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, MARCH 7, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading, Reduced to 32° Fahr.	BAROMETER. Departure from Average of 18 Years.	TEMPERATURE OF THE AIR. Highest.	TEMPERATURE OF THE AIR. Lowest.	TEMPERATURE OF THE AIR. Range.	TEMPERATURE OF THE AIR. Mean for Day.	TEMPERATURE OF THE AIR. Departure (Mean) from Average of 20 Years.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Degree of Humidity. Saturation = 100.	WIND. Average Direction.	RAINFALL.
Mar.	In.	In.	°	°	°	°	°	°			In.
1	30.17	+0.34	41.4	22.8	18.6	32.0	− 0.4	20.1	63	W. WSW	0.00
2	30.01	+0.16	54.1	33.2	20.9	47.4	+ 3.0	42.5	97	S.SW.	0.29
3	29.61	−0.25	53.6	43.0	12.6	47.3	+ 2.8	43.1	86	S.W.	0.04
4	29.67	−0.22	45.6	40.0	5.6	42.7	+ 1.8	41.8	94	S.S.W	0.34
5	29.79	−0.21	46.4	34.1	12.3	39.3	− 1.2	31.0	82	WNW. N.W.	0.00
6	29.65	−0.28	47.2	32.2	15.5	37.2	− 3.3	31.3	85	N. N.W.	0.00
7	29.30	−0.64	42.1	31.9	10.2	35.9	− 4.6	32.6	88	N. N.W.	0.23
Mean	29.77	−0.11	48.7	33.0	12.8	39.5	− 1.0	35.2	85	SW.: sum N.W.	0.77

March 1.—Fine, but cloudy and cold day. Misty. Hoar frost in morning.
— 2.—A dull cloudy day. Mild. Rain fell in early morning.
— 3.—A very dull day. Mild. Frequent thin rain.
— 4.—Overcast, very dull and wet throughout. Exceedingly dark in morning. Cos necessary.
— 5.—A fine but cloudy day. Cool.
— 6.—A very dull cloudy day. Cool.
— 7.—A dull, cloudy day, but fine at intervals. Frequent showers of hail and snow. Rain at night.

LONDON: *Barometer.*—During the week ending Saturday, March 3, in the vicinity of London, the reading of the barometer at the level of the sea decreased from 29.56 inches at the beginning of the week to 29.14 inches by the early morning of February 26, increased to 30.39 inches by the morning of March 1, and decreased to 30.06 inches by the end of the week. The mean reading for the week at sea level was 29 96 inches, being 0.17 inch above that of last week, and 0 05 inch below the average.

Temperature.—The highest temperatures of the air observed by day ranged from 55° on the 25th of February to 40° on the 28th; the mean value for the week was 47½°. The lowest temperatures of the air observed by night varied from 22½° on March 1 to 44½° on February 25; the mean for the week was 32½°. The mean daily range of temperature in the week was 14½°, the greatest range in the day was 21°, on March 2, and the least 10½°, on February 25 and March 3.

The mean daily temperatures of the air and the departures from their respective averages were:—February 25, 48°.9, +9°.4; 26th, 40°, +0°.3; 27th, 34°.3, −5°.6; 28th, 31°.5, −8°.6; March 1, 30°.9, −9°.4; 2d, 43°.4, +3°.3; 3d, 47°.3, +6°.8. The mean temperature of the air for the week was 39°.5, being 0°.6 below the average of sixty years' observations.

The highest readings of a thermometer, with blackened bulb in vacuo placed in sun's rays, were 104° on February 25, 88½° on the 27th, and 90° on the 28th; on March 3 the reading did not rise above 60°. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 19° on February 28, and 18° on March 1; on March 3 the reading was not lower than 43°. The mean for the seven low readings was 28½°.

Wind.—The direction of the wind was W.S.W. and N.W., and its strength moderate. The weather during the week was somewhat fine, though cloudy and changeable. Hail and snow fell on February 26 *Rain* fell on three days during the week, the amount collected was 0.36 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 55½° at Cambridge, and 55° at Blackheath and Sunderland; at Bradford 50½° was the highest temperature; the mean value from all stations was 53°. The lowest temperatures of the air were 17½ at both Sheffield and Eccles, and 18° at Nottingham; at Portsmouth and Plymouth 27° was the lowest temperature; the mean value from all stations was 22½°. The range of temperature in the week was the greatest at Eccles, 36½°, and the least at Portsmouth and Plymouth, both 25°; the mean range from all stations was 30½°.

The mean of the seven high day temperatures was the highest at Truro, 51°, and the lowest at Bradford 42°; the general mean from all stations was 45½°. The mean of the seven low night temperatures was the lowest at Bradford, 30½°, and the highest at Truro, 40°; the general mean from all stations was 33½°. The mean daily range of temperature was the greatest at Sunderland, 16½, and the least at Norwich and Liverpool, both 9½; the mean daily range from all stations was 12½°.

The mean temperature of the air for the week from all stations was 38½°, being 8° lower than the value for the corresponding week in 1876. The highest was 45°, at Truro, and the lowest 35½°, at Bradford.

Rain.—It fell four or five days in the week at most places. The amounts varied from 1½ inch at Sheffield, Liverpool and Eccles, to one-tenth of an inch at Truro and Sunderland; the average fall over the country was three-quarters of an inch.

The weather during the week was generally fine, though cloudy and changeable. *Snow or Hail* fell generally over the country on February 26 and 27.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 56° at both Dundee and Paisley to 53½° at Edinburgh, Aberdeen, and Leith; the average value from all stations was 54½°. The lowest temperatures of the air ranged from 18° at both Paisley and Greenock to 24½° at Greenock; the mean value from all stations was 21°. The mean range of temperature from all stations was 33½°.

The mean temperature of the air for the week from all stations was 35¾, being 6½° lower than the value for the corresponding week in 1876. The highest was 36¾° at Greenock, Paisley, and Leith, and the lowest 34½° at Aberdeen and Perth.

Rain.—The amount of rain measured during the week varied from half an inch at Greenock, to three-hundredths of an inch at Edinburgh, Leith, and Perth; at Paisley 0.49 fell. The average fall over the country was two-tenths of an inch.

DUBLIN.—The highest temperature was 56°, the lowest 24½°, the range 31½°, the mean 41½°, and the fall of rain three-fourths of an inch.

Answers to Correspondents.

CAMELLIAS: *F. H.* The leaves are evidently sunburnt. Either there are lenses in the glass itself, or drops of water hanging about the glass have concentrated the sun's rays upon the affected portion of the leaves.

OLEANDRIAS: *E. T.* The flowers received are all bright in colour, and many of them of larger size than usual, but coarse, and not up to the florist's standard of form and substance. No doubt they are a showy and useful lot for general decorative purposes, and with care in fertilising and seed-saving you may obtain a good strain from the larger forms. Mr. James has flowers quite as large, but very much superior to yours in quality.

COCOS WEDDELLIANA: *E. Fischer.* Cocos is a monœcious genus, not dioecious. The species in question does not exist as a pistillate plant.

CYCLAMENS: *H. E.* A good strain, well known to us.

GROWTH ON THE YEW: *B. and Others.* This is by no means uncommon. It is the result of the puncture of an insect—cecidomya taxi.

INSECTS: BEANS: *W. Y. W.* Bruchus rufimanus. As bad in England as in France. *A. M.—W. Crump.* The Leopard moth, Zeuzera æsculi. *A. M.*

ORCHARD-HOUSE: *O. H.* The directions you allude to are perfectly intelligible. When the writer said "the pots should be plunged perfectly level," he could not have meant level with the ground, because in a line or two above he had given directions to plunge them "one-third of their depth." What he means, therefore, is, that the pots should be set level, *i.e.*, water-level.

NAMES OF PLANTS: *T. F.* Canarina Campanula, a very old plant, introduced so far back as 1696 from the Canary Islands, and figured in the *Botanical Magazine* in 1799, t. 444.—*Pinus.* We cannot identify it without a cone.—*K. S. W.* Kennedya prostrata var. major.—*J. Lane.* It would appear from your note that you intended to send two flowers, but only one came to hand, and that was of a glorious variety of Aerides Fieldingii, and would see a coloured plate of something like it in Morren's *La Belgique Horticole*, 1876, p. 283. It comes near the var. Lobbii in the shape of the lip, which is usually folded up at the sides in the typical A. Fieldingii, *H. G Rchb.*

NEPHROLEPIS: *J. Cocker & Sons.* Your Fern appears to be not Nephrolepis exaltata, but N. tuberosa, which usually has such tubers on the roots. If you will send us a good piece of the frond it will enable us to settle the question.

STRELITZIA REGINÆ: *W. S.* This plant succeeds best in an intermediate temperature. Although it will live in a greenhouse it does not do well, neither will it in a high temperature. Where it is kept growing through the winter this is not calculated to induce a disposition to flower. It is a strong grower, and requires considerable pot-room; it can be increased by division of the crowns. Plants with a single crown should have a 10 or 12-inch pot, well drained, and good loam with a little sand added. Sufficient through the spring and summer, in a night temperature of 55° or 60°, proportionately higher in the day; keep drier at the roots and cooler during the winter, and they cannot fail to flower the following summer.

CATALOGUES RECEIVED.—Messrs. J. A. Bruce & Co. (Hamilton, Ontario, Canada), Illustrated Seed Catalogue.—Messrs. J. Dickson & Sons (108, Eastgate Street, Chester), Catalogue of Farm Seeds.—Messrs. Downie & Laird (17, South Frederick Street, Edinburgh), Catalogue of Florists' Flowers, Stove and Greenhouse Plants, &c.—T. S. Ware (Hale Farm Nurseries, Tottenham, London), Catalogue of Florists' Flowers, and Catalogue of Perennials, Aquatics, Bulbs, Bamboos, &c.—James Bird (Bridge Street, Downham Market), Select List of Kitchen Garden, Agricultural, and Farm Seeds.

COMMUNICATIONS RECEIVED.—J. D.—W. G. S.—J. H.—Enquirer.—J. A. B.—W. Ware.—H. G. K.—D. R. & Co.—J. C. & Co.—E. S. D.—G. H.—J. V. & Sons. C. C.—C. R.—G. W. T.—G. T. M.—D. T. F.—W. M. —E. F.—Max Kolb (with thanks).—T. M.—J. R.—W. T. T. D.

Markets.

COVENT GARDEN, March 8.

Trade remains quiet, with no alteration worth noticing. A few Garibaldi Strawberries have been sent to the market by Mr. Bennett, and are making about 5s. per ounce. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.

	s. d.	s. d.
Azaleas, per dozen	24 0	60 0
Begonias, per doz.	6 0	12 0
Bouvardias, do.	12 0	24 0
Cineraria, per doz.	9 0	18 0
Coleus, per dozen	3 0	9 0
Coccus, per dozen	3 0	9 0
Cyclamen, per doz.	12 0	30 0
Cyperus, do.	6 0	12 0
Dracæna terminalis	30 0	60 0
— viridis, per doz.	18 0	24 0
Ferns, in var., p. doz.	6 0	30 0
Ficus elastica	2 6	5 0
Fuchsias, per dozen	9 0	18 0
Heaths, variety, doz.	9 0	24 0
Heliotrope, per doz.	8 0	12 0
Hyacinths, per doz.	8 0	18 0
Lily of Valley, each	1 6	5 0
Mignonette, per doz.	6 0	9 0
Myrtles, do.	3 0	9 0
Palmas in variety, each	2 6	21 0
Pelargoniums, scarlet, per doz.	6 0	12 0
Primula sinensis, doz.	4 0	9 0
Richardia æthiopica, per doz.	9 0	18 0
Solanums, per doz.	12 0	24 0
Tulips, per dozen	8 0	12 0
Valotta purpur., doz.	12 0	18 0

CUT FLOWERS.

	s. d.	s. d.
Azaleas, 12 sprays	0 6	2 0
Bouvardias, per bun.	1 0	4 0
Camellias, 12 blooms	2 0	4 0
Carnations, per dozen	1 6	4 0
Coccus, 12 bunches	2 0	6 0
Cyclamen, per doz.	0 9	2 0
Daffodil dbl., 12 bun.	4 0	9 0
— sngl., 12 bun.	2 0	6 0
Epiphyllum, 12 blms.	1 0	3 0
Eucharis, per doz.	6 0	12 0
Euphorbia, 12 sprays	2 0	6 0
Gardenia, per doz.	9 0	18 0
Heliotropes, 12 spr.	0 6	1 0
Hyacinths, p. doz.	2 6	6 0
— Roman, 12 spr.	1 0	4 0
Lily of the Valley, 12 sprays	0	0 4 0
Marguerites, 12 bun.	4 0	6 0
Mignonette, 12 bun.	4 0	9 0
Narcissus, 12 sprays	2 0	4 0
Pelargoniums, 12 spr.	1 6	3 0
— zonal, 12 sprays	0	0 6 0
Primroses, per dozen	1 0	3 0
Primula, dbl., p. bun.	1 0	2 0
Roses, indoor, p. doz.	3 0	12 0
Stephanotis, 12 spr.	9 0	15 0
Tuberoses, 12 blms.	2 0	6 0
Tulips, per dozen	1 0	2 6
Violets, 12 bun.	0 0	4 0
Wallflowers, p. doz.	0	0 12 0

VEGETABLES.

	s. d.	s. d.
Artichokes, per bush.	4 0	...
— Eng. Globe, doz.	4 0	6 0
Asparagus, Fr., bun.	20 0	...
— English, p. bun.	8 0	10 0
— Sprue, per bun.	1 6	...
Beans, French (new), per 100	2 6	...
Beet, per doz.	1 0	2 0
Brussels Sprts. bush.	7 0	...
Cabbages, per doz.	1 0	2 0
Carrots, per bunch	0 6	...
— New Fr., p. doz.	2 0	...
Cauliflowers, per doz.	2 0	4 0
Celery, per bundle	1 6	2 0
Chilis, per 100	3 0	...
Cucumbers, each	1 0	2 6
Endive, per doz.	1 0	2 0
— Batavian, p. doz.	2 0	3 0
Garlic, per lb.	0 6	...
Herbs, per bunch	0 2	0 4
Horse Radish, p. bun.	4 0	...
Leeks, per bunch	0 4	0 4
Lettuces, Fr., p. doz.	1 0	2 0
— Cos, per doz.	1 6	0 ...
Mint, green, bunch	0	0 ...
Mushrooms, per pott.	0 6	1 6
Onions, per bush.	5 0	8 0
— young, per bun.	0 4	0 6
Parsley, per bunch	0 4	...
Peas, green, per lb.	1 0	2 0
Potatoes, new, per lb.	0 2	0
Radishes, per bunch	0 1	0 3
Spanish, do.	0 4	...
New Jersey, doz.	2 0	...
Rhubarb, per bundle	1 0	...
Salsafy, per bundle	1 0	...
Scakale, per punnet	1 6	2 6
Shallots, per lb.	0 6	...
Spinach, per bushel	4 0	5
Tomatas, per doz.	2 0	6
Turnips, per bundle	0 4	0

Potatos.—Kent Regents, £5 to £6; Essex Regents, £4 10s. to £5: Kidneys, £8 per ton.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	3 0	8 0	Oranges, per 100	4 0	10 0
Cobs, per lb.	1 0	1 6	Peaches, per doz.	0 0	0 0
Grapes, per lb.	6 0	12 0	Pears, per doz.	2 0	12 0
Lemons, per 100	4 0	10 0	Pine-apples, per lb.	1 6	4 0

SEEDS.

LONDON: *March 7*.—There has been more business doing this week in farm seeds, country dealers having manifested a determination to delay no longer getting in a portion, at any rate, of their supplies for the spring. A good spell of fine weather is, however, needed to impart life to the trade. Of English reds, the supply coming forward shows this week a marked falling off; this, of course, tends to strengthen the values of foreign parcels. The stock of American Clover now left in London is comparatively small, and a little movement in the trade would soon clear the market of this description. As regards white Clover seed, the last few days have developed nothing new; present quotations are considered quite safe, even for holding over. Alsike and Trefoil are both steady: in the latter article a good number of transactions are reported. For grass seeds there is an active demand, at unchanged currencies. Small spring Tares are offered on easier terms. The demand for Canary seed is almost *nil*; notwithstanding the almost unprecedentedly low figure at which it is now obtainable, buyers still hold aloof. Other seeds, for the lack of business, are without alteration in price. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade was somewhat quiet at Mark Lane on Monday, and prices had a downward tendency. To effect sales holders of Wheat found it now and then necessary to give way to the extent of about 1*s*. per quarter, but fine dry samples were worth perhaps as much as on Monday se'nnight. In Barley quotations were flat for all sorts. Malt was steady, with a limited inquiry. Oats were a trifle easier in some instances, and there was a difficulty in supporting the market for Maize. Beans, Peas, and flour were nominally unaltered in value.—On Wednesday fine samples of English Wheat were held at full prices, and inferior produce attracted scarcely any attention. Foreign Wheat was purchased to a limited extent, at about previous quotations. Choice Barley realised full rates, but medium and inferior produce sold slowly, on former terms. Oats were in slow request, at late rates; and Beans and Peas moved off slowly on former terms. The flour trade was quiet at previous quotations.—Average prices for the week ending March 3:—Wheat, 50*s*. 11*d*.; Barley, 40*s*.; Oats, 26*s*. 3*d*. For the corresponding week last year:—Wheat, 43*s*.; Barley, 32*s*. 7*d*.; Oats, 25*s*. 4*d*.

CATTLE.

At Copenhagen Fields on Monday there was a short supply of beasts, but trade was not at all brisk, yet the quotations of Monday se'nnight were well maintained throughout. Trade in sheep was dull, and late rates were with difficulty realised; inferior quality especially met with a dull sale. Calves continued scarce and dear. Quotations:—Beasts, 4*s*. 6*d*. to 5*s*., and 5*s*. 6*d*. to 6*s*.; calves, 6*s*. to 7*s*.; sheep, 5*s*. 10*d*. to 6*s*. 3*d*., and 6*s*. 10*d*. to 7*s*. 6*d*.; and pigs, 4*s*. 4*d*. to 5*s*. 4*d*.—The market underwent no material change on Thursday. Prime beasts met a moderate inquiry, and brought steady values. The sheep trade ruled firm, especially for prime qualities, and the tendency of prices was against buyers. Prime calves were scarce and dearer, and pigs dull of sale.

HAY.

The Whitechapel report for Tuesday states that trade was steady, quotations being generally well supported. The supply was moderate. Prime Clover, from 110*s*. to 130*s*.; inferior, 85*s*. to 95*s*.; prime meadow hay, 90*s*. to 124*s*.; inferior, 70*s*. to 85*s*.; and straw, 40*s*. to 54*s*. per load.—On Thursday there was a steady demand for good hay-stuffs; inferior sorts dull. Quotations:—Clover, best, 100*s*. to 130*s*.; inferior, 85*s*. to 95*s*.; hay, best, 100*s*. to 124*s*.; inferior, 65*s*. to 75*s*.; and straw, 40*s*. to 52*s*. per load.—Cumberland Market quotations:—Superior meadow hay, 128*s*. to 137*s*.; inferior, from 90*s*. to 117*s*.; superior Clover, 132*s*. to 140*s*.; inferior, 110*s*. to 120*s*.; and straw, 54*s*. to 58*s*. per load.

POTATOS.

The Borough and Spitalfields markets reports state that sound Potatos are in moderate request, trade generally steady, but the supplies somewhat excessive. Kent Regents, 90*s*. to 120*s*. per ton; Essex do., 70*s*. to 115*s*.; rocks, 70*s*. to 80*s*.; flukes, 140*s*. to 160*s*.; kidneys, 120*s*. to 150*s*.; and Scotch Regents, 100*s*. to 130*s*.—The imports into London last week consisted of 30,476 bags from Hamburg, 8597 Bremen, 4776 Antwerp, 203 Brussels, 942 Harlingen, 636 sacks Boulogne, 97 bags Rotterdam, and 61 from Dunkirk.

COALS.

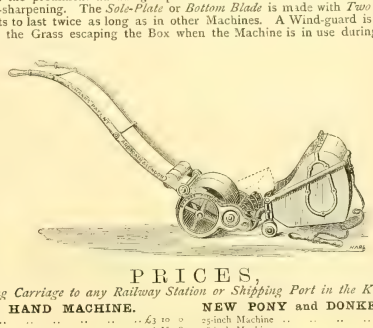
The market on Monday was steady, and previous prices were current for house coals; but Hartleys were 6*d*. per ton lower. There was a steady business in the market on Wednesday, with a fair supply of house coals. Quotations:—Bebside West Hartley, 15*s*. 9*d*.; East Wylam, 16*s*. 6*d*.; Walls End—Hetton, 18*s*. 6*d*.; Hetton Lyons, 16*s*. 9*d*.; Hawthorns, 16*s*. 9*d*.; Lambton, 18*s*.; South Hetton, 18*s*. 6*d*.; Tunstall, 16*s*. 9*d*.; Chilton, 17*s*. 6*d*.; Hartlepool, 17*s*. 6*d*.; Kelloe, 17*s*.; East Hartlepool, 18*s*. 3*d*.; South Hartlepool, 17*s*. 9*d*.; Tees, 18*s*.

SHANKS' NEW PATENT

LAWN MOWERS,

Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The *Sole-Plate* or *Bottom Blade* is made with *Two Edges*, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the Grass escaping the Box when the Machine is in use during the prevalence of wind.



PRICES,

Including Carriage to any Railway Station or Shipping Port in the Kingdom:—

NEW HAND MACHINE.

10-inch Machine	£3 10 0
12-inch Machine	4 15 0
14-inch Machine	5 15 0
16-inch Machine	6 15 0
19-inch Machine	8 5 0
22-inch Machine	9 0 0
24-inch Machine	9 10 0

The Hand Machines are all fitted with Silent Movement, and can be used either with or without the usual Front Rollers.

NEW PONY and DONKEY MACHINE.

25-inch Machine	£11 10 0
28-inch Machine	13 15 0
30-inch Machine	17 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

Price, for the 28 inch and 30-inch Machines, 30*s*. extra; 25-inch Machine, 25*s*. extra. Silent Movement, 12*s*. 6*d*. extra. Boots for Pony, 24*s*.; Donkey, 20*s*. per set.

NEW HORSE MACHINE.

30-inch Machine	£20 10 0
36-inch Machine	24 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

Price, for the 48-inch, 42-inch, and 36-inch Machines, 40*s*. extra; for the 30-inch, 30*s*. extra. Silent Movement, 20*s*. extra. Boots for Horse's feet, 20*s*. per set.

42-inch Machine	£28 0 0
48-inch Machine	32 0 0

A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

SHANKS' PATENT LAWN MOWERS

Are warranted to give ample satisfaction, and if not approved of can be at once returned.

ALEXANDER SHANKS & SON,

Dens Ironworks, Arbroath; and 27, Leadenhall Street, London, E.C.

27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.

Small Lawn Mowers—6-inch, 25s.; 7-inch, 35s.; 8-inch, 50s.

MR. WORTHINGTON SMITH'S

SALUS,

Founded on Compounds of SULPHUR and POTASSIUM,

FOR THE

PREVENTION OF THE POTATO DISEASE.

J. C. WHEELER & SON,

SEED GROWERS, GLOUCESTER

Beg to inform the Trade that they are the Sole Agents in Great Britain for the Sale of this valuable material.

The retail price of 14 lb. of Salus, which is sufficient for 1 acre of Potatos, is 14*s*.; or in smaller quantities, 7 lb. for 7*s*.; or a good sized packet, sufficient to dress 1 bushel of Seed Potatos, for 1*s*., or post-free for sixteenpence.

WHOLESALE PRICES ON APPLICATION TO

J. C. WHEELER & SON, Seed Growers, GLOUCESTER.

LONDON OFFICE: 59, MARK LANE, E.C.

NEW PLANTS, 1877.

CHARLES LEE & SON,

SUCCESSORS TO

MESSRS. JOHN AND CHARLES LEE,

OF THE

Royal Vineyard Nursery,

HAMMERSMITH, near LONDON,

Have the pleasure to offer the following very beautiful and interesting

NOVELTIES,

now offered by them for the first time:—

BEGONIA COLTONI.

This distinct and beautiful Begonia was raised at the Royal Vineyard Nursery. The colour of the flowers is quite new in Begonias, being of an orange-crimson. It is a most abundant bloomer, and the flowers are of the largest size. It received a First-class Certificate from the Floral Committee of the Royal Horticultural Society in 1875. Good plants, price 10*s.* 6*d.* each.

BEGONIA RODWELLII.

This lovely Begonia was also raised at the Royal Vineyard Nursery. The flowers are of a bright vermilion-scarlet, and of the largest size; and the plant is a very abundant bloomer. It received a First-class Certificate from the Committee of the Royal Horticultural Society. Good plants, price 10*s.* 6*d.* each.

CORNUS MASCULA AUREA ELEGANTISSIMA (J. & C. Lee).

This elegant and lovely hardy shrub was raised from seed in our Isleworth Nursery, and has been proved to be perfectly constant in its beautiful variegation. A broad margin of pure gold surrounding a bright green centre is of itself a sufficient attraction, but when in July the tips of the leaves become suffused with the brightest carmine it is impossible to give an idea of the beauty and elegance of the plant, which will bear a favourable comparison with the best variegated stove or greenhouse exotics. Suffice it to say, that it has been seen and admired by many amateurs and nurserymen, and has been awarded a First-class Certificate at South Kensington. The habit of the plant is semi-pendulous, and very graceful. Price of maiden plants, 15*s.* each; larger specimens, 21*s.* each. A Coloured Plate may be had on application for 1*s.*

JUNIPERUS VIRGINIANA ELEGANS (J. & C. Lee).

This very elegant variety of the Red Cedar was raised from seed in our own grounds in 1860. It is scarcely necessary to remark upon the hardiness of this plant, but it is due to its character to state that the elegant cream-coloured variegation with which the whole plant is suffused is perfectly constant, and has never been injured by frost or burned in the least degree by the hottest sunshine, although fully exposed in the open air. The plant is of neat and free growth, and received the honour of a First-class Certificate from the Floral Committee at South Kensington, in July, 1875. Price 15*s.* each; larger specimens, 21*s.* each. A Photograph of the plant may be had on application for 1*s.*

POPULUS CANADENSIS AUREA VAN GEERTI (1876).

The golden variety of this noble Poplar sent out in February last by Mr. Charles Van Geert, of Antwerp, has fully borne out in our Nurseries the description he gave of it, and has retained its golden colour much better than either the Golden Catalpa or the Golden Oak during the late tropical summer.

EXTRACT FROM MR. VAN GEERT'S DESCRIPTION.

"We have the pleasure of offering an extremely remarkable variety of the Canadian Poplar, with a foliage which presents during the whole summer the finest hue of golden-yellow. It is in our opinion a most valuable acquisition, and has been pronounced so by every connoisseur who has admired it in our nursery, for the coloured foliage now so frequently met with among low shrubs fails almost entirely among the larger trees. The Catalpa aurea and the Quercus Robur concordia are the only trees known as possessing the same golden foliage; but the former is only a second-sized tree, and the latter has not the vigour of the Canadian Oak. Our golden Poplar, on the contrary, is a first-sized tree, of rapid and vigorous growth. Its leaves are quite as large as those of the common Canadian Poplar, and the yellow hue, instead of looking sickly, has a warm and vigorous tint. The better nourished the tree is, and the more it is exposed to the sun, the more vivid is the golden hue."

Having received in February last a large consignment of this magnificent novelty from Mr. Van Geert, we are enabled to offer nice plants at 7*s.* 6*d.* each.

ABIES EXCELSA AUREA (J. & C. Lee, 1875).

This is decidedly the finest golden Conifer of large growth yet introduced. It is of free growth, and requires to be planted in the full sunshine. In such a position the whole tree is suffused with the richest gold. A First-class Certificate has been awarded to this valuable tree at South Kensington. Price of nice plants, 15*s.* each; larger specimens, 21*s.* each.

LAURUS CAMELLIÆFOLIA (Wood, 1875).

We can still supply a few hundreds of this extraordinary and elegant Laurel. Price 2*s.* 6*d.* each; per dozen, 18*s.*

CHARLES LEE & SON,

HAMMERSMITH, W.

ECONOMY

IN THE

GARDEN

BEST SECURED

BY THE USE OF

CARTER'S

COLLECTIONS OF

VEGETABLE SEEDS

PRODUCE A CONSTANT SUPPLY OF THE BEST VEGETABLES ALL THE YEAR ROUND.

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3⅝ " " ..... "	1	8	1	4	7 0
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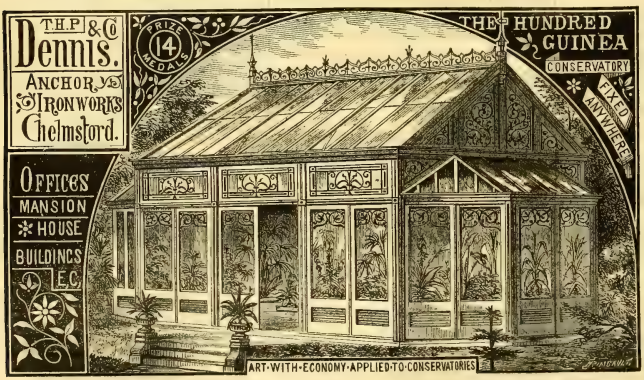
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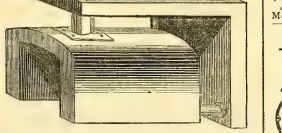
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20 in.	18 in.	18 in.	300	7 0 0
20 ,,	18 ,,	24 ,,	400	8 0 0
20 ,,	18 ,,	30 ,,	500	9 0 0
24 ,,	24 ,,	24 ,,	700	12 0 0
24 ,,	24 ,,	30 ,,	850	14 0 0
24 ,,	24 ,,	36 ,,	1,000	16 0 0
24 ,,	24 ,,	48 ,,	1,400	20 0 0
28 ,,	28 ,,	60 ,,	1,800	25 0 0

Larger sizes if required.

From MR. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May 29, 1873.*

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.
J. JONES and SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.
When ordering Boilers please refer to the above advertisement.

AN EXTRAORDINARY BOILER.—During the Great Boiler Contest at Birmingham, in 1872, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 1000 feet of 4-inch pipes, and yet had more than 1 bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners. This was THE CHAMPION, Deards' Patent Close Coil Boiler, for Drawings and Prices of which send two stamps to
Messrs. DEARDS, Boiler Works, Harlow,
who now have their Boilers at work in every county of England except Rutland. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

AGRICULTURAL LOCOMOTIVES,
STEAM PLOUGHING MACHINERY,
ROAD LOCOMOTIVES, TRAMWAY LOCOMOTIVES,
STEAM ROAD ROLLERS.
For Prices, Description, and Reports of Working, apply to the Manufacturers,
AVELING & PORTER,
ROCHESTER, KENT: 72, CANNON ST., LONDON, E.C.; and 9, AVENUE MONTAIGNE, PARIS.
AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of *three and one-fifth pounds of coal* per horse-power per hour.



WRIGHT'S PATENT
ENDLESS-FLAME-IMPACT
HOT-WATER BOILER.
Awarded the only English Medal for the best Hot-water Apparatus at the United States Centennial Exhibition at Philadelphia.
For prices and full particulars please see our pamphlet, entitled "Our Boilers and Heating," which will be handed post-free on application.
WILLIAM WRIGHT & CO.,
HOT-WATER ENGINEERS, AIRDRIE, N.B.

HORTICULTURAL WINDOW GLASS.—A large variety of sizes, 15 oz., 12s. 6d.; 21 oz., 16s. 6d. per 100 feet. Large sizes, in Cases, for Cutting up, 15 oz. 4ths, 36s.; 3ds, 46s. per 100 feet. 21 oz. 4ths, 36s.; 3ds, 46s. per 100 feet. Prices forwarded for large and special quantities.
ALFRED SYER, Glass, Lead, Zinc, Oil, and Colour Merchant, 8, Pentonville Road, London, N.

STEVENS'
TRENTHAM GREENHOUSE BOILER,





After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved. For Illustrations, with full particulars, apply to the Sole Makers,
F. & J. SILVESTER,
HOT-WATER ENGINEERS, &c., &c.,
Castle Hill Works, Newcastle, Staffordshire.
☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

COWAN'S PATENT
COMPENSATING SYSTEM
OF HEATING,
FOR HORTICULTURAL, PUBLIC, AND OTHER BUILDINGS.
The most important discovery for saving the cost of fuel, for steadiness in heating power, and dispensing with night stoking. One Apparatus will do the work of several Boilers, and in some cases produce a profit.

Heating by the Ordinary Systems.
Hothouses, Mansions, Churches, and other Buildings efficiently heated by other approved methods, where the Patent Apparatus cannot be adopted.
A large Stock of the most improved forms of Boilers to select from.

HEAT and LIGHT.
COWAN'S PATENT COMBINED GAS-MAKING and HEATING APPARATUS,
By which Country Mansions and Public Institutions may be heated and lighted, in most cases free of cost.

HORTICULTURAL BUILDING.
All structures specially adapted to the purposes for which they are required, built of the best materials and workmanship, at moderate prices.
Plans and Estimates free. An Illustrated Pamphlet free.
All work done by the Company is guaranteed.
THE
Cowan Patents Company (Limited),
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And The Vineyard, Garston, near Liverpool.

JAMES LYNE HANCOCK'S
Improved India-rubber Socket-rings
FOR THE
JOINTS of HOT-WATER PIPES.

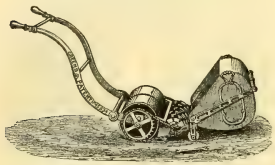


Description of Sketch:—
A. The Rubber Ring as rolled into the Socket.
B. The Ring before inserted in the Pipe.
These Rings are made any size to order. All ordinary sizes are kept in stock.
Illustrated Price List on application.
J. L. HANCOCK,
VULCANISED INDIA-RUBBER WORKS,
266, GOSWELL ROAD, LONDON E.C.

GREEN'S
PATENT "SILENS MESSOR,"

Or Noiseless Lawn-mowing, Rolling, and Collecting Machines for 1877.

The Winner of every Prize in all cases of competition.



The superiority of these Machines over those of all other makers is universally acknowledged. They will Cut either long or short Grass, Bents, &c., wet or dry.

These advantages no other Lawn Mowers possess.

They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant.

Every Lawn Mower sent out is guaranteed to give entire satisfaction, otherwise it may be returned at once free of cost to the Purchaser.

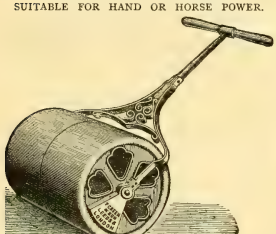
N.B.—Those who have Lawn Mowers to repair will do well to send them either to our Leeds or London Establishment, where they will have prompt attention, as an Efficient Staff of Workmen is kept at both places.

Descriptive Illustrated Price List free on application.

GREEN'S PATENT ROLLERS

For Lawns, Drives, Bowling Greens, Cricket Fields, and Gravel Paths.

SUITABLE FOR HAND OR HORSE POWER.



They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom; or direct from the Manufacturers,

THOMAS GREEN & SON,

SMITHFIELD IRONWORKS, LEEDS;

And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

THE PATENT "EXCELSIOR" LAWN MOWER,

The simplest and best ever introduced.

Waite, Burnell, Huggins & Co.,

228, UPPER THAMES STREET, LONDON, E.C.,

Sole Consignees for Great Britain, Ireland and France.



The "Excelsior" has never been beaten in Competitive Trials.

For Agencies, Catalogues, and Trade Terms, apply as above.

E. T. ARCHER'S "FRIGI DOMO."—Patronised by Her Majesty the Queen, for Windsor Castle and Frogmore Gardens, the late Sir J. Paxton, and the late Professor Lindley, &c.

MADE of PREPARED HAIR and WOOL.

A perfect Non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for Pits and Forcing Frames.

PROTECTION from COLD WINDS and MORNING FROSTS.

"FRIGI DOMO" CANVAS.

2 yards wide .. .. 1*s.* 10*d.* per yard run.
3 yards wide .. .. 3*s.* per yard.
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ELISHA T. ARCHER, only Maker of "Frigi Domo," Brockley Road, Forest Hill, London, S.E.; and of all Florists and Seedsmen. All goods carriage paid to London.

NOTICE—REMOVED from 3, CANNON STREET, CITY.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.

TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3*d.* per yard, or 100 yards, 20*s.*; 4 yards wide, 6*d.* per yard, or 50 yards, 20*s.*

NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6*d.* per yard; 4 yards wide, 1*s.* per yard; ¾-inch mesh, 4 yards wide, 2*s.* 6*d.* per yard.

TIFFANY, 6*s.* 6*d.* and 7*s.* 6*d.* per piece of 20 yards.

EATON and DELLER, 6 & 7, Crooked Lane, London Bridge

Established over a Quarter of a Century.

FRANCIS MORTON & Co's (LIMITED) LIVERPOOL NAYLOR STREET CABLE FENCING

Is in use over many thousand miles,

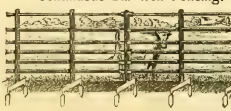
And has been awarded the Medals and highest Commendation of all the leading Agricultural Societies.

It is constructed with

FOWERFUL WINDING STRAINING PILLARS, RIGID INTERMEDIATE IRON POSTS, STRONG and DURABLE WIRE CABLE STRANDS,

Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

Continuous Bar Iron Fencing,



With bars secured by F. M. & Co.'s Patent Self-locking Joints, which effectually prevent the uprights being pushed aside, and are independent of loose pins, wedges, or staples.

IRON ENTRANCE and FIELD GATES,

IN WROUGHT AND CAST IRON,

Designed for the Mansion, Villa, or Farm,

WICKET AND GARDEN GATES,

In Great Variety of Patterns.

Iron Hurdles, Railing, Tree Guards,

FRUIT ESPALIERS, WALL FRUIT TRAINERS, &c.

☞ *Illustrated and Described in F. M. & Co.'s New Catalogue, sent on application.*

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HORTICULTURAL IRON and WIRE WORKS.



For CONSERVATORIES.
Wirework Baskets.
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Wirework Flower Stands.
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Balloon and other Trainers.

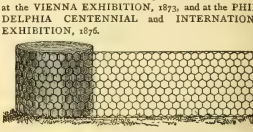
GARDEN.
Wirework Arches.
Wirework Rosaries.
Wirework Summer-houses.
Wirework Screens.
Wirework Hurdle Fencing.
Iron and Wire Espaliers.
Iron Gates.
Water-piping laid on in Gardens.

Illustrated CATALOGUE of Designs.

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The Sole International Prize Medals for GALVANIZED WIRE NETTING

Have been awarded to Messrs. J. B. BROWN and CO., at the VIENNA EXHIBITION, 1873, and at the PHILADELPHIA CENTENNIAL and INTERNATIONAL EXHIBITION, 1876.



Prices per Lineal Yard, 24 inches high:—

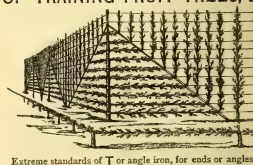
Size of Mesh.	Mostly used for	Gauge, or Light.		Gauge, or Medium.		Gauge, or Strong.	
2 in.	Dogs or Poultry .	19	3¾*d.*	18	4½*d.*	17	5¾*d.*
1⅞ in.	Small Rabbits, &c.	19	4¼*d.*	18	5¼*d.*	17	6¼*d.*
1½ in.	Smallest Rabbits.	19	5¼*d.*	18	6¼*d.*	17	8*d.*

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J. B. BROWN & CO.,

Offices—90, CANNON STREET, LONDON.

THE FRENCH SYSTEM OF TRAINING FRUIT TREES, &c.



Extreme standards of T or angle iron, for ends or angles, for straining the wires from, self based; also stays for these standards, at prices as under:—

Intermediate Standards, 10 ft. apart, at half these prices.

	Painted.	Galvd.		Painted.	Galvd.
4½ ft. high..	4*s.* 6*d.* ..	6*s.* 6*d.*	7 ft. high	7*s.* 0*d.* ..	10*s.* 0*d.*
5 ft. high....	5 0 ..	7 6	8 ft. high	8 0 ..	11 0
6 ft. high....	5 9 ..	8 6	9 ft. high	9 0 ..	12 0

STRAINING SCREWS and NUTS, one to end of each wire, 3*s.* per dozen.

No. 13 WIRE, 10 inches apart, 2*s.* 3*d.* per 100 yards.

*** Prices of Material for WIRING GARDEN WALLS on the FRENCH SYSTEM on application.

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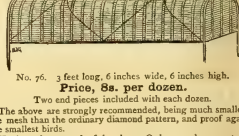
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REDUCED PRICES. SEASON 1877.

Superior Quality. Galvanised after made.

NEW PATTERN WITH DIAGONAL STAYS.



No. 76. 3 feet long, 6 inches wide, 6 inches high.

Price, 8s. per dozen.

Two end pieces included with each dozen.

The above are strongly recommended, being much smaller in the mesh than the ordinary diamond pattern, and proof against the smallest birds.

Having a large stock of the above, Orders can be executed on receipt.

Illustrated and Priced Catalogues of Horticultural Wirework on application.

Five per cent. discount allowed for prompt cash on orders amounting to 20*s.* and upwards.

Special quotations for large quantities.

J. J. THOMAS & CO.,

PADDINGTON WIREWORKS,

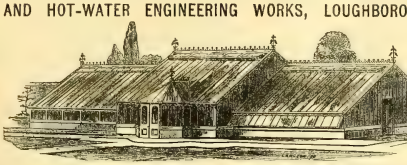
285 and 362, EDGWARE ROAD, LONDON, W.

Post-office Orders to be made payable at 310, *Edgware Road.*

MESSENGER & COMPANY,

CONTRACTORS, MIDLAND HORTICULTURAL BUILDING

AND HOT-WATER ENGINEERING WORKS, LOUGHBOROUGH,



Beg to inform their numerous Patrons and the Public generally, that having erected new, more extensive, and commodious works, fitted with the best steam-power machinery, for the construction of Horticultural Buildings in wood or iron, plain or ornamental, large or small, they are in a position, from their great facilities and experience, to carry out with dispatch, in the best manner, at very moderate cost, the orders with which they are entrusted. Only thoroughly well-seasoned timber used. Glasshouses erected on Messenger's patent principles are, owing to mechanical arrangements, very strong, *most durable*, light, *elegant; perfect efficiency* for purpose intended is *guaranteed*; are economical in cost and maintenance. Messenger's Patent Boilers, Flexible Jointed Hot-water Pipes and Valves, are now in use in many thousands of instances, with the greatest success. Particulars on application. Plan, and Estimates forwarded. Ladies and Gentlemen waited upon.

The Plans of Landscape Gardeners, Architects, and others carried out. Richly Illustrated CATALOGUE post-free for 33 stamps.

Illustrated CIRCULAR of Messenger's Improved Patent Tubular Saddle Boiler free.

THE THAMES BANK IRON COMPANY,



Old Barge Wharf, Upper Ground Street, London.

SURREY SIDE, BLACKFRIARS BRIDGE.



HOT-WATER BOILERS,

PIPES, CONNECTIONS.

NEW PATENT "CLIMAX" BOILER (1874). See p. 666, 1874, *Gardeners' Chronicle.*

"GOLD MEDAL" BOILER (Birmingham, 1872).

PATENT "EXCELSIOR" BOILER (1871).

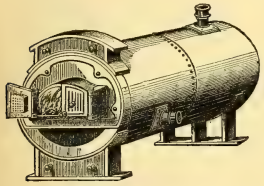
☞ *The largest and most complete Stock in the Trade; upwards of Twenty Thousand Pounds' worth to choose from.*

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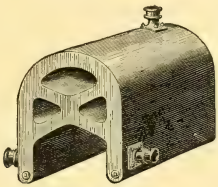
"TRENTHAM IMPROVED" BOILER, with Waterway End and Smoke Consumer.

"TUBULAR," and every other Boiler of known merit or excellence.

☞ *Prize Medal Awarded at the National Contest, Birmingham,* 1874.



("TRENTHAM IMPROVED" BOILER.)



("CRUCIFORM" BOILER.

MILL'S PATENT AUXILIARY FUEL ECONOMISER,

Which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boilers, Fire-Bars, and Furnace Fronts ever yet introduced to the public.

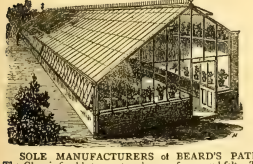
STAINTON'S NEW PATENT FROST DEFYING LIQUID (see "Gardeners' Chronicle," Aug. 19, 1876).

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PRICE LIST on application; or, Six Stamps for DESCRIPTIVE CATALOGUE, 4th Edition.

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Victoria Works, Bury St. Edmunds.





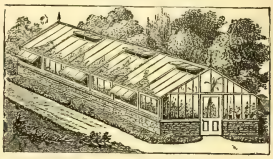
SOLE MANUFACTURERS of BEARD'S PATENT METALLIC NON-CONDUCTING GLASS-HOUSES.—The Glass is fixed between two layers of prepared felt. The Ventilators are worked by a simple mechanical contrivance, and the whole structure is screwed together so as to render it quite portable. HEATING APPARATUS IN ALL ITS BRANCHES.

ORNAMENTAL CONSERVATORIES and HORTICULTURAL BUILDINGS of EVERY DESCRIPTION.—For lightness, elegance and durability, these Houses cannot be surpassed. The best materials only are used in their construction. Great improvements have recently been made, to obviate the objections to iron houses. Very extensive works on this principle have been satisfactorily executed. *An Illustrated Catalogue forwarded post-free on application.*

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Estimates given on application for GREENHOUSES and CONSERVATORIES of all kinds, and to any design.

GARDEN BOXES and LIGHTS.

	Each.
Portable Box with One Light, 6 feet by 4 feet, glazed good 16-oz. sheet glass, painted four coats, and packed ready for use	£ s. d. 35 0
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LIGHTS ONLY.

3 feet by 4 feet Light, not painted nor glazed	3 6
Ditto glazed, good 16-oz. sheet glass, and painted 4 coats	10 0
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Ditto glazed and painted four coats	16 6

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BOULTON & PAUL,

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One Hundred Melon and Cucumber Frames and Lights, glazed with best 21-oz. glass of the following sizes, ready for delivery. LISTS, with full particulars, post-free:—

1-light frame,	4	feet by	6	feet ..	£1	17 6
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Carriage paid to any Railway Station in England and Wales, also to Dublin, Edinburgh, and Glasgow, on Orders amounting to 40s. and upwards.

PATENT PLANT PRESERVER LISTS post-free.

GREENHOUSE LISTS post-free.

Horticultural Buildings of any description and dimension.

Designs prepared. Estimates free of charge.

BOULTON & PAUL, Norwich.

Metallic Hothouse Builder to Her Majesty.

HENRY HOPE (late Clark & Hope, formerly Clark), HOTHOUSE BUILDER and HOT-WATER APPARATUS ENGINEER, 55, Lionel Street, Birmingham. Established A.D. 1818.

BOOKS of DESIGNS, 5s. each.

☞ The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.



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HORTICULTURAL BUILDERS AND HOT-WATER ENGINEERS.

Patentees & Manufacturers of the Self-adjusting Throttle Valve

See Illustrated CATALOGUE, Two Stamps.

Designs and Estimates free of cost.

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7	,,	..	..	0	4	6	18	,,	..	..	0	10	0
8	,,	..	..	0	5	0	19	,,	..	..	0	10	6
9	,,	..	..	0	5	6	20	,,	..	..	0	11	0
10	,,	..	..	0	6	0	21	,,	..	..	0	11	6
11	,,	..	..	0	6	6	22	,,	..	..	0	12	0
12	,,	..	..	0	7	0	23	,,	..	..	0	12	6
13	,,	..	..	0	7	6	24	,,	..	..	0	13	0
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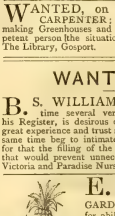
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"Far superior to any of ours."—*The Field.*
"Remarkably easy to work."—*Gardeners' Mag.*

"We feel bound to recommend it to our readers as one of the best Mowers we have as yet made acquaintance with."—*Florald World.*

PATRONIZED BY

HER GRACIOUS MAJESTY THE QUEEN,
HER IMPERIAL MAJESTY THE EMPRESS OF GERMANY,
THE LATE EMPEROR OF THE FRENCH,
HIS ROYAL HIGHNESS THE PRINCE OF WALES,
HIS IMPERIAL MAJESTY THE EMPEROR OF AUSTRIA,
THE VICEROY OF EGYPT,
And many of the Nobility and Gentry of Great Britain.

CHIEF ADVANTAGES.

They are extremely LIGHT IN DRAUGHT, SIMPLE IN CONSTRUCTION, WELL MADE, and NOT LIKELY TO GET OUT OF ORDER.

They Cut LONG or SHORT, WET or DRY Grass, and do not clog.

They have no ROLLERS in FRONT of the Cutters, and therefore Cut the Grass as it GROWS, and do not miss the BENTS.

They work well on SLOPES, STEEP EMBANKMENTS, UNDER SHRUBS, and Close up to Trees, &c.

They can be USED either WITH or WITHOUT GRASS BOX, as may be desired.



TESTIMONIALS.

From A. F. BARRON, Esq., *Royal Horticultural Society, Chiswick Gardens, W.*

"GENTLEMEN,—We have now had your 'Archimedean' Lawn Mower in use for several months, and without hesitation I can truly say it is the *best* and *most efficient* implement of the kind we have ever used."

From SHIRLEY HIBBERD, Esq., F.R.H.S., *Editor of the "Gardeners' Magazine."*

"The 'Archimedean' Lawn Mower has been in constant use in our experimental garden since Midsummer last, and has done its work remarkably well. It is a good sign when the men who have to do the work take to a thing of this sort without any persuading, and my men evidently regard it as a magical means of making mowing an amusement, for they fly through the work and enjoy the perfect shave quite as much as I who look on, and wonder we have so lately attained to real simplicity."

From the Rev. A. MCALLISTER, *Plumstead Vicarage, London.*

"I have the pleasure of forwarding a cheque for the 'Archimedean' Lawn Mower which I had from you, and which does its work admirably."

LIST OF PRICES.

6-inch, Suitable for Small Grass Plots	..	..	..	£1	5	0	14-inch, Suitable for a Man	..	..	..	..	..	..	£5	5	0
8 ,, ,, ,, ,,	..	..	..	2	2	0	16 ,, ,, ,, on Level Lawns	..	..	..	..	..	..	6	6	0
10 ,, ,, a Lady or a Boy	..	..	..	3	3	0	18 ,, ,, ,, and Boy	..	..	..	..	..	..	7	7	0
12 ,, ,, ,, ,,	..	..	..	4	4	0	20 ,, ,, ,, ,,	..	..	..	..	..	..	8	8	0

Grass Boxes, 6-inch and 8-inch, 5*s.*; 10 and 12 inch, 7*s. 6d.*; 14, 16, 18, and 20-inch, 10*s.* each.

DELIVERED CARRIAGE FREE AT ANY RAILWAY STATION IN THE UNITED KINGDOM.

NO CHARGE FOR PACKING CASES, which are most convenient for storing the Machine during Winter.

EVERY MOWER IS WARRANTED TO GIVE AMPLE SATISFACTION,

And if not approved of may be returned within a Month, and the amount paid be refunded.

Before purchasing a Lawn Mower send for Catalogue, containing Opinions of the Press and Testimonials from Gentlemen of high position in the Horticultural World, Noblemen, Clergymen, and others.

WILLIAMS & CO. (Limited), Manufacturers and Patentees.

Selling Agents { JOHN G. ROLLINS & CO., Old Swan Wharf, Upper Thames Street, London, E.C.
WALTER CARSON & SONS, La Belle Sauvage Yard, Ludgate Hill, E.C.; and 21, Bachelor's Walk, Dublin. } Selling Agents

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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—SCIENTIFIC, FRUIT and FLORAL COMMITTEES' MEETINGS on WEDNESDAY NEXT, March 21, at 11 o'Clock. GENERAL MEETING for ELECTION of FELLOWS, &c., at 3 o'Clock. Admission 1s. Military Band from 3 o'Clock, P.M.

N.B.—On this occasion the Fruit and Floral Committees will meet in the CONSERVATORY, where Exhibits will also be shown.

ROYAL BOTANIC SOCIETY. Gardens, Regent's Park, S.W.

FIRST EXHIBITION of SPRING FLOWERS this Season, WEDNESDAY, March 21. Gates open at 2 o'clock. Tickets, to be obtained at the Gardens only by Vouchers from Fellows of the Society, price 2s. 6d. each.

CRYSTAL PALACE.—AURICULA SHOW, April 24; GREAT FLOWER SHOW, May 12; ROSE SHOW, June 23. Schedules for the two latter can be had on application to

GENERAL MANAGER, Crystal Palace.

ROYAL MANCHESTER BOTANICAL and HORTICULTURAL SOCIETY.—Floral Meeting at the Town Hall, King Street, Manchester, on the 20th inst. The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1877 will be held in the Gardens, Old Trafford, MAY 18 to 25. The ROYAL NATIONAL TULIP SOCIETY'S EXHIBITION will be held on the same place on MAY 25 and 26. For Schedules apply to

Botanic Gardens, Manchester. BRUCE FINDLAY.

EXHIBITION of PLANTS, CUT FLOWERS, and FRUIT will be held in the grounds of the Preston Nursery and Pleasure Gardens Company, Farington Hall Nurseries, Preston, from MAY 19 to 22. Prizes amounting to nearly THREE HUNDRED POUNDS. Schedules now ready, post-free. W. TROUGHTON, Manager.

BRISTOL, CLIFTON, and WEST OF ENGLAND ROSE and STRAWBERRY SHOW, Zoological Gardens, Clifton, THURSDAY, July 12. Schedules of Prizes, with Rules and Regulations, may be obtained of the Gate-keepers at the Gardens: or by letter addressed to the Zoological Gardens, Clifton. SECRETARY.

KENDAL and DISTRICT HORTICULTURAL SOCIETY, JULY 26. 70 Silver SPECIAL PRIZES: For twelve Stove or Greenhouse Plants, distinct, six at least in flower, first, £15; second, £10: third, £5. Fruit, eight varieties, first, £5; second, £3; third, £2: besides 300 other prizes. Schedules free. Entries before July 20, to

T. WILKINSON, } Secs., Kendal.
J. H. BUTLER, }

CLAY CROSS HORTICULTURAL SOCIETY.—TWENTIETH ANNUAL EXHIBITION, AUGUST 14. Prizes THREE HUNDRED and SIXTY-THREE POUNDS. For twenty Plants, £25, £20, £15, £10, £5. Schedules ready by March 31.

J. STOLLARD, Secretary.

Clay Cross, near Chesterfield.

Notice.

DRACÆNA TERMINALIS ALBA.—In consequence of the number of orders received for this fine plant during the past week, and the Limited Stock THE PRICE PER PLANT WILL BE **42s.** EACH, INSTEAD OF **21s.** as previously advertised by circular and advertisement.

JOHN WILLS, Royal Exotic Nursery, Onslow Crescent, South Kensington, S.W.

Superior New English Scarlet Runner Beans.

FREDERICK GEE has to offer a few Quarters of the above, at 35s. per bushel, for cash. These are a very rare article this season, and are far preferable to Foreign, which are now being sold; also a few Quarters of EARLY LONGPOD BEANS, at 7s. 6d. per bushel; common WINDSORS, at 10s.; fine Selected BROAD IN WINDSORS, at 14s. per bushel.

Seed Establishment, Biggleswade, Beds.

NURSERYMEN COMING to HOLLAND during the International Horticultural Show at Amsterdam, in April, 1877, are kindly requested to Visit my Nursery.

A. M. C. JONGKINDT CONINCK, Tuttenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

CALCEOLARIAS, aurea floribunda and Golden Gem, strong, healthy, autumn-struck plants of the above, 5s. per 100, 45s. per 1000. AURIETIA CAMPBELLII, the best of all the Aubrietias, 3s. per dozen. Package free for cash.

W. FIELD, Tarvin Road Nursery, Chester.

Trade.

DWARF ROSES, on Manetti, extra extra fine Plants, 25s. per 100, £10 per 1000.
Planting SEAKALE. 25s. per 1000. Terms cash with orders.
RICHARD LOCKE, The Rose Farms, Red Hill, Surrey.

CUCUMBER PLANTS, Telegraph.—Strong plants now ready.
A. WATKINS, Nursery, Bishop Stortford, Herts.

Vines, Vines, Vines.

MR. T. C. CLARKE, of Vinery House, Allerton, near Liverpool, has a fine stock of young Vines, nice canes for planting, out of the best varieties, from 2s. 6d. to 5s. each.

Vines, Vines, Vines.

B. S. WILLIAMS begs to announce that his GRAPE VINES this year are unusually fine, and are now ready for distribution.

Our Detailed List, see Bulb Catalogue.

Victoria and Paradise Nurseries. Upper Holloway, London, N.

Vines, Vines, Vines.—The Planting Season.

THE COWAN PATENTS' COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent well-ripened Canes of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

VINES.—Splendid Planting Canes of leading varieties, perfectly ripened from bottom-heat, and a few extra strong Canes for Immediate Fruiting

JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

LADY HENNIKER APPLE GRAFTS — Post-free, 6 for 12. 6d., 12 for 2s. 6d., 50 for 8s., 100 for 15s. A splendid Kitchen or Dessert Apple, weighs 18 oz., bears freely on one-year's wood. Pyramids 3s. 6d., Standards 5s. each.

EWING AND COMPANY, Eaton, Norwich.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Gentlemen's Gardeners, Amateurs, and Others

REQUIRING

GARDEN POTS of best quality, are requested to send their orders to

J. MATTHEWS, Royal Pottery, Weston-super-Mere.

Price List on application.

To Nurserymen and Others.

WANTED, 200 to 500 PLANE TREES, from 6 feet, delivered in London. State price per 100 to Mr. J. WALTHAM, 16, Annerley Street Orkney Street, Battersea Park Road, London, S.W.

WANTED, LARCH, various sizes, and other Transplanted and Seedling NURSERY STOCK. Name lowest prices, with all necessary particulars.

JOSEPH TREMBLE AND SONS, Nurserymen, &c., Penrith.

WANTED, about 20,000 QUICKS. State price to

WOOD AND INGRAM, The Nurseries, Huntingdon.

WANTED, strong QUICK, and SEAKALE. Quote price per thousand to

PHIPPEN AND ROBINSON, Victoria Nursery, Reading.

MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATUM and GERANIUM FLORIOUS.—The Advertiser, having a surplus of the above, would be glad to EXCHANGE for LOBELIA PUMILA GRANDIFLORA, any VARIEGATED GERANIUM, or VERBENA.

H. H., Post-office, Boothstown, Manchester.

WANTED, Cuttings of GERANIUMS, Vesuvius, Madame Vaucher, Master Christine, any sort Tricolor, and good Bicolors, also CALADIUMS and ALOCASIA LOWII. ORCHIDS, TUBEROSES, LILY OF THE VALLEY CLUMPS, SEEDS, &c., may be had in EXCHANGE.

W. F. BOFF, 203, Upper Street, Islington, N.

WANTED, TWO common DUTCH HONEYSUCKLES, 5 or 6 feet high, and well furnished, and established in pots. Send price, &c., to

C. DIMMICK AND SONS, Nurserymen, Ryde.

WANTED, a quantity of CLEMATIS ROOTS for Stocks. Reply by letter to

W. BARRON AND SON, Elvaston Nursery, Borrowash, Derby.

NEW REGAL PELARGONIUMS (Two of the Gems of the Season), "PRINCE OF WALES" and "PRINCESS OF WALES." Price 1 guinea each.

To be sent out the first week in May by

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

EUONYMUS EUROPÆUS.—Strong 2-yr. seedling plants, £1 per 1000, £9 per 10,000. Offers for Cash.

A. KÄTHKE AND SON, The Nurseries, Praust, near Danzig, Germany.

Winter-flowering Orchids.

CALANTHE VESTITA RUBRA OCULATA. Price, 5s. per dozen, or 50s. per 100.
S. WOOLLEY, Nurseryman, Chesh nut, Herts.

To the Trade.

PRIMROSES, double lilac, 12s. 6d. per 100, 100z. per 1000. Good plants.
RODGER MCCLELLAND AND CO., 64, Hill Street, Newry.

Balsam, Cineraria, and Primula Seed.

FAND A. SMITH offer the above, saved from their unrivalled strains, in 1s., 2s. 6d., and 5s. packets. Price per weight to the Trade on application.

The Nurseries, West Dulwich, S.E.

CARNATIONS and PICOTEES.—A fine selection of strong healthy plants, 12s. per dozen pairs. Trade price on application.

SAMUEL HARTLEY, Headingley Nursery, near Leeds.

Gentiana acaulis.

OSBORN AND SONS can supply fine Clumps of the above at 6s. per dozen, 30s. per 100. Trade price on application.

The Nurseries, Fulham, London, S.W.

CENTAUREA CANDIDISSIMA.—Nice plants, in single pots, 20s. per 100, package included. Terms Cash.

JOHN HOUSE, Eastgate Nurseries, Peterborough.

ALTERNANTHERA AMŒNA, and STORE VERBENAS, in large or small quantities. For price, &c., apply to

JOSEPH PAXTON, The Nursery, Green Lanes, Stoke Newington, N.

SPIRÆA PALMATA.—Fine Crowns for Forcing, 75s.; smaller, 25s. to 50s. per 100.

CHARLES NOBLE, Bagshot.

Larch Fir.

GEORGE SWAILES begs to offer good, well-grown LARCH FIR, 3 to 4 feet, 35s. per 1000.

Beverley Nurseries, Yorkshire.

PALMS.—For Sale, handsome Prize Specimens. Apply to

W. JACKSON AND CO., Nurseries, Bedale.

AVENUE and OTHER TREES.—Elm, Lime, Chestnut, Poplar, Oak, Beech, &c. Extra fine Beech, 3 to 4 and 4 to 5 feet; Spruce, 2 to 3 feet. The above to be sold cheap. Ground must be cleared.

B. R. DAVIS (late E. Pierce), Yeovil Nursery, Yeovil.

HAWS, or THORN QUICK SEED.—Sound, heavy, fit for sowing at present, or spring coming, guaranteed free from soil or other mixture, and thoroughly well preserved. About 30 tons on hand. For lowest prices apply to

GRANT AND CO., Park Nursery, Portadown, Ireland.

PONTICUM RHODODENDRONS —for Cover—2½ to 3 feet, fine, £8 per 100.

J. JACKSON, Nursery, Kidderminster.

RHODODENDRONS 3-yr. Seedlings, 6 to 10 | 4-yr. Seedlings (fine), 8 to 10 inches, transplanted; | inches, transplanted; 12 to 18 inches, transplanted.

For prices, which are low, apply to

HENRY ARNSWORTH, Matlock Bank, Derbyshire.

WILLIAM WALKER has a large stock of splendid GREEN TREE BOX to offer, from 3 to 4½ feet. Price on application.

Packington Nursery, one mile from Ashby-de-la-Zouch Station.

To the Trade.

ASPARAGUS, Giant, 1-yr., 2-yr., 3-yr., and 4-yr., fine.

JAMES BIRD, Nurseryman, Downham.

DALMAHOY SEED POTATOS, free on rail at Edinburgh, at 90s. per ton.

J. T. STEWART, Bangholm Cottage, Edinburgh.

POTATOS for SEED.—Improved Victorias, Paterson's Flukes, Excelsior, Bresee's Prolific, Dalmahoys, Bryanstone Kidneys, Queens, Bovinias, Climax, Hundredfold Flukes, Eureka, Compton's Surprise. Very low: per ton for cash.

W. COCKS, Monks Hall, Gosberton.

CINQUANTINÆ—"Fifty Days" INDIAN CORN, 12. 3d. per peck, 4s. 6d. per bushel, 35s. per quarter. Cash with order, bags extra, 9d., 6d., and 1s.

RICHARD BINNS, Corn Factor, Derby.

SALES BY AUCTION.

Periodical Sale of Poultry and Pigeons (4017).

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, March 20, at half-past 12 o'Clock precisely, surplus stock of CAMELLIAS, AZALEAS, and PALMS from Ghent; 2000 Standard, Dwarf, and Climbing ROSES, from a well-known English Nursery; Trained and Standard FRUIT TREES, Hardy and Ornamental TREES and SHRUBS, HERBACEOUS PLANTS, RUSTIC GARDEN-WORK, GLADIOLI, LILIUMS, &c.

On view the morning of Sale, and Catalogues had.

Lilies, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 22, at half-past 12 o'Clock precisely, 2000 Bulbs of LILIUM AURATUM, and 2000 very fine Bulbs of LILIUM KRAMERI, just arrived from Japan in the best possible condition; four cases of ARAUCARIAS, a quantity of MAPLES from Japan, and an importation of good Bulbs of the beautiful LILIUM NEILGHERRENSE. The white flowers of this magnificent Lily are delicately fragrant, and of great substance: it bears several flowers on a stem, each flower nearly a foot long. Also some excellent Bulbs of the following new varieties of Lilium neilgherense, viz.:—

LILIUM NEILGHERRENSE ROSEUM—the exterior of the flower of this variety is pink, the interior white.

LILIUM NEILGHERRENSE FLAVUM—a handsome light yellow-coloured form of this charming Lily.

LILIUM NEILGHERRENSE TUBIFLORUM—a magnificent pure white Lily, with very long flowers; figured in Wight's *Icones Plantarum Indiæ Orientalis*.

LILIUM NEILGHERRENSE TUBIFLORUM LUTEUM —a very handsome yellow-flowered variety of tubiflorum.

And some splendid Bulbs of other choice LILIES, including Bloomerianum, dauricum, purpureum, Humboldtii, superbum, parvum, californicum, and Wallichianum. Also a quantity of choice Bulbs and Tubers from California, including CALOCHORTUS, CYCLOBOTHRA, BRODIÆAS, TRITELEIAS, CALLIPRORAS, ERYTHRONIUMS, BLOOMERIAS, &c.; also fine blooming Bulbs of the handsome CRINUM BRACHYNEMA, AUSTRALE, C. PRAETENSE CANALICULATUM, tuberous-rooted handsome-flowered BEGONIAS, AMARYLLIS, with a variety of other Bulbs and Tubers.

On view morning of Sale, and Catalogues had.

The Unrivalled Collection of Specimen Stove and GREENHOUSE PLANTS of the late F. G. WILKINS, Esq., of Leyton.

MR. J. C. STEVENS has received instructions to offer for SALE by AUCTION, on the Premises, on THURSDAY, March 29, at half-past 12 o'Clock precisely, the magnificent COLLECTION of STOVE and GREENHOUSE PLANTS formed by the late F. G. Wilkins, Esq., of The Poplars, Leyton, comprising Heaths, Aphelexis, Statices, Hedaromas, Ixoras, Bougainvilleas, Clerodendrons, Crotons, Anthuriums, Azaleas, Palms, Ferns, Trained Pelargoniums, &c. This collection is without doubt one of the finest in the kingdom.

On view the day prior and morning of Sale, and Catalogues had.

Imported and Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 26, at half-past 12 o'Clock precisely, a large consignment of ONCIDIUM MACRANTHUM, just arrived per s.s. *Tasmania*, in the finest possible condition, and consisting of probably the largest masses that ever reached this country; fine plants of the pretty ODONTOGLOSSUM ROSEUM and rare pure ANODES MEDUSÆ, ONCIDIUM SERRATUM, ODONTOGLOSSUM CLAVICEPS, and some large masses of CATTLEYA labiata, an importation of GRAMMATOPHYLLUM ROMPLERIANUM and G. ELLISI; several small collections of Established ORCHIDS.

On view the morning of Sale, and Catalogues had.

Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, March 27, at half-past 12 o'Clock precisely, a COLLECTION of ESTABLISHED ORCHIDS, including many very choice and rare species, and the following:—

Odontoglossum sceptrum	Odontoglossum cirhosum
Oncidium phymatochilum	Masdevallia Harryana cerulescens
Lælia anceps Barkeriana	Oncidium superbiens
Dendrobium glumaceum	Cattleya Trianæ splendens
Cattleya Warneri	Odontoglossum navium
Oncidium macranthum hastiferum	Masdevallia Lindeni
Odontoglossum superbiens	Cymbidium eburneum
Trichopilia gloriosa var.	Oncidium tetracopis [andræ
Dendrobium McCarthiæ	Odontoglossum crispum Alexandræ

and several good established plants of

ODONTOGLOSSUM VEXILLARIUM,
ODONTOGLOSSUM REZLII,
a fine lot of the beautiful
ODONTOGLOSSUM CORONARIUM.
Also an importation of the handsome
CŒLOGYNE GLANDULOSA,
DENDROBIUM BARBATUM,
DENDROBIUM AUREUM,
and the true DENDROBIUM ALBUM.

Wight, in describing this beautiful Dendrobium in *Icones Plantarum Indiæ Orientalis*, says:—"This is one of the handsomest of the genus I have yet met with; large pure white flowers."

On view the morning of Sale, and Catalogues had.

City Auction Rooms, 38 & 39, Gracechurch Street, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the City Auction Rooms, as above, on THURSDAY, March 22, at half-past 12 o'Clock precisely, a first-class collection of CARNATIONS, PICOTEES and PINKS of fine growth; a superb assortment of 500 Standard and Dwarf ROSES, selected FRUIT TREES, hardy AMERICAN PLANTS, CONIFERÆ, and EVERGREEN SHRUBS, choice GREENHOUSE PLANTS, DAHLIAS, LILIUM AURATUM, Imported and other FLOWER SEEDS, &c.

On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, &c., 98, Gracechurch Street, E.C., and Leytonstone, E.

Cheltenham.

HIGHLY IMPORTANT UNRESERVED SALE of the unrivalled Collection of Specimen Exhibition STOVE and GREENHOUSE PLANTS, which for many years past have been exhibited at the leading Shows throughout the country with unprecedented success by Mr. James Cypher, who during the last two years has been the winner of 900 First Prizes and of £1075 in prize money, exclusive of a great number of Cups.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. James Cypher (who is giving up exhibiting on account of the want of house accommodation) to SELL the above COLLECTION of PLANTS, on the Premises, the Queen's Road Nurseries, Cheltenham, on WEDNESDAY and THURSDAY, April 11 and 12, at 12 for half-past 12 o'Clock precisely. The following form a portion only of the specimens to be offered:—

STOVE PLANTS.

	Height above the Pot.		Width.	
	Ft.	In.	Ft.	In.
PRITCHARDIA PACIFICA, probably the most perfect specimen in Europe	11	0	7	0
COCOS WEDDELLIANA, a grand specimen, vying in form and size with any other in existence	7	0	6	0
LIVISTONA ALTISSIMA, a truly majestic example of this rare Palm ..	7	0	10	0
GEONOMA FUMILA, with spread of fronds 9 feet				
DAVALLIA MOOREANA, three matchless specimens	3	0	5	0
GLEICHENIA MENZELII (true variety), the largest and best furnished plant of which we have any experience	4	6	2	6
„ RUPESTRIS (true), an extremely handsome specimen	2	9	5	0
„ FLABELLATA, an unusually attractive plant	3	0	5	6
CIBOTIUM PRINCEPS, a very handsome example			13	0
ADIANTUM SUTTONI and PERUVIANUM, each	3	0	5	0
And several other showy plants of other species				
ENCEPHALARTOS VROOMII —a noble Cycad	4	6	..	..
CROTON WILLIAMSII, considered to stand quite unrivalled alike as to its form, size, and colouring ..	6	0	4	0
„ IRREGULARIS, supposed to be the best plant in the country ..	5	0	4	0
Also numerous handsome examples of other species.				
EUCHARIS AMAZONICA, a pair of unusually fine plants, each			4	6
ANTHURIUM SCHERZERIANUM, several fine plants, conspicuous for their large spathes and vivid colouring				
„ CRYSTALLINUM, a very effective specimen				
IXORA WILLIAMSII, a grand specimen of this striking variety ..	3	0	4	0
„ AMABILIS, a free-growing specimen of this beautiful variety ..	3	0	3	6
„ COLEI, fine examples of this and other varieties				
FRANCISCEA HOPEANA, a magnificently furnished plant	3	6	4	0
IMANTOPHYLLUM MINIATUM, a gigantic specimen	3	0	5	6

GREENHOUSE PLANTS.

AZALEA SIR ROBERT HAVELOCK, a perfectly symmetrical plant	4	0	4	0
„ PRINCESS OF WALES, handsomely formed	3	6	5	0
„ FLAG OF TRUCE, a remarkably well-grown plant	3	6	4	0
„ MADAME VANLEIZEL, a most imposing plant	3	6	4	6
And several other well-grown specimens of other selected varts.				
ERICA VICTORIA REGINA, a grand plant	2	0	3	6
„ VENTRICOSA CECCINA MINOR, most symmetrically grown	2	6	3	6
„ CANDOLLEANA, a particularly fine plant	2	0	2	9
„ ÆMULA, and several other striking examples.				
HEDAROMA TULIPIFERA, the best plant extant	5	0	4	6
PIMELEA DECUSSATA, a grand plant, well set	3	0	4	6
STATICE LIBERTASTA GILBERTII, the largest and best plant known	—		4	0
DICKSONIA ANTARCTICA PENDULA, noble plant of this distinct variety.				
PHORMIUM VEITCHII VARIEGATA, a dense plant, conspicuous for its rich colouring	5	6	5	0
CORDYLINE INDIVISA, a noble plant	6	0	—	

The Stock may be viewed at any time. Catalogues may be had (6d. each, returnable to purchasers) of Mr. J. CYPHER, on the Premises; and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C.; and Leytonstone, E.

MR. E. P. NEWMAN will SELL by AUCTION, on the Premises, at Mr. Walker's, Stafford Bridge, Hillingdon, Uxbridge, on MONDAY and TUESDAY, March 19 and 20, at 11 for 12 o'Clock each day, 300 dozen Bundles GARDEN and HEDGE STAKES; 2000 Bundles PEA STICKS; 16,000 BIRCH, ALDER and OAK POLES; quantity of OAK PALINGS; 200 dozen HURDLES, &c.

On view the Saturday preceding the Sale, and Catalogues can be obtained at the office of the Auctioneer, 41, High Street, Uxbridge, Middlesex.

Ladbroke Nursery, Notting Hill, W.

TO NURSERYMEN, GENTLEMEN, and OTHERS.

MR. JAMES REEVES is instructed to SELL by AUCTION (without reserve), on THURSDAY, March 22, the whole of the STOCK in TRADE, consisting of Greenhouses, Pits, and Hot-water Pipes, Boilers, &c.; Plants in Pots, Arbleas, Ferns, Cerasuses, Thymanthuses, Dicksonia antarctica, large Stephanotis, &c.; SHOOT-CART, SHANROPE PILE and Effects.

On view two days prior to Sale. Catalogues with full particulars of the Auctioneer, 178, High Street, Notting Hill, W.

Exhibition, Conservatory, Greenhouse, and Stove PLANTS.

ATTRACTIVE SALE of a splendid Collection of SPECIMEN PLANTS, the property of a leading Firm of Exhibitors in the North of England, who are giving up showing.

ARTINGSTALL AND HIND beg to notify that the receipt of peremptory instructions to SELL by AUCTION, at the Exhibition Hall, March 23, at the Manchester Exchange, Manchester, a valuable collection of EXHIBITION PLANTS.

Catalogues in preparation, which may be obtained on March 21 on application to the Auctioneers, 51, Princess Street, Manchester.

J. WARD begs to announce that, owing to an OBJECTION to his two EXHIBITION VANS BEING SOLD on the Premises, they will be SOLD on GROUND ADJOINING the Station of the Eastern Counties Railway and Hotel, on MONDAY, March 19, at 12 o'Clock.

FOR IMMEDIATE DISPOSAL, a SMALL ESTATE of about 32 acres, with House and commodious Buildings, situate in Norfolk, contiguous to Railway and Station, well adapted for Nursery Grounds, nothing of importance being near. A large town within a short distance. Fine stream of water adjoining. Apply

M. E. L., care of George Kelly, 23, King Street, Parliament Street, Westminster, S.W.

TO BE LET, about 28 miles from London, and near a Railway Station, a KITCHEN GARDEN, containing 3½ Acres in a high state of cultivation and well stocked with choice Fruit Trees, Three Ranges of Glass, heated with hot water, and a quantity of Cold Pits. Also about 65 ACRES of PASTURE LAND. For particulars apply to Messrs. THYNNE AND THYNNE, 21, Great George Street, Westminster, S.W.

To Florists, Nurserymen, and Others.

TO BE LET, or the GROUND LEASE TO BE SOLD, a very VALUABLE PROPERTY, with large frontages to Edgware Road and St. John's Wood Road, where the business of a Florist has for many years carried on. There is a good House and other suitable buildings on the ground. Apply to

Messrs. RUSHWORTH, ABBOTT AND RUSHWORTH, 22, Savile Row, W.

TO BE LET, a NURSERY and MARKET GARDEN, in the neighbourhood of Reigate, containing rather more than an acre, planted with fruit trees. Thereon is a good Cottage, Hothouse, Cucumber-house, and Orchard-house, well-stocked with Peach and other trees. Rent £25. The present occupant has resided thereon upwards of twenty years. Letters to be addressed to

Messrs. TAYLOR, HOARE, AND TAYLOR, 28, Great James Street, Bedford Row, London, W.C.

Pelargoniums, Pelargoniums.

JAMES HOLDER AND SON have a fine healthy Stock of the above to offer, as the following low prices for WELL SET 3½ per 100, distinct sorts, hamper and package included; also extra strong plants, in 32-pots, 18s. per dozen, in 48-pots, 9s. per dozen, 70s. per 100, basket and packing extra. Crown Nursery, Reading.

Important Notice.

JAMES HOLDER AND SON beg to inform their numerous customers, and the public generally, that the PELARGONIUMS advertised by them are not the Zonal Class, but consist of Show, French, and Fancy varieties. The Stock and Collection is First-class, as certified by numerous testimonials received from parts of the country.

Crown Nursery, Reading.

Lobelia, Emperor William.

H. B. MAY offers strong plants of this fine LOBELIA at 3s. per dozen, post-free; extra large, 12s. per 100. GENISTAS, 18s., showing bloom, 40s. and 50s. per 100.

Dyson's Lane Nursery, Edmonton, N.

To the Trade.

GERMAN LILIES of the VALLEY, extra strong for Forcing, in single crowns, can be supplied on very advantageous terms by ordering at once. For price and samples apply to

C. PUTTARKEN, 63, Horton Lane, Bradford, Yorkshire.

Verbenas, Verbenas, Verbenas

WILLIAM BADMAN offers Purple King, White King, Crimson, and Rose VERBENAS, in single pots, at 12s. per 100; or turned out of pots, 10s. per 100. Good rooted Cuttings, 6d. per 100, 5os. per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S.E.

To Potato Planters.

CHRISTMAS QUINCEY begs to state that his third importation of AMERICAN POTATOS of this season has arrived, and these, with upwards of 50 tons of the best leading English sorts, makes his selection one of the best in the kingdom. See Retail LIST, and compare with other houses, post-free on application.

N.B.—Wholesale LIST on receipt of Trade Card.

CHRISTMAS QUINCEY, Seed Potato Merchant and Grower, Peterborough.

HARDY HEATHS, 100,000 :—
12 plants in 12 varieties, 6s.
24 plants in 24 varieties, 12s.
50 plants in 25 varieties, £1.
100 plants in 40 varieties, £2.
For varieties see CATALOGUE.
ANDROMEDAS, various.
LEDUMS, various.
JAMES SMITH, Darley Dale Nurseries, Matlock.

VERBENAS, VERBENAS, VERBENAS.—Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6s. per 100, 50s. per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, 8s. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

Planting Season.

E. BURGESS begs to offer the following:—Strong Standard and Pyramid PEARS, ROSES, Evergreen and Deciduous Flowering SHRUBS, English OAK, ELMS, and LIMES, up to 10 feet, and Spruce FIRS. Prices on application.
The Nurseries, London Road, Cheltenham.

Presented (by post) on application,

NEW CATALOGUE for 1877.
For remarks and List of Plants offered, with prices, see last week's large Advertisement. Plants true to name, well hardened off, low in price. See New Catalogue
WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

To the Trade—Turnip Seeds.

HAND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.
Seed Growing Establishment, Wisbech.

To the Trade.

STANDARD and DWARF ROSES of the leading sorts—splendid Plants, no better in the Trade, well-rooted and good—about 15,000 Standards and 5000 Dwarfs, guaranteed true to name. For lowest prices apply to
GRANT & CO., Park Nursery, Portadown, Ireland.

Green Ivies of sorts in four kinds.

ROBERT PARKER, having a surplus stock of Small-leaved IVIES in pots, suitable for edgings, pattern beds, covering banks, &c., will be pleased to dispose of them in quantities, at very low prices. Samples, sizes, and prices per dozen, 100, or 1000, will be given on application.
Exotic Nursery, Tooting, Surrey, S.W.

Herbaceous and Alpine Plants (illustrated).

THOMAS S. WARE'S CATALOGUE of the above for the present year is Now Ready, and includes New, Rare, and Choice Perennials, Bamboos, and Ornamental Grasses, Bog Plants, and Aquatics; also, a few Bulbs. Post-free on application.
Hale Farm Nurseries, Tottenham, London.

Wood's Early Frame Radish (for Stock).

WOOD AND INGRAM can supply a limited quantity of the above Seeds grown from specially selected and transplanted roots, which may be relied upon as being as being as true and pure as the original stock sent out by their firm many ago.
Seed Merchants, Huntingdon.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep the free growth. 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive List free on application.
RICHARD SMITH, Nurseryman, Worcester.

ALTERNANTHERAS, good stuff, shaken out and forwarded free.
ALTERNANTHERA AMŒNA, 12s. per 100.
ALTERNANTHERA MAGNIFICA, 8s. per 100.
ALTERNANTHERA PARONYCHIOIDES, 8s per 100.
CLOVES, old English, true, 20s. per 100 pairs.
WILLIAM HOLMES, Frampton Park Nurseries, Hackney, London, N.E.

LOBELIA PUMILA MAGNIFICA (true). This Lobelia is said to be identical with the one recently offered under the name of Emperor William (see *Gardeners' Chronicle*, March 10, p. 333). Fine, strong-rooted cuttings, 4s. per 100, 500 for 18s., package and carriage free.
Mr. MARRIOTT, Mellish Road, Walsall.

Hardy Florists' Flowers.

THOMAS S. WARE'S New SPRING CATALOGUE of the above, including Pansies, Violas (Bedding), Delphiniums, Daisies, Pinks, Pæonies, Phlox, Pyrethrums, and others, for immediate Planting, may be had free on application.
Hale Farm Nurseries, Tottenham, London.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LIST for 1877.
Extra Strong SEAKALE, 2s. per dozen.
RICHARD SMITH, Nurseryman, Worcester.

To the Trade.—Mangel Wurzel Seeds, 1876 Growth.

H. AND F. SHARPE invite the attention of the Trade to their fine selected stocks of home-grown MANGEL SEEDS, raised from fine picked bulbs. Special offers and samples may be had on application.
Seed Growing Establishment, Wisbech.

To Market Gardeners and Others.

S. BIDE has to offer good, strong, pricked-out plants of BATH COS LETTUCE, at 5s. per 1000, or 500 for 3s. Cash with order to
S. BIDE, Alma Nursery, Farnham.

H. AND F. SHARPE'S Wholesale Spring CATALOGUE of HOME-GROWN AGRICULTURAL and GARDEN SEEDS is now ready, and may be had on application. The prices will be found very moderate.
Seed Growing Establishment, Wisbech.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden.—"Gee's superior Bedfordshire-grown Plants and Seeds have attained much celebrity."—*Bedford Mercury*, July 29, 1876. "The Seals of the district offer facilities enjoyed at few places for bringing away plants, &c., and under the skill and perseverance of Mr. F. Gee they are turned to good account."—*Vide Agricultural Gazette*, July 31, 1876. See other opinions of the Press, also a Treatise on the Cabbage. CATALOGUES, lowest prices, &c., on application to FREDERICK GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

Potatos.

BRESEE'S PROLIFIC.—A few Tons of this excellent variety to be Disposed of: grown from seed imported last season. Price £5 per ton cash.
HENRY CLARKE AND SONS, 32, King Street, Covent Garden, W.C.

SPECIAL OFFER.—Maiden PEACHES, NECTARINES, APPLE, PRUNE, and CHERRY, fine; 1 yr. SPANISH CHESTNUT, BIRCH, 2½ to 3½ feet.
H. HEFFERMAN, Nurserymen, Egham, Surrey.

CATALOGUES. — His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (by post) to
S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

To the Trade Only.

SEAKALE SETS, ready for Planting, at 10s. per 1000.
WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

SEEDS—SEEDS—ALL KINDS.—Before ordering your Seeds, send for Illustrated CATALOGUE, which contains full Directions,
How, When and What to Sow.
PENGILLEY AND POOL (successors to the Heatherside Nurseries Company), 59, Queen Victoria Street, London, E.C.

W. F. BOFF offers magnificent Bulbs of LILIUM AURATUM, 12s. per dozen: easy grown; CROCUS, ORCHIDS, &c. 30s. per 1000, package included. Terms Cash.
Cemetery Nursery, Gravesend, S.E.

New Roses for 1877.

A DESCRIPTIVE LIST of all the best New Roses of the Season is now ready.
Extra fine plants ready in March.
CRANSTON AND COMPANY, King's Acre Nurseries, near Hereford.

Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS (by THOMAS RIVERS) is now ready: also CATALOGUE of Select ROSES. Post-free on application.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

LARGE TREE BOX and EVERGREEN HOLLY.—Handsome, bushy, and well-rooted, will transplant safely, balls of earth, 3, 4, and 5 feet high. Tree Box lives under trees better than any other Evergreen tree. A selection invited. Price on application to
T. JACKSON AND SON, Nurserys, Kingston, Surrey.

120,000 Vesuvius Geraniums for Sale.

F. C. WOOLVEN, Langhedge Nurseries, Church Road, Upper Edmonton, London, N., has strong, well-rooted Plants of above for disposal, at 8s. per 100, packed and forwarded to any London Railway Station gratis, on receipt of Post-office Order for number required, payable at Upper Edmonton Post-office, London, N. Also several thousands of CHRISTINE and Double GERANIUMS at the same price.

LOBELIA, EMPEROR WILLIAM.—For Sale, 10,000 plants from Cuttings, ready the first week in April. This Lobelia is one of the finest ever introduced, being of dwarf compact habit, with large flowers of the most intense blue, and, what is of great consequence, will remain in full bloom from June to November. Per 100, 7s. 6d.; per dozen, package free. Price to the Trade on application.
T. GOODENOUGH, Grove Nursery, Edgware, Middlesex.

CENTROPOGON LUCYANUS.—Fine Stock Plants of this splendid plant as noticed in *Gardeners' Chronicle*, Feb. 24, price 3s. 6d. and 5s. each; also very fine LIMES, POPLARS, MOUNTAIN ASH, and AUCUBAS, suitable for London Planting.
N.B.—A few clean, extra-sized, dwarf-trained APRICOTS, fit for planting now.
THOMAS BUNYARD AND SONS, Nurseries, Maidstone.

PATERSON'S VICTORIA POTATOS, Grown from Scotch Seed of last year.—Good sample for planting. Price per cwt., ton, or for quantities of not less than 3 tons, on application.
JOHN AND GEORGE MCHATTIE, Seed Merchants, Chester.

Delphinium cardinale.

W. THOMPSON, DEDHAM, Tavern Street, Ipswich, begs to offer SEEDS of the above-named handsome hardy perennial, SCARLET LARKSPUR, distinct from D. nudicaule, in packets post-free for thirteen stamps. His Descriptive CATALOGUE for 1877 is now ready, and should be seen by all Amateurs of Hardy Plants. Post-free to any address.

To the Trade or Private Growers.

POTATOS.—We can still supply from the undermentioned prolific varieties:—
Breese's Excelsior, Climax, Peerless, Browneli's Beauty, Fluke Kidney, Compton's Surprise, Early Flourball, American Wonder, Hundredfold Fluke, Fortyfold, Redskin Flourball, Early Shaw, Early Goldrich.
C. R. TEEEMAN, Economic Seedsman, Norwich.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.
Mr. WEBB, Calcot, Reading.

Seed List.

CHARLES SHARPE AND CO.'S WHOLESALE LIST of VEGETABLE and FARM SEEDS is now ready, and will be sent post-free on application.
CHARLES SHARPE AND CO., Seed Farmers, Sleaford; and at 31, New Corn Exchange, Mark Lane, London, E.C.

Select Swede and Turnip Seeds.

CHARLES SHARPE AND CO.'S carefully-selected Stocks of SWEDE and TURNIP SEEDS, the produce of their own Seed Farms in Lincolnshire, are offered in their Wholesale Seed List for 1877.

Select Mangel Seeds.

CHARLES SHARPE AND CO. have paid much pleasure in asking attention to their select Stocks of MANGEL WURZEL SEED, which have been grown under their personal supervision upon their own Seed Farms at Bourne, Sleaford, and in the adjoining parishes. Descriptions and prices are given in C. S. & Co.'s Wholesale Seed List for 1877.

EVERY DESCRIPTION of HORTICULTURAL and AGRICULTURAL SEEDS, SEED POTATOS of finest quality, both Home-grown and Imported.

CHARLES SHARPE AND CO., Seed Farmers, Sleaford, and 31, New Seed Market, Mark Lane, London, E.C. All letters address Sleaford.

LARGE EVERGREEN SHRUBS.
PINUS AUSTRIACA, 6 to 10 feet.
SPRUCE FIRS, 8 to 12 feet.
PORTUGAL LAURELS, perfect pyramids, 6 to 8 feet.
SILVER-LEAF, SILVER-VEIN, 6 to 8 feet.
The above were all transplanted spring, 1876, and will remove any distance with safety. Price on application to
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

THE NEW PLANT and BULB COMPANY beg to call special attention to their NEW LIST (No 31), just published. Contents:—New Hardy Bulbs, New and Rare Lilies, New Hardy Cyprepedia, New Ferns, Seeds of New Hardy Flowering Plants, &c. All of sterling merit, and at low prices. Free on application.
Lion Walk, Colchester.

Good Verbenas, Cheap.

S. BIDE has now a splendid stock of good, strong, healthy VERBENAS, free from any disease, consisting of White, Purple, Scarlet, Pink, and various other colours, at 6s. per 100, or 50s. per 1000, free for cash. Send orders early to
S. BIDE, Alma Nursery, Farnham.

Genuine Garden Seeds.

WM. CUTBUSH AND SON have for many years held some of the finest Stocks of SEEDS in the Trade, and they believe that no house can possibly supply better quality. CATALOGUES post-free on application.
HIGHGATE, LONDON, N.; and BARNET, HERTS.

PRICKLY COMFREY.—The most productive and permanent Forage Plant known: withstands drought: can be cut five times a year: 120 tons have been cut in one year.
C. R. FREEMAN, Economic Seedsman, Norwich.

Cinerarias.

F. AND A. SMITH will send Blooms of the above from their superior Collection to all applicants on receipt of two stamps.
The Nurseries, West Dulwich, S.E.

NEW GERANIUMS—
LEMOINE'S.
DAME BLANCHE } Good double whites,
MADAME AMELIA BALTET } 3s. 6d. each.
DEPUTY PICK, 2s. 6d. each.
DEPUTY VIOX, 2s. 6d. each.
The above received First-class Certificates from Royal Horticultural Society during summer 1876.
BEAUTY of OXTON (Bull), 2s. 6d. each.
KONIG ALBERT, double Ivy-leaf, 6s. per dozen.
Post free. Post-office orders payable to
FREDK. PERKINS, Nurseryman, Regent Street, Leamington.

GLOXINIA CRASSIFOLIA GRANDIFLORA.—Magnificent strain, quite distinct: sown now will flower in autumn. Erecta and hybrida, separate or mixed, 2s. and 2s. 6d. per packet.
PETUNIA, double large-flowered, yields a large percentage of double flowers, 1s. 6d. per packet.
STEPHANOTIS FLORIBUNDA.—Remarkably free-flowering variety from the Mauritius, 2s. 6d. per packet.
CATALOGUES free on application.
JAMES TYNAN, Seed Warehouse, 63, Great George Street, Liverpool.

SPRING FLOWERING PLANTS—
PRIMROSE, double yellow, 3s. per dozen, 20s. per 100.
" double lilac, 2s. 6d. per dozen, 15s. per 100.
" double purple-crimson, 6s. per dozen, 45s. per 100.
" double crimson, true, 18s. per dozen.
" single yellow, flowers in scapes, 9s. per dozen.
CARDAMINE PRATENSIS fl.-pl., 3s. per doz., 20s. per 100.
SISYRINCHIUM GRANDIFLORUM, in pots, 3s. 6d. per dozen.
PANSY, Blue King, strong, 2s. per dozen, 10s per 100.
VIOLA, Blue Bell, strong, 2s. per dozen, 10s per 100.
" lutea Grevei, strong, 2s per dozen, 10s. per 100.
POLYANTHUS, sorts, strong, 2s. per dozen, 10s. per 100.
DAISIES, white and red, 3s. 6d. per 100.
WALLFLOWERS, double German, 6s. per 100.
" single dwarf yellow, 6s. per 100.
RODGER MCCLELLAND AND CO., 64, Hill Street, Newry.

VINES.

MUSCAT OF ALEXANDRIA, VENN'S BLACK MUSCAT, WALTHAM CROSS WHITE.

JOHN KEYNES

Has a few of the above, in fine Fruiting Canes, from 1-yr. old eyes. Warranted to fruit six to ten bunches of Grapes.

NO OTHER SORTS LEFT.

The NEW ROSES for 1877 now ready, in very extra fine Plants.

The NEW DAHLIA and VERBENA CATALOGUE ready.

SALISBURY.—March 1, 1877.

RICHARD SMITH'S GUINEA COLLECTION OF VEGETABLE SEEDS

Contains the following excellent sorts

(Carriage Free):—

PEAS, Ringleader	.. ..	1 quart
,, Improved Sangster's	.. .. ..	1 ,,
,, Veitch's Perfection	.. .. ..	1 ,,
,, Fortyfold	.. .. ..	1 ,,
,, Prizetaker	.. .. ..	1 ,,
,, Blue Scimitar	.. .. ..	1 ,,
BEANS, Johnson's Wonderful	.. ..	1 ,,
,, Broad Windsor	.. ..	1 pint
,, Dwarf French	.. ..	½ ,,
,, Scarlet Runner	.. ..	1 ,,
BEET, Nutting's Red	.. .. ..	1 pkt.
KALE, Asparagus	.. .. ..	1 ,,
,, green curled	.. .. ..	1 ,,
BRUSSELS SPROUTS	.. .. ..	1 ,,
BROCCOLI, Adams' Early	.. ..	1 ,,
,, Snow's Winter White	.. ..	1 ,,
,, Purple Sprouting	.. ..	1 ,,
,, Walcheren	.. ..	1 ,,
CABBAGE, Early Nonpareil	.. ..	1 ,,
,, Enfield Market	.. ..	1 ,,
,, Worcester Incomparable	.. ..	1 ,,
,, Red Pickling	.. ..	1 ,,
CARROT, Early Horn	.. ..	1 oz.
,, James' Intermediate	.. ..	1 ,,
,, Improved Altringham	.. ..	1 ,,
CAULIFLOWER	.. .. ..	1 pkt.
CELERY, fine Red	.. .. ..	1 ,,
,, fine White	.. .. ..	1 ,,
CRESS, Broad-leaved	.. .. ..	2 oz.
,, Curled	.. .. ..	1 ,,
,, Australian	.. .. ..	1 pkt.
CUCUMBER	.. .. ..	2 pkts.
ENDIVE, Moss Curled	.. .. ..	1 pkt.
LEEK, Musselburgh	.. .. ..	1 ,,
LETTUCE, Paris White Cos	.. ..	1 ,,
,, Drumhead	.. ..	1 ,,
,, Worcester Cabbage	.. ..	1 ,,
MUSTARD	.. .. ..	4 oz.
MELON	.. .. ..	1 pkt.
ONION, White Spanish	.. ..	2 oz.
,, James' Keeping	.. ..	1 ,,
PARSLEY, Extra Curled	.. ..	1 pkt.
PARSNIP, Hollow-crowned	.. ..	1 oz.
RADISH, Wood's Early Frame	.. ..	1 ,,
,, Long Scarlet	.. ..	1 ,,
,, Red Turnip	.. ..	1 ,,
,, White Turnip	.. ..	1 ,,
SAVOY, Green Curled	.. ..	1 pkt.
SPINACH, Round	.. ..	2 oz.
,, Prickly	.. ..	2 ,,
TURNIP, Early Snowball	.. ..	1 ,,
,, Early Red-top	.. ..	1 ,,
TOMATO, Large Red	.. ..	1 pkt.
VEGETABLE MARROW	.. ..	1 ,,
SWEET BASIL	.. ..	1 ,,
SWEET MARJORAM	.. ..	1 ,,

SEED WAREHOUSE, 61, HIGH STREET, **WORCESTER.**

VINES, VINES, VINES.

F. & A. SMITH,

THE NURSERIES, WEST DULWICH, S.E., Offer from a large Stock strong well-grown fruiting and planting Canes, at low prices.

List on application.

Vines.



E. G. HENDERSON AND SON offer splendid Fruiting Canes of all leading kinds. Planting Canes, 3s. 6d., 5s., and 7s. 6d. each; Golden Queen, Venn's Black Muscat, and Waltham Cross, 42s. and 60s. per dozen. Trade supplied.

Pine-apple Nursery, Maida Vale, W.

New Continental Roses for 1877.

H. BENNETT'S own selection, in the best possible Plants, ready in March.

Descriptive LISTS may now be had post-free on application.

MANOR FARM NURSERY, STAPLEFORD SALISBURY.

GODETIA, LADY ALBEMARLE.

First-class Certificate Royal Horticultural Society, August 2, 1876.



A magnificent new variety, growing 1 foot high. Flowers 3½ to 4 inches across, and of the most intense glowing carmine-crimson colour, which being produced in wonderful profusion give the plants the most charming appearance. This is the finest annual ever sent out, and being extremely hardy and easy of cultivation, should be in every garden.

Seed, with full cultural directions, per packet, 1s. 6d., post-free.

"We have scarcely any plant of such a lovely shade of colour."—*The Villa Gardener, September*, 1876.

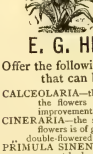
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PLANES, 12 to 14 feet.
CHESTNUTS, Horse, 11 to 12 feet.
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POPLARS, Lombardy, 15 to 20 feet.

All with clean stout stems.

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PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 8 inches at 4 feet from the ground.

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Mr. SHIRLEY HIBBERD describes it, after two years' trial, as "*the very model* of a gentleman's Potato."

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INVITE INSPECTION OF THEIR COLLECTION OF THE ABOVE, WHICH ARE NOW IN FINE BLOOM.

The CAMELLIAS are also still very fine.

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Vigorous growing, free flowering, beautiful habit, quite distinct, and described by Dr. Masters as one of the best hybrid varieties of Fuchsia. The blooms, 3 inches in length, are of great substance. The tube and sepals are of a light rosy carmine, corolla deep carmine.

This is a valuable decorative plant. It was awarded First-class Certificates at the Crystal Palace and Royal Botanic Society, Regent's Park, and is figured in the *Floral Magazine* for February.

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Perhaps the Finest Rose for Bedding ever sent out.

COLOUR OF "CHARLES LEFEBVRE."

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Its inflorescence may be imagined when it is stated that flowers were cut daily from June to November 20, 1876.

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COMMENCING FIRST WEEK IN MAY.

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And several good established Plants of ODONTOGLOSSUM VEXILLARIUM, O. ROEZLII, a fine lot of the beautiful O. CORONARIUM; also an importation of the handsome CŒLOGYNE GLANDULOSA, DENDROBIUM BARBATULUM, D. AUREUM, and the true D. ALBUM—Wight, in describing this beautiful Dendrobium, in *Icones Plantarum Indiæ Orientalis*, says: "This is one of the handsomest of the genus I have yet met with; large pure white flowers."

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The Finest Strain of Quilled Aster in Cultivation.

The entire Stock of all the New Varieties is in the hands of

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Blushing Bride.—A perfect gem—the outer ring of the flower of a pretty pale pink colour, gradually shading off to a centre of the purest snow-white; pale salmon guard-petals. Form of flower beautifully full *s. d.*
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Package and carriage free for 5000 upwards (or plants equivalent) to any Railway Station in England. Cash must accompany all orders from unknown correspondents. Post-office Orders made payable at Bures.

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Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18s. to 30s. per dozen.

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Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or £5 per 100.

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The largest Black Grape in Cultivation.

Eyes or Scions from fine, strong, well-ripened wood, 10s. 6d. each

Ditto ditto ditto second size .. .. 7s. 6d. ,,

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WM. CUTBUSH & SON

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BATH COS, White Seed.
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Each, per Packet, 1s.

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STOCK PLANTS are now ready.

Very fine and clean.

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New Bedding Tropæolum, "Hunterl."

DOWNIE AND LAIRD have much pleasure in offering for Spring delivery the above Tropæolum, which has been raised by Mr. Andrew Hunter, gardener to Lord Shand, New Hailes House, near Edinburgh. This is an excellent Bedding Tropæolum, surpassing its parent Cooperi, being of a dwarfer habit, and we can with perfect confidence recommend it. The Editors of the *Gardeners' Chronicle* say, "It grows about 6 inches high, is very neat and compact in habit, and a most profuse bloomer, the flowers being of medium size, nice form, and of a bright scarlet colour." Price, per dozen plants, 12s.; each, 2s. 6d. Usual discount to the Trade.

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These Nurseries comprise about 50 Acres of well-grown and a most useful assortment of STANDARD, ORNAMENTAL, FOREST, FRUIT, and ROSES, and SHRUBS, all of which are in a most healthy and fit condition for removal. A personal inspection invited. CATALOGUES free on application.

The Nurseries are within a few minutes' walk of the Clapham Junction and Wandsworth Common Railway Stations.

Special Offer.

SEED POTATOS, warranted True and Free from Disease. In cwt. bags.

RED-SKINNED FLOURFALL, 8s. per cwt.
JERSEY BLUE, 8s. per cwt.
REGENTS, Improved, 8s. per cwt.
DUTCH RED, 8s. per cwt.
EARLY ROSE, 8s. 6d. per cwt.
SNOWFLAKE, 24s. per cwt.
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Many other sorts in stock.

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DANIELS BROS., Norwich.

LYE'S FAVOURITE.—The handsomest and best Potato ever offered. Indispensable for Exhibition. This variety will be the greatest Prize Winner of the season. We have purchased the entire Stock of Mr. James Lye, Clyffe Hall, Market Lavington, and parties wishing to grow this remarkably handsome and beautiful variety should order at once, as the stock is getting very limited. It can only be obtained direct from us. Price 5s. per lb. Orders of 20s. and upwards carriage free.

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MESSRS. JNO. STANDISH AND CO.'S CATALOGUE for Autumn, 1876, and Spring, 1877, is now ready, and may be had, post-free, on application.

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Plants of Recent Introduction. Conifers.
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Azalea indica and Rhododendron. Roses, Standards and Dwarfs,
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Hardy Trees and Shrubs. Grape Vines.
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LÉVÊQUE AND SON, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand ROSE TREES, Standards, Half-standards, Dwarfs, and on own root—New and Old sorts.

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SPLENDID PYRAMID CAMELLIAS, price 12s. to 50s. each; small, 2s. 6d. to 10s.

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LÉVÊQUE AND SON, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand strong, healthy Flowering BULBS of GLADIOLI. The Seedling Bulbs are particularly recommended—their flowers equal to the named sorts (seeds have been taken from the best sorts of the collection). GLADIOLI, Seedlings, 8s. per 100, £3 per 1000, £26 per 10,000; mixed white, red, pink, 10s. per 100; separate colours, 12s. to 20s. per 100; yellow, 24s. per 100. Named sorts per 100, 10 sorts, 20s.; 25 sorts, 50s.; 50 or 100 sorts (the best), from 25s. to £6, less or more, according to the novelty. For a good flowering bulb, English Cheques on London, or Post-office Orders on Paris, accepted in payment.

RHODODENDRON PONTICUM, 500,000, all twice or thrice transplanted, bushy plants:—

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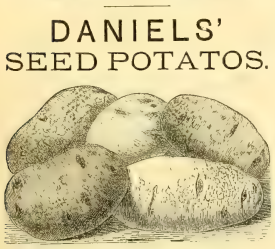
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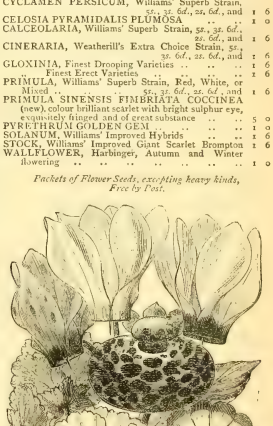
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THE QUEEN'S SEEDSMEN,
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SATURDAY, MARCH 17, 1877.

THE COLORADO BEETLE.

IN a recent notice of Mr. Riley's last entomological report we pointed out the grounds there were for fearing that the Colorado beetle might be introduced into this country. We now propose to devote a short space to considering how it should be dealt with if it should come; and that the reasonableness of our prescription may commend itself to our readers, we must give them a very brief summary of the conditions under which it is likely to present itself.

The eggs are laid on the leaves, the larvæ feed on the leaves, and the pupæ undergo their metamorphosis underground, and as there is no importation of growing Potato plants from America to England its coming in any of these forms need not be dreaded. But the perfect insect has wings, flies on board ships in the American harbours, and may easily be brought over in them. Therefore, if the insect comes at all, it is almost certain that it will arrive in the beetle stage. When winter comes it burrows into the ground, often to a considerable depth, and remains there in a torpid state, coming out in spring. In other words, it goes down in the beginning of October and comes up in the end of May, hence the only time when we have to fear its coming is from the beginning of June to the end of September.

We see that our Board of Trade and our Colonial Department have both been taking precautions against its arrival during the rest of the year—when the beetle is sound asleep 12 or 18 inches underground. We can guarantee the success of their precautionary measures until the beetle wakes up again; when it does so, the importation of Potatos and relative measures of precaution will be at an end!

On reappearing the first business of the beetle is to begin to propagate a fresh brood, and the female will lay her eggs on the young shoots of the Potato plant in about a week after her reappearance. The eggs are hatched in about a week after being laid. The larvæ take about a fortnight to become full fed. They then descend and bury themselves in the earth, and in three or four days become pupæ, in which state they remain for about ten days, after which the perfect insect appears.

It is said that the perfect insect does not pair for about seven days after its appearance, but this is opposed to the analogy of insects in general, which do not usually lose any time in pairing after emerging from the pupa state; but, assuming that it is as stated, the above periods give about thirty-five days as the time required to produce a new generation, and as the number of eggs which each female is said to lay is from 700 to 1000, perhaps an increase of 300 fertile females would be a fair estimate for each. The total increase at that rate from one female in one year is put down at upwards of 38,000,000.

Now applying these premises to our own position let us see during what month the insect is most likely to arrive in England. The period when there is least fear of their coming over is during the thirty-five days (June) when the first brood is, so to say, being manufactured. The numbers of the old last year's insects are comparatively few, and the new hordes are not yet

in motion. After that they go on progressively, increasing both in numbers and apparently in vitality and restlessness. The time most to be dreaded is thus September. But if they come in September they will not then breed. Their instincts forbid their breeding when there will be no food for their offspring. They will descend into the ground, and the first intimation that we shall have of their arrival will be in the following month of June, when some one near Cork, Londonderry, Liverpool, or Glasgow, will detect a colony of young larvæ in the corner of some Potato field. Then is the time to attack them. In whatever month they come, and in whatever form they come, experience has shown that the stage in which they can be most successfully encountered is the larva stage. The eggs are laid on the under side of the leaves, and are not likely to be noticed. The pupæ are underground, and of course safe from interference, and the perfect insect is enclosed by a coat of mail, on which poison, whether liquid or in powder, falls innocuously, and it has wings on which it can fly away and be at rest elsewhere; but in the larval stage it is not so protected, and has no such means of retreat. Its soft, fleshy body easily absorbs the poison, and the insect dies.

As our readers know, Paris green (an arseniate of copper) is the poison which has been found most successful in America, and it has the advantage of cheapness and being easily administered, whether in powder or in liquid. But this is not the only mode in which the destruction of the insect can be accomplished. Besides the powdering or sprinkling of the larva with Paris green or other poison, there is hand-picking and machine collecting both of the larva and perfect insect. Both of these are largely used in North America, and with good effect. But there is another means which ought to be our first resource here—it is mowing down the vines of the Potatos on which the larvæ are feeding, and burning them. This affects all stages of the insect except the pupa. It is true that it is not used in North America, but the reason is that the object there is different from ours. The American farmers have never made any attempt at exterminating or stamping-out the insect, which is what we must aim at. What they have tried to do has been to kill the insects so as to save the present crop. Of course, if you cut off the leaves you destroy your crop of Potatos even more effectually than the beetle would, for it might spare some leaves, whereas cutting them leaves none. With us, on the other hand, everything must give way to securing the destruction of the insect. Not only would we mow the vines down entirely and burn them, but we would also hand-pick any stragglers, and sprinkle the field as often as is necessary all over with Paris green, so as to destroy any individuals that might have chanced to fall to the ground in the course of the mowing.

If this treatment is followed out stringently we should have little fear of the Colorado beetle, even assuming that it should be able to accommodate itself to the different conditions and climate of this country as readily as it has done to those of Canada and the Eastern States.

There are, however, two lions in the path—one is the shortness of the period that we have to work in. The larval stage, as above said, lasts in all only a fortnight—two or three days must be deducted from the commencement of this, while the larvæ are still too small to be observed, then two or three more to give time for the chance of their attracting notice; in fact, it is most probable that the first thing that will attract the farmer's eye will be the flagging of the Potato vines from the attacks of the beetle. There will then remain perhaps scarcely a week in which to accomplish their destruction; and it may be that, when the farmer arrives with his aids to destroy them, he will find the thousands which he saw yesterday have all disappeared, having gone down into the ground in the night to pass into the pupa stage.

The other danger is still greater. Suppose that the beetle shows itself in the field of some small agriculturist who has not had his mind enlarged by the weekly perusal of the *Gardeners' Chronicle* (we admit that such a phenomenon is not likely, but it is just possible), that he has never heard of the Colorado beetle, and that if he has, he is still in such a depth of selfish barbarism that he would rather have the whole country run the risk of being overrun by the beetle than lose the £20 that he expects to make by his patch of Potatos. What is to be done then? His neighbours may warn and advise him; but if he won't take their advice, what can they do? While they are remonstrating and making up their minds to subscribe and bear the man's loss among them, the time slips past, and the opportunity is lost.

There is only one remedy for such a class of cases, Government must take charge of the matter. It alone has the faculty of prompt and decided action and the power to meet pecuniary difficulties of execution. The Privy Council is with us the representative of the agricultural interest. It has had experience in stamping-out already, and it would argue an indifference to the general welfare which we have no right to impute to it if it stood by and looked carelessly and helplessly on, without making preparations against this impending danger. That it may come to nothing is no argument against providing for it. "When clouds are seen, wise men put on their cloaks," and they do not grumble at the trouble although they may bring them back undripping. *A. M.*

—— The Commissioners of Customs have been informed that the COLORADO POTATO BEETLE has been discovered in a living state at Bremen upon goods which had been brought from New York. Specimens of the beetle have been seen at other places in Germany. The Commissioners have issued a circular to the collectors of Customs at the ports in the United Kingdom directing that the instructions already given for detecting the beetle be at once applied to Potatos imported from Bremen or any other place in the German Empire.

New Garden Plants.

DENDROBIUM FINDLEYANUM, *Parr. and Rchb. f.**

Much in the way of Dendrobium Aphrodite (nodatum). The stems consist of a system of flat oblongo-pyriform articulations. Those are the product of one isochronic shoot, as I learn from Sir Trevor Lawrence, when I had felt some surprise they might not be coactaneous, being formed as a system of connected shoots, a sympodium. The linear lanceolate leaves do not appear to persist very long, at least the mature stems have but a few. The lateral inflorescences are one or two-flowered. The flowers are very gay, much in the way of those of Dendrobium Boxallii. The chin is angular, well developed; sepals lanceolate; petals oblong acute; lip nearly circular, wavy, having a yellow disk, a purplish violet base, and such a lip. The sepals and petals have their tips of the same purplish violet, and there are such lines on the inner side of column. All the not mentioned parts are white. The gay plant made its appearance at the Royal Horticultural Society. May many such gay novelties give pleasure to the judges, and let them forget awhile the state of affairs! The original discoverer of the beautiful plant is Rev. C. Parish, who found it in 1869 in Burmah, and who kindly sent me lately a copy of his original drawing, prepared by Mrs. C. Parish. There is a little more of purplish violet to be seen in Rev. C. Parish's drawing, and the lip is more wavy. I only knew the plant from this drawing and dried specimens, when quite lately it made its European *début* in Sir Trevor Lawrence's collection, that appears to be an inexhaustible store of rare and showy things. *H. G. Rchb. f.*

* *Dendrobium Findleyanum*, Parr. and Rchb. f.—Pseudobulbosum articulis a basi tenui clavate-incrassatis complanatis vaginis parvis; foliis cuneato-lanceolatis acutis subbidentatis; pedunculis uni — biforis; sepalis linear-lanceolatis acutis; tepalis a basi cuneata ovato-triangulis; labello cuneato oblongo-eluso integerrimo seu hinc microscopice denticulato, toto disco velutino asperulo; lineis asperulis quibusdam auct chlum basi abruptum; columna basi incrassata.—Moulmein, dct. Rev. E. C. Parish, 1869; *Transactions* Linn. Soc. London, xxv. 149.

DENDROBIUM ARACHNOSTACHYUM, *n. sp.**

Mr. Peter Veitch has just sent to the Royal Exotic Nursery a gorgeous Dendrobe, which comes nearest in affinity to Dendrobium Mirbelianum and veratrifolium of Dr. Lindley. The author used to show his specimens, stating they had been paid for with the life of some English sailors on the coast of New Guinea. We hope the new species may not have been paid for at so high a rate, though, indeed, it is of sterling value. The spike has its twelve great flowers standing on a spindle of a foot's length. They must be pallid yellow. They call to my memory flowers of Bolbophyllum Lobbii, though all the parts are much narrower, and the petals are longer than the sepals. The very long lip has many brownish streaks on the side laciniæ. We may expect in this plant quite a novel aspect. The single comparable Dendrobium Mirbelianum has much smaller flowers, and its blunt chin is bent forwards, when in this species it is straight and acute. *H. G. Rchb. f.*

STAPELIA UNGUIPETALA, *N. E. Br.* (Fig. 54.)

Stems erect, slender, branching at the base, 3½—5 inches high, 4—5 lines thick, puberulous, dark green, 4-angled, sides concave, angles toothed, teeth short, erect. Peduncle sub-obsolete? two or more? flowered, from near the base or 2 or more inches up the young branches. Pedicels rather slender, 2½—3 inches long, 1½ line thick, puberulous. Calyx lobes linear-lanceolate acute, 4 lines long, 1 line broad, puberulous. Corolla stellate, 1¼—1½ inches in diameter; back glabrous or almost glabrous except the minutely puberulous nerves, pale green, tinged with purplish towards the tips; face rugose, smooth towards the tips, the disk covered with long silky purple-red hairs, the lobes fringed with similar but rather paler hairs, elsewhere glabrous, rich purple-brown, marked to two-thirds the way up the lobes with transverse yellowish undulating lines, the centre of the disk and five bands radiating to the sinuses pale greenish-ochre; lobes about 1¼ inch long, ¼ inch broad, lanceolate attenuate, very much spreading, convex, except a little below the upturned or incurved hooked tips. Ligulæ spreading and recurving, lanceolate acute, dark purple-brown. Rostra subulate, recurving, 2½ lines long, dark purple-brown. Alæ deltoid obtuse, free to the base, divergent, 1 line long, dark purple-brown.

For this beautiful species, as well as for many others, I am indebted to the kindness of Mr. Justus Corderoy, of Blewbury, who sent it to me in September, 1875. It is nearly allied to S. patentirostris, which it closely resembles in its stems, but is well distinguished from any described species by its hooked petals, radiate pale greenish-ochre centre, and the form of the parts of the outer and inner coronæ. *N. E. Brown.*

* *Dendrobium arachnostachyum*, H. G. Rchb. f.—Aff. Dendrobio Mirbeliano: racemo pluriflore, grandiflore, meum extinctoriformi acute recto; sepalis summo linear-lanceolatis; sepalis lateralibus basi latioribus, ceterum æqualibus; tepalis lineari-bus acutis longitudinis; labello trinde; lacinius lateralibus ante medium abruptis obtusangulis; lacinia media lanceolata; carinis ternis a basi ad basin laciniæ mediæ; columna apice utrinque obtuso, apicato dorsali mediano.

BOTANICAL EXCURSION TO BEN NEVIS.†

THE Scottish Alpine Botanical Club was instituted in 1870, and has for its object the exploration of the Scottish mountains, with the view of obtaining an accurate knowledge of their flora. The Clova in Forfarshire, the Braemar in Aberdeenshire, and the Breadalbane mountains in Perthshire having already been partially examined by the Club, it was decided that Ben Nevis, in Inverness-shire, should be next visited. Accordingly the Club met at Fort William on the evening of July 21 last, and took up their quarters in the Chevalier Hotel, where they were comfortably provided for. Next morning, after an early breakfast, the party, which numbered thirteen, including Colin Cameron, the guide, started for the summit of the most stupendous and lofty mountain in Great Britain. The distance from the village to the summit by the usual way of ascent is about 5 miles. At the height of 1000 feet our course was southward along a stream, which issues from a small lake at 1840 feet above the sea, called Lochan Meall an t-Suidhe.

On our way we noted the ordinary vegetation met with on similar mountain slopes in Scotland, along with Rhynchospora alba, Polygonum viviparum, Plantago maritima, and other subalpine species. At

† Read at the January meeting of the Edinburgh Botanical Society by Mr. John Sadler, Secretary to the Scottish Alpine Botanical Club.

the north end of the lake there was abundance of the alpine aquatic form of Carex vulgaris, and at a considerable distance from the shore Isoetes lacustris, Subularia aquatica, and Lobelia Dortmanna were obtained by wading. On the north side there are patches of beautiful strand composed of disintegrated granite and porphyry, with which the mountain abounds. Leaving the lake we continued the ascent till we reached a point about 2700 feet, where there is a rocky ravine or gorge called Coire na h-Urchaire, through which a small stream runs. This stream has its rise in the last spring met with before reaching the summit. It flows westwards, and has a very abrupt and precipitous course. In the ascent from the loch to this point we gathered Saxifraga aizoides, S. hypnoides, Gnaphalium supinum, Alchemilla

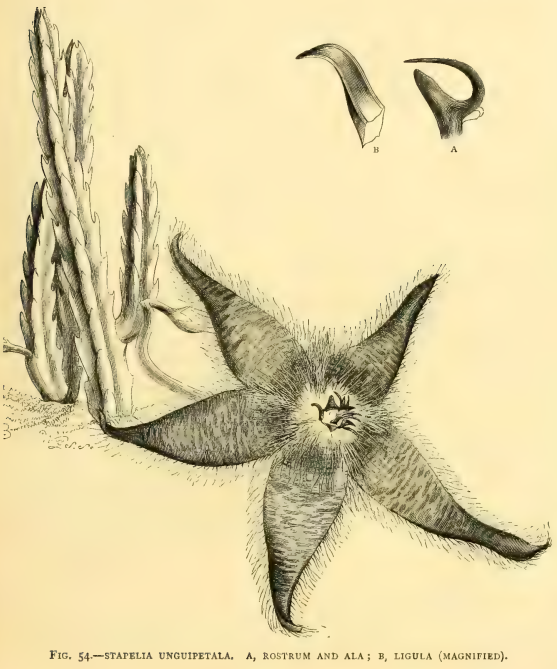


FIG. 54.—STAPELIA UNGUIPETALA. A, ROSTRUM AND ALA; B, LIGULA (MAGNIFIED).

alpina, Silene maritima, S. acaulis, Luzula spicata, Poa alpina, and Cryptogramme crispa. The ravine is only 200 or 300 feet in length, and is certainly the best botanising spot on this side of the mountain. Here we met with Thalictrum alpinum, Sagina saxatilis, Rhodiola rosea, Epilobium alsinifolium, E. alpinum, Armeria maritima, Cochlearia officinalis, Polypodium alpestre, beautiful specimens of Cerastium Smithii, and C. trigynum, the last being in great abundance near the upper part of the ravine, and for 200 feet above it. The most remarkable plant of all was a form of Saxifraga stellaris, which grew in large mossy-looking patches, resembling Montia fontana, the leaves being as small, the branches as delicate, and the flowers nearly as tiny as those of that plant. Several species of Hepaticæ were also collected, including Jungermannia cochleariformis and two varieties of Scapania undulata. Between the upper end of the ravine and the spring, which is 3363 feet above the sea, we gathered fine specimens of Sibbaldia procumbens, Aira alpina, Ranunculus acris, alpine form; Veronica humifusa, Salix herbacea, Cerastium pubescens, and C. compactum, the last being in considerable quantity and in fine flower. At a short distance above the spring, or about 3500 feet, Phanerogamic vegetation and soil almost wholly disappear, and only lichens and a few mosses are seen on the large blocks of porphyry, with which the upper part of the mountain is covered. At 3900 feet we reached the verge of the precipices immediately overlooking Coire na Ciste, where there is a cairn. From this we proceeded along the top of these precipices, which face north-east, and form the back of the mountain. All the corries were filled with snow. The summit was reached amidst torrents of sleet and rain, thick mist, and a fierce cold wind, which unfortunately prevented us from seeing fully one of the most boundless prospects in Scotland. The leading characters that give the interest to this sublime and unrivalled scene are elevation, immensity, and extent. On a clear day are seen mountain ranges in all directions, intermingled with extensive water surfaces; the view ranges from the Murray Firth and the mountains in the shires of Ross and Sutherland in the north and north-east to Ben Lomond and the island of Colonsay in the south and south-west, comprehending a distance of about 180 miles. The scene is one which can scarcely be equalled or at least surpassed in the diversity of magnificent and striking objects, and in majesty and grandeur. The late Dr. Macknight, in speaking of what he saw from the summit says that, "the feelings excited at this commanding elevation are not, however, entirely un mingled with sensations of a different kind, when we take our attention from the objects at a distance to the spot on which we stand. On looking beneath us, a few paces from the summit, we see the edge of a frightful precipice, which cannot be approached without caution, and from which the boldest must shrink with terror. What adds to the danger of the trembling spectator, the edge itself is wholly composed of loose fragments, which a little pressure is often sufficient to displace, and, when of any considerable size, their own weight soon urges down the precipice with a rushing noise and tremendous crash. This sound, produced by the rattling of the stone as it impinges successively during its fall on the projecting points of the perpendicular rock, is reverberated among the surrounding cliffs, and filling the vast adjacent cavity, thunders along the valley below. The effect accordingly on the ear is grand and impressive, and has occasioned the common but perilous amusement of heaving stones from the top of the precipice into the dreadful abyss."

The summit of the mountain, which is 4406 feet above the sea, is crowned by a cairn about 6 feet high. This was mounted by the party, who, standing shoulder to shoulder, shouted into space a toast which will never be forgotten by any who joined in it, viz., the health of Professor Balfour, the veteran President of the Club. Close by the cairn a single very minute plant of the starry Saxifrage (Saxifraga stellaris) was picked, thus being the highest flowering plant in Britain. A few feet below the summit, and on the very verge of the precipice, we met with a rare moss (Andræa nivalis), in great cushion-like masses.

The next day (26th) we visited the precipices or "snow corries" on the north-east side of Ben Nevis. Our course was following the stone burn, or as it is called in Gaelic, Allt a Mhuilin, which takes its rise in Coire Leas, a little to the south of the snow corries. In the ascent we again observed many species of plants common to similar moorish and subalpine situations in the North of Scotland. Several species of mosses and lichens were collected, including Mnium subglobosum, Dicranum falcatum, magnificent specimens of Sphagnum compactum, and Cladonia deformis. At about 2000 feet above the sea we noted in one or two spots abundance of Cornus suecica, both in flower and fruit, along with Lycopodium alpinum, Empetrum nigrum, Rubus Chamæmorus, and Hookeria lucens, a moss not usually found at such an elevation. On the northmost rocks, or those nearest the point of ascent, little of interest was met with.

Proceeding southward, and climbing into all accessible places, we met with Vaccinium uliginosum, Thalictrum alpinum, Silene acaulis, Potentilla alpestris, Saxifraga oppositifolia, S. nivalis, Cherleria sedoides, Salix reticulata, Oxyria reniformis, Veronica humifusa, Silene maritima, Armeria maritima, and Carex atrata sparingly. C. rigida was more plentiful, and very large, but most of the specimens had their fruit affected by Ustilago urceolorum, a fungus almost peculiar to Cyperaceæ. Saussurea alpina, Draba incana, Juncus trifidus, and J. triglumis were noticed. The only species of Hieracium met with were H. anglicum and a single specimen of H. chrysanthum. Veronica saxatilis was seen in one spot in flower. This removes the query put after the plant in Watson's *Topographical Botany*. Few Ferns were observed, the only species worthy of note being Aspidium Lonchitis and Hymenophyllum unilaterale. The two best plants collected were undoubtedly Saxifraga rivularis and Juncus castaneus. The former was found in the first snow corrie, and the latter by the marshy sides of a small stream proceeding from the second snow corrie. This is a new country for the Juncus, so far as botanical works go. It is noted, however, in a guide-book to the district, as being found on the mountain. Below the upper snow corrie Carex pulla was abundant and in fine flower, and some of the large blocks of stone were almost completely covered with patches of Andræa alpina in fruit. These snow corries and precipices are very grand, and at some points perfectly overwhelming when viewed from below. Imagine a precipitous front of rock, at least 1500 feet high, bending forwards at many of its points with a threatening aspect, and extending itself to a distance of more than a mile and a-half, with enormous projecting masses or abutments, which fill the great re-entering angle of the mountain, and divide it into vast recesses or aisles of the wildest aspect. Of this stupendous and impressive object the grand and singularly picturesque feature is what

may be called the angularity of its appearance, both as a whole and in its subordinate parts. The face of the rock, in the progress of waste and decomposition, is everywhere furrowed or fretted by lines, which at a distance seem to shape it into innumerable fasciculi of small columns or fluted pillars, resembling columnar distinct concretions. These again are joined together in an endless variety of groups, ascending into pointed summits and serrated ridges, which form the most elegant mountain-lines, and which accumulate in the projections and recesses, towering successively behind each other, till the whole terminate at the summit of the mountain. But notwithstanding all this diversity of form and position, these rocks cannot be said to be rich in alpine vegetation, either in the number of species or number of individuals of a species.

Several diatomaceous gatherings were made both on this and the previous day above 2000 feet. These were submitted to the Rev. Eugene O'Meara, of Hazlehatch, for examination, and the following is a list of the species which he detected :—Coscinodiscus Smithii, Eunotia camelus, E. diodon, E. triodon, E. tetraodon, Hemantidium bidens, H. majus, H. Soleirolii, Navicula angustata, N. alpina, N. crassinervia, N. cocconeiformis, N. gibba, N. limosa, N. icostauron, N. rhomboides, N. serians, N. viridis, and Surirella linearis.

On the morning of the 27th the Club broke up. One party proceeded by an early boat to Ballahulish or Fairies-town, and thence by coach through Glencoe, with its amazing scenery, and Inverornan to Tyndrum, and then by rail to Killin, and conveyance to Bridge of Lochy, in Perthshire. In several places by the roadsides about Inverornan the Drosera obovata was observed. On the 28th, Cama-creag, or the Crooked Rock, on the Breadalbane mountains, was visited, where Woodsia hyperborea, Myosotis alpestris, Hieracium pallidum, Gentiana nivalis, and several other alpine plants were gathered.

The other party left Fort William later in the day on the 27th, and proceeded by Curranferry and Ardgour to Strontian, at the head of Loch Sunard, in Argyllshire. They ascended Ben Resipole, a mountain the summit of which is 2800 feet above the sea, but they found it very unproductive. By the sides of the loch, however, a few good plants were collected, including Malaxis paludosa, Pinguicula lusitanica, Utricularia minor, Osmunda regalis, Lythrum Salicaria (this plant was also observed in several spots by the sides of the Crinnan Canal), Drosera anglica Jasione montana abundant, Scutellaria galericulata, Nephrodium æmulum, and Sedum anglicum. This party also returned by Ballahulish and Glencoe, and so ended a very pleasant week's botanical excursion. Specimens of the plants collected during the trip were exhibited.

ARTIFICIAL FLOWERS AND FRUIT.

THE first competitive exhibition of artificial flowers and fruit at the Crystal Palace may be regarded as a successful show, if the variety of materials out of which the so-called "flowers" are made be taken as the measure of success. Those who are curious to see how caricatures of flowers can be manufactured out of the most dissimilar materials should certainly visit this collection. Here they will find gold, silver and iron, wood, ivory and paper, hair, leather and feathers, silk, wool and rice-paper, chenille, muslin and wax, employed in the construction of a large collection of highly-coloured ornaments, the botanical determination of which would sorely puzzle the authorities at Kew. We have called them caricatures, but we doubt whether that is quite the correct word to use, since that word implies knowledge of the subject depicted, and power to produce it in an amusing form. The great majority of these flowers indicate on the part of the makers a surprising amount of ignorance of the form and structure of the objects which they have attempted to imitate. At the same time we must do them the justice to applaud their in genuity in the fabrication of their special materials.

We recently referred to the successful career of the late Mr. Ormson as a horticultural builder, which was mainly attributable to his early education as a gardener, and consequently to his knowledge of what plants required for their growth. In like manner most manufacturers of artificial flowers make themselves acquainted with the construction of the flower which they propose to copy before they can hope to attain a creditable result. Our remarks will be the better understood if we refer to the only really well-made group of flowers in the whole collection, that exhibited by Mrs. Clara Mogridge (*née* Minton), of 13, Charlotte Street, Bedford Square. This group consisted of Allamanda, Eucharis, Imantophyllum, Anthurium, Stephanotis, Odontoglossum Pescatorei, Plumbago rosea, a species of Franciscea, and two species of Dendrobium, all accurately copied from Nature, and most tastefully arranged with a few equally well-made variegated leaves. The next best collections, though scarcely so natural, were those of Mr. H. Minton, and the twelve varieties of Roses shown by Mr. Edward Fox, of Market Street, Brighton; in these the foliage was nearly as true to Nature as the flowers, which is more than we can say for any other group in the exhibition, which no gardener could look through without making the same remark. There was not so much fault to find with the shape of the leaves as with their colour, the rich dark green of well grown Camellias was nowhere to be seen on plants bearing these flowers. A tall plant of "white thorn" in full bloom was decorated with foliage of richly coloured autumnal hues, and the same incongruity was observable more or less throughout. From these remarks we wish to exclude the flowers and foliage of the Primroses and Violets, exhibited in small Sussex "twig" baskets by Mr. Fox, of Brighton.

There was a very small display of fruit, which consisted of Apples and Pears, Plums, Apricots, Peaches, Nectarines, Cherries, Strawberries, and Nuts. The white Bigarreau Cherries, and the Plums shown by Mr. J. Johnson, of Notting Hill, were the best amongst these, but none of the rest were so good as they can be made.

We shall be very pleased if this first attempt at a show of this kind should result in an improvement on the part of the exhibitors generally, or in inducing more experienced manufacturers to show upon another occasion. We regret to say that the general impression left on our mind by the majority of the exhibits was similar to that of the collector of choice violins on being shown a home-made article, and on being told, "I made this fiddle out of my own head, and I have wood enough left to make another."

FERTILISATION OF PLANTS.

(*Continued from p. 272.*)

MR. DARWIN devotes a portion of chapter 8 to "the transmission of the good effects of a cross," and shows that when a previously intercrossed, a crossed, and a self-fertilised plant are allowed to be fertilised naturally by insects, the good effects of the "cross" is seen in the greater fertility and vigour of the offspring of the first two than in that of the self-fertilised; and that this benefit may be continued, not only to the grandchildren, but for many years, as appeared from Mr. A. Knight's varieties of Peas, which were originally raised by crossing, and which kept true for more than sixty years, during which time they retained their superiority, though invariably self-fertilised. This fact, as Mr. Darwin observes, is due to the "force of inheritance being very strong in plants." On the other hand, continued interbreeding between very closely related plants brings ultimately no benefit at all as far as fertility is concerned; and, with reference to colour, such interbreeding is closely analogous to self-fertilisation; that it tends to produce great uniformity of tints, but still much less so than the self-fertilised plants, for Mr. Darwin observed that the seventh to the tenth generations of Ipomœa were absolutely uniform in tint, "like those of a constant species living in a state of Nature." That last sentence is not followed up, but is suggestive of queries. Why are wild flowers so uniform? They must be abundantly intercrossed, and as in Nature we often get a great variety of soils and climatal conditions within reasonable distances, we should think there would be abundant resources for crossing distinct stocks, yet there are many species identical, not only in the same country, but in opposite hemispheres of the globe! However this "retention of specific type" may be explained, the practical benefit of Mr. Darwin's observations to horticulturists is plain, for, as he says:—"We learn from them that new and slight shades of colour may be quickly and firmly fixed, independently of any selection, if the conditions are kept as nearly uniform as is possible, and no intercrossing [much less crossing with a new stock] be permitted."

Mr. Darwin gives a table (D.) of "the relative fertility of crossed, intercrossed, and self-fertilised parentage, the fertility being estimated by the number of seeds per capsule, number of capsules, or else the weight of seeds per capsule, the first being the most valuable method. Eliminating, therefore, from table D., all cases judged by capsules, as well as that by weight of seeds, and also deducting five cases of plants crossed by a new stock, there are left eleven instances for comparison between the intercrossed and self-fertilised; and if 100 be standard for the intercrossed, that of the self-fertilised is 91.5—a result which, considering the data, is very nearly a ratio of equality, and had the introduced into table D. "Hero" and the "white variety of Mimulus," the ratio would have been probably, if not in favour of the self-fertilised, at least one of equality (see p. 50), for when Ipomœa, under a net, gives a ratio of 100 : 99, and another instance, uncovered, gives a ratio of 100 : 89, we see at once that there must be conditions which may vary the proportions to a considerable extent one way or the other. Indeed, Mr. Darwin himself says :—"It should be observed that the results [of this table] cannot be considered as fully trustworthy, for the fertility of a plant is a most variable element, depending on its age, health, nature of the soil, amount of water given, and temperature to which it is exposed." Next, selecting from table D. the five cases of plants crossed by a new stock, the highest and lowest ratios are 100 : 30, and as 100 : 75, their mean being as 100 : 49.4, which shows a much more decided degree of fertility for crossed plants than that of intercrossed over self-fertilised.

The mean ratio deduced for the number of capsules produced by the plants of intercrossed and self-fertilised parentage would be very misleading, for the ratios vary from 100 : 3.5 to absolute equality! though the intercrossed plants doubtless as a rule yield more than the self-fertilised. As they are more vigorous plants, this is what one would anticipate; but the seeds per capsule may be the same: thus, of Nolana prostrata thirty intercrossed flowers produced twenty-seven capsules, each with five seeds; thirty-two self-fertilised flowers yielded six capsules; each, however, had also five seeds; hence their fertility is the same, but the proportion of capsules as 100 : 21.

Table E. gives the innate fertility of four plants crossed with a fresh stock, calculated as 100, and compared with those of intercrossed and self-fertilised respectively, as follows:—Mimulus as 100 : 4 and : 3; Eschscholtzia as 100 : 45 and : 40; Dianthus as 100 : 45 and : 33; and Petunia as 100 : 54 and : 46.

Table F. gives the relative fertility of the flowers of thirty of the "parent plants" when intercrossed and when self-fertilised. Of these six are equal, and four of the self-fertilised are most fertile. The ratios of fertility for the "cleistogene" flowers of the Vandellia and of Ononis minutissima are omitted from this table. They would have lessened the difference in the mean proportion, as they are so highly self-fertile. Mr. Darwin puts "100 : 67?" as the ratio for the conspicuous flowers of Vandellia, but on p. 90 he says he thinks that 100 : 100 would be more correct. Subtracting this case with the above, we have twenty left, which give an average ratio of 100 : 64; but, if we substitute 100 : 100 for the conspicuous flower of Vandellia, 100 : 106 for the cleistogene flowers of the same plant, and 100 : 111 for those of Ononis (deduced from the number of seeds given in p. 167), we get a total mean ratio of 100 : 96, which is, of course, practically *nil*; but this conclusion does not destroy the fact, that the whole number of intercrossed plants given in this table are more fertile than the self-fertilised in the proportion of two to one. Mr. Darwin observes that "this fertility ranges from zero to a fertility equalling (or exceeding) that of the [inter] crossed plants. Of this fact no explanation can be offered." Moreover in table G., which is analogous to F., only treating of descendants instead of the parent plants, the infertility of the self-fertilised plants does not decrease, indeed in Dianthus it steadily increased; so that Mr. Darwin observes, "There is, therefore, no evidence at present that the fertility of plants goes on diminishing in successive self-fertilised generations."

As the chapter (9) is here devoted to self-sterility and self-fertility it will be better to defer further remarks until another issue, when my communication will deal with self-fertilisation especially. *George Henslow.*

(*To be continued.*)

OPEN-AIR VEGETATION

AT THE

ROYAL BOTANIC GARDEN, EDINBURGH.*

THE weather during the month of February was in general very pleasant, and drier than it had been during the four previous months. Owing to this comparatively dry state of the ground much outdoor work has been accomplished.

During the month the thermometer was seven times at or below the freezing point, indicating collectively 36°, while the united February frosts during the last twenty-three years amounted to 1492°. The highest markings were during 1855, when 220° were registered, and the fewest during 1869, when 6° only were recorded. Up to February 21 this year only 4° were noticed, but since that date frost continued to the end. The lowest markings were on the 8th, 20th, 22d, 26th, 27th, and 28th, when 31°, 30°, 24°, 28°, 20°, and 24° were respectively registered, while the highest markings were on the 2d, 7th, 9th, 15th, 18th, and 24th, indicating 39°, 44°, 40°, 41°, 38°, and 40°. This comparative mild state of the weather has brought forward vegetation, which had been so long kept back by the excessive moisture of the previous months, as will be seen by annexed list of spring flowering plants. It contains the names of the selected species fixed on for annually recording their dates of blooming :—

	1877.		1876.	
Eranthis hyemalis	February	1	January	26
Rhododendron atrovirens ..	,,	2	,,	25
Leucojum vernum	,,	2	,,	18
Galanthus nivalis	,,	4	,,	16
Crocus susianus	,,	4	,,	20
Scilla præcox	,,	6	February	16
Galanthus plicatus	,,	6	January	29
Crocus vernus and varieties ..	,,	9	,,	28
Nordmannia cordifolia	,,	10	February	16
Daphne Mezereum	,,	13	January	26
Sisyrinchium grandiflorum album ..	,,	13	February	17
Scilla sibirica	,,	14	,,	20
,, bifolia	,,	14	,,	24
Sisyrinchium grandiflorum	,,	15	,,	20
Bulbocodium vernum	,,	16	,,	16
Iberis gibraltarica	,,	17	,,	21
Dondia Epipactis	,,	20	,,	21
Tussilago alba	,,	21	March	8
Rhododendron Nobleanum	,,	23	February	10
Aubrietia grandiflora	,,	24	,,	17
Tussilago nivea	,,	26	March	18

On February 28, notwithstanding a slight fall of snow and a hard frozen surface, about fifty species of plants were counted in flower on the rock garden ; the most interesting at that time being Rhododendron præcox superba, Erica carnea, Erica carnea alba, Daphne Mezereum, Andromeda floribanda, Primula denticulata, Primula vulgaris rubra, Corydalis angustifolia, Iberis gibraltarica, Crocus Imperati, C. nivalis, and C. susianus, Leucojum vernum, Galanthus plicatus, Dondia Epipactis, and Helleborus colchicus and seven other varieties. The frost of the 28th had partially injured some of the blooms of the more tender species, while it had the desirable effect of destroying slugs and other vermin harbouring near the surface.

* Read at the March meeting of the Botanical Society, Edinburgh, by Mr. M'Nab, Curator.

ON THE ROAD TO AMSTERDAM :—ANTWERP.

ON the high road to Amsterdam, whose International Horticultural Exhibition and Botanical Congress are fixed for April 12 next, lies Antwerp. For those who have the time, it is well worth a visit. There are steamers direct from St. Katherine's Wharf to Antwerp ; but we will suppose that the horticulturist has accompanied us by the land route, making a halt on the way at Ghent, whose treasures have often been described in these columns.

To reach Antwerp from Ghent, you proceed not to the Station de l'Etat, by which you arrived from Lille, but to the Station du Pays de Waes, whence you start on a single-lined railway. The Pays de Waes, which you then traverse, is an unbroken plain made fertile by human industry, divided here and there by rows rather than hedges of mixed copsewood—Poplar, Willow, Alder—which now and then rise into trees. There is no picturesqueness, but a considerable look of comfort, about the scenery. The land seems to yield a sufficiency of most things, even of tall trees in places, to give shade in summer and break the force of the winds in winter. One of the stations is at Mille-Pommes (a Thousand Apples) ; the next is St. Nicolas, a large prosperous town, at least as rich in religious intolerance as in fruits ; for the *Times'* special correspondent tells us that, owing to the supremacy of the priest, a Protestant would be unable to hire a house there, and that a Belgian gentleman married to an Englishwoman was looked down upon until it was ascertained that she was a good Catholic. The field crops along the line, including a great breadth of Potatos, are interspersed with patches of Hemp, Haricots, Buckwheat, Tobacco, and other little luxuries. Potatos last autumn showed patches having their haulm much or entirely destroyed by disease contiguous to other patches in full verdant vigour, and seemingly ailing nothing. Whether the difference is one of sorts or of the times of planting, a passing railway traveller had no means of learning. His attention would be principally absorbed in the jolts he receives from the rough state of the line. A week spent on it in going to and fro, would be an effectual remedial course for patients whose organisms require a good shaking. At last you feel a breeze on your cheek which betrays the neighbourhood of wide-spread water ; a stately cathedral spire rises in the air, the train stops, but you are not yet at your journey's end. The broad stream of the Escaut or Scheldt has to be crossed in a steamboat, which lands you at the Antwerp station of the Pays de Waes. If ignorant what quarters to choose, you may safely go to the Hôtel St. Antoine, at one of the corners of the Place Verte (which is not green but gravelly).

THE PARK.

The park of Antwerp deserves a visit, first because it shows what may be done with a triangular piece of ground in the midst of town buildings, with the help of water, rocks, a peninsula, and a bridge ; secondly, because it illustrates the good effects produced by combining the same sorts of trees and shrubs into homogeneous groups and masses, instead of mixing them up promiscuously, so as to produce a blurred appearance, making every group alike, or at least without any distinctive character. In a public garden, which is to a certain extent an arboretum, there must, of course, be just a little spottiness, especially until the specimens have made larger growth, so that plants now standing singly are united, or have made a near approach to each other in clumps.

Unusual varieties of usual trees at least show their merits and their demerits. The purple-leaved Maple deserves honourable mention ; the fastigiate and variegated-leaved Elms remove all doubts as to their ugliness ; an uncommon plain-leaved Holly is prepossessing, and promises usefulness. The Rosemary-leaved Willow and the red-berried Elder are turned to good account amongst the rocks. The silver Lime tree is both sweet and graceful. A scrap of reed-bed in the lake, off a point of the peninsula, looks natural, and serves as covert for water-fowl, but betrays the shallowness of the water, which had better have been concealed as much as may be.

THE ZOOLOGICAL GARDENS.

For those who have to wait an hour or two for a train the Zoological Gardens, close to the station, afford a pleasant lounge, and contain an inviting *restaurant*. With this, the orchestra, the refreshment tables and chairs, and the Noah's arkful of animals, the Antwerp Zoo, though quite on the outskirts, has less the air of country than the park. "How nice it would have been," a philosopher said, "had all our towns been built in the country !" To obviate the omission, endeavours are made to bring bits of the country into most large towns. A French *savant*, M. Hautier, goes further. He proposes to introduce country air into cities, to be drawn from elevated woods and other salubrious spots, pumped thence through pipes laid down like those for gas and water for distribution to public buildings and private dwellings. Only think of that, all ye who are shut up in factories, theatres, reading-rooms, ball-rooms, schools, offices, and other places where experiments are tried on how little oxygen human beings can exist. When you are unable to go and breathe sea breezes, it will be something to have sea breezes sent to to you, even on the payment of so much per cubic yard.

The Antwerp Zoo, besides good specimen trees and shrubs and examples of the effectiveness of certain plants (Hydrangea paniculata, for instance), when appropriately employed, exhibits during the season admirable carpet-bedding, some exactly like richly ornamented cake, others resembling embroidered hearth-rugs competing in contrasted colours with cloth patchwork ottoman covers, inviting you to do what you must not, namely, sit or lie upon them. On a large scale, and well carried out, such carpet-bedding is beyond the means of private individuals with moderate fortunes, and must be left to millionnaires, public companies, Belgian and Dutch zoological, and the parks and gardens maintained by wealthy cities. To those travelling on that line of railroad the carpet-bedding in the Jardin Vauban at Lille (once the Jardin de l'Imperatrice) is well worth a halt. By going early, before the hour of general promenading, you may catch the artist-gardeners at work with their scissors and brushes, their pegs and pins. No dandy's valet can be more assiduous to prevent a hair or a lock, or a leaf or a spray, from exceeding due proportions and assuming an unkempt look. The materials, in fact, are within most gardeners' reach, and when once obtained will serve from year to year, with proper care of housing and propagation. Every year the designs may be varied. The same forces may be mustered to combine in perfectly different patterns ; taste to design, adapt, or copy which, may always be expected to be forthcoming. It is the keeping up and the unceasing high finish which are absolutely indispensable to success. And then, the quantity of plants required—not trifling for the making even of a modest carpet-bed—is enough to frighten many amateurs.

MADAME LEGRELLE'S GARDEN.

Little known to the crowd of tourists is the rich garden of Madame Legrelle Dhanis, at Berchem, a suburb of Antwerp, Rue de la Chapelle, No. 12, behind La Pépinière, which said *pépinière*, or nursery, is the old gallows-ground, or hanging-place, promoted to the more cheerful condition of a garden, beside which is the summer resort of the Harmonie Royale Society. You reach it by following the boulevard, starting from the statue of Leopold I. Many of the Antwerp boulevards deserve imitation. In the middle is a double row of trees (Planes are the favourites), with a broad footpath between them. On each side of the trees is a carriage-road, thus leaving an open space between them and the lines of houses, which are consequently less shaded by their branches. Trees are certainly great ornaments in a town ; still they may be too near a dwelling, preventing the circulation of air and the entrance of direct sunshine, besides harbouring insects and shedding withered leaves.

Amateurs were, and no doubt still are, admitted to Madame D'hanis' garden on the presentation of their card. Immediately after entering the gate, you are struck by standard Myrtles, large-leaved and small-leaved, in tubs, which must be at least sixty or seventy years old, in the enjoyment of perfect health, and, as we might say, retaining all their faculties. The ante-chamber in which you sign your name in the register of visitors, contains a few pictures worth looking at. Naturalists will have their attention arrested by a choice collection of insects, birds, and shells. A conservatory leading out of the billiard-room is not a mere tropical plant-house, but serves as an evening reception-room, where after-dinner coffee may be chatted over. Evidences of a lady's taste are visible in the fountains backed by looking-glasses, which thus play double—fountain and reflection ; in the disposition of the lamps and the seats, one group of which latter have a fine Ceratozamia mexicana overhanging them, or weeping, as a verdant canopy. Remarkable specimen plants are not wanting, as of Zamia mexicana, 200 years old ; of Livistonia Beiro, Cycas revoluta, Angiopteris evecta, Cyathea medullaris, Encephalartos Altensteini, Bonapartea tenuifolia. Variegated Phormiums in flower (at the time of my visit) shot up their tall stems after the fashion of Agaves. Beneath the stately Palms and Tree Ferns, Begonias (as B. longipila and semperflorens) add richness below, while Gloxinias of exquisite spotting and hues peep out here and there to court approval.

Indeed, the main interest of this garden is centred in the houses, which have been filled, to use the trite expression, "regardless of expense." One, for instance, contains a little fortune invested in a unique collection of Marantas, and comprising, besides other things, M. Wagneri, tubispatha, Makoyana, Veitchii, majestica, regalis, roseo-picta, all fine specimens in perfect health. Cypripedium purpureum flourishes in a low terrestrial Orchid-house, whose 28° Centigrade (83° Fahr.) does not feel overpoweringly hot when visited in August although very moist compared with the air outdoors. A house for variegated-

leaved plants tempts many to linger, by its variegated Pine-apple in fruit, and its variegated Curculigo and Pandanus utilis. During their passage from house to house amateurs will be attracted by the rich cushions of Selaginella apoda, Eucharis amazonica, the scarlet flowers and crimped leaves of Cyrtodeira fragrans, the curious sliuness of Bignonia Roezliana, by Anthurium crystallinum or Beschomeria multiflora. Then there is an aviary to see and experimental beds of seedlings whose quality has yet to be ascertained; the bouquet of the whole being the handsome room containing the medals, gold and silver, framed and glazed, won at horticultural shows so numerous and liberal that, were the said medals to be melted in the crucible, they would make Madame D'hanis a small service of plate. We retire thankful for the privilege of witnessing how admirably a lady amateur can follow up her favourite pursuit.

It may be useful to some to know, *apropos* to Antwerp, that valuable information respecting Belgian gardening may be obtained from Monsieur Jean Baptiste Debeucker, Horticulteur et Marchand Grainier, Rue Carnot, 107. †

FLORISTS' FLOWERS.

The Auricula and Polyanthus.—"Thrum Eye" is the second writer in this classic column who considers that I have made a dead set against "self alpines," and there may be other correspondents in the end.

Perhaps, therefore, it may be well to explain that I have advanced no mere fancy of my own. I did but state the thoroughly determined points which, in the alpine Auricula, constitute the first-class flower. These have long been fixed, understood, and worked up to, and no one in order to humour some pretty seedling is authorised to break down boundary lines and confuse distinctions in strict florists' flowers. It is not that I wish self alpines dead, or that there were no such things as self and fancy Polyanthus. I admire them all as flowers, they are all beautiful, and well worth growing in their place. But if an Auricula, entirely deficient in the leading and recognised property of its class as a florists' flower, or if a Polyanthus glaringly at variance with its florist standard, be brought, by claim, into competition with the highbred flowers of full properties, then either it must receive a crushing defeat, which it is hardly fair to expose it to, or the more refined and rare and gifted flowers must be brought down to the lower level—a degradation which florists will not suffer their flowers to endure. A most eminent florist, the Rev. Geo. Jeans, used to say when seedling Auriculas were sent for his criticism, "I have grown very particular in the case of showy seedlings usually deficient in these properties" (the more solid ones of florist flowers).

I am sorry I cannot see "Thrum Eye" through the disguise of his name, for a bird in the hand is, in this sense, worth two in the bush; but I should scarcely take him for a veritable florist, or he would know how much the progress always being made in florists' flowers is due to that same technical conservatism of which he complains.

Herein precision is the principle of progression, and laxity is the reverse. A florist flower is a classical flower. It is, as it were, a picture, not a panorama. It is not grown merely to see what is the effect of so many bunches of it in a pot, or yards of it on a ribbon border. Florists cannot but rejoice in the blaze of beauty that a whole collection of Auriculas, Tulips, or Carnations exhibits when in bloom, but the value and enjoyment are immeasurably heightened because that each component blossom is a study, Nature-painted, in itself.

"Thrum Eye" thinks that "in this strict floral conservation lies the danger for the fancy Polyanthus," and that "if the hard and fast lines of florists have not exterminated the gold-laced kinds, it is certain that really good forms are rarities." So they are; but the reason of rarity is not refinement, but neglect. The flower has been forgotten. It never lacked vigour and variety while it was cared for. The florist Polyanthus is not a particularly "miffy" thing, and if seedlings be raised from the wreck that remains of a beautiful old favourite there will be no need to seek constitution and brilliancy from the border varieties; while as for refinement the fancies will have to follow the advances of a fairer, gentler rival that is ever before them. When "Thrum Eye" thinks the future of the fancy Polyanthus may be to extinguish the florist Auricula, or make it "pale its ineffectual fires," he can hardly have seriously compared the flowers.

No one placing side by side a black gold-laced Polyanthus such as Cheshire Favourite, and a white-edged Auricula such as Smiling Beauty, can have any doubt as to which is the more gifted sister, though both are beautiful. The Auricula, with all her variety in frosted silver foliage, as well as green, and with the rare loveliness of the green, grey, white edges, and the rich coloured velvet of the self*s*, is a flower of far greater resource than the Polyanthus.

I have written more on this subject in the current issue of the *Journal of Horticulture*, but I had rather ask "Thrum Eye" to study the work of an abler pen than mine, on "The Philosophy of Florist Flowers." I humbly venture to say it will do him good. It was written for the *Florist* of 1849 by the Rev. Geo. Jeans, under the modest signature of "Iota." I append an applicable extract:—

"As for a person unaccustomed to any species of flower making a wrong selection for his approval, it happens in everything else as well as in flowers, and therefore loses its force. Lace, for instance, is made for the same purpose that the flower was created—to please the eye; and an unpractised eye would be as apt to pass by the rare and costly, and to select the valueless in lace, as in a Pelargonium. The fact is ever found to be that the most showy qualities are not the most useful; nor is that which will most permanently please that which first catches the unaccustomed eye. But that which is sterling, which will attract without fatiguing the sight, and gratify without offending the judgment, will often be passed over at first without notice; and therefore it is no more a reproach to the study which investigated these facts, or to the art which is founded upon them, that the eye of a novice should make a choice which the same eye when tutored by experience would reject, than it is an argument against a more cultivated taste in diet that a child prefers green fruit to ripe, and leaves wholesome food for gingerbread."

And again—

"The work of the florist is simply to follow whither Nature leads him, selecting always that track in which there is the greatest promise of success; and on his judgment in never departing from this, and in using the best means for securing the accomplishment of his desires, depends the correctness of his practical science. And though mistakes have, of course, been made, and will be made also in the endeavours after advancement in each particular object of our culture, yet these still become fewer as progress is made in developing the natural powers and characteristic excellences of the plant, whereby the philosophy of its improvement is seen; and we do not work in the dark, because there is a system of such development in Nature, and a definite point of perfection, the constant approach to which constitutes improvement in each species."

F. D. Horner, Kirkby Malzeard, Ripon.

Auriculas.—There appears now every probability that Auriculas will not be in flower so early as was generally expected six weeks ago. Then the Southern growers were asking themselves what they could do to retard the growth, but now they are beginning to consider what can be done to induce development. In another month the floral forces will be gathering for competition at the two great exhibitions, one in the North, the other in the South, and the question naturally arises, will any flowers be forthcoming from the North at the latter meeting-place? The anticipated early bloom threatens to be an unusually late one. The dull sunless moist weather certainly excites to growth, but it is very gradual and slow. The bright dry, sunny March of last year considerably quickened the progress of the plants, but this year this exciting influence is wanting. Just now Auriculas may be allowed the benefit of warm showers, for there is no danger of injury to the pips while the calyx covers the tube or pip; and these warm showers greatly strengthen and improve the plants and tend to increase the size and quality of the blossoms. As a rule growers look for the trusses rising up out of the hearts of the plants by the middle of March, but plants that have been wintered in a warm position under glass make but little sign as yet.

—— Pinks have wintered badly in the open ground during the winter; the excessive wet has affected them much more injuriously than frost. Some growers assert that they have lost a great many of their plants; and those who grow the commonest Pinks for the costermongers round London are found stating that the inferior varieties have suffered in common with the good ones. On the other hand common Carnations have grown with something akin to luxuriance all the winter, and are as healthy looking as they can well be. The grower of florists' Pinks invariably grows his plants in the open air during the winter, unless the locality will not admit of their being planted out till spring; and always plants in beds well raised to secure drainage during winter. But this precaution, sufficient in ordinary seasons, appears to have failed during the present winter in preventing the plants from dying through the excessive rainfall.

Garden Operations.

PLANT HOUSES.

Greenhouse Hard-wooded Plants.—Large and medium-sized specimens of hard-wooded plants that need more root-room should now be potted. If the soil was got under cover, as advised some weeks back, and turned over as occasion might require, the recent drying winds will have brought it into a fit condition for use; but if at all too damp this to some extent may be corrected by drying the sand well before mixing with it, and as it is desirable to complete the potting of all plants of this description with as little delay as possible before the hot weather commences, the above expedient will be preferable to waiting till the weather gets warmer. The proportion of sand to peat for plants of all descriptions, but especially for those under consideration, is an important matter. The quantity in all cases must be regulated by the character of the peat and the nature of the plants to be potted. With soft peat a more liberal addition is necessary than with such as is harder. Where too much sand is used, as might be supposed, it has the effect of making the soil poorer, from the consequent less vigorous growth the plants in it will make, but it is much better to err on the side of using too much sand than too little, and for the latter reflection that those who have not had much experience in the cultivation of these plants generally get wrong. The sand required may vary from one-sixth to one-tenth. As a safe rule the finer the description of roots a plant possesses, and the slower its growth, the more sand will be necessary to keep the soil in a sweet, healthy condition. If the sand obtainable is of a dusty nature, that is, a great portion of it composed of very fine particles, the labour of washing it will be well repaid by the improvement it will make. The washing process is best effected in a large shallow tub, or any similar open vessel, and under a tap kept running, putting in a few bushels of sand at a time, and keeping it stirred up with a spade; as the water will thus necessarily overflow, the fine portion will be washed away, leaving that of a heavier, coarser description in the bottom. In pointing, the old barbarous practice of loosening the roots from the ball, so as to spread them out more or less into the new soil, is a thing of the past with those who grow hard-wooded plants successfully. The scarifying process inflicted by puncturing with a pointed stick the surface of the ball, where the great mass of roots are situated, and on which the vital energies of the plants depend, which used to be advised, has caused the destruction of thousands of tender subjects. To some extent the practice might be looked upon as the least of two evils, in the case of plants that were in a stunted condition, the roots of which were spirally curved in the smallest possible space, by being confined for years in little pots; but such plants as these are not worth the trouble of potting at all by any one attempting to cultivate them in a creditable manner. It is well to bear in mind that the greater the quantity of roots a plant possesses the more solid and impervious to water they will have made the ball, consequently the harder it is necessary to ram the new soil. It is also quite time to pot the small-growing stock that are intended to have a second shift during the summer. See that they are free from scale, especially the white species; any plant, however valuable, that is affected with this, immeasurably the worst pest that infests greenhouse plants, had much better be consigned to the fire than introduced amongst clean stock, as if through inadvertence the infested plant is ever allowed to stand in a way that it overhangs or is in actual contact with such as are clean, the insect is certain to spread, and it is so tenacious of life that except on vigorous strong-leaved things any insecticide that will destroy it completely generally destroys the plant as well. See that the beautiful but now neglected Gompholobium polymorphum and G. bar-

bigerum are not allowed to go too long without their shoots being trained, especially whilst the plants are in a young state; if not kept clear of each other but allowed to become entangled in that cord-like condition they soon get into, it is difficult afterwards, and always at some sacrifice of the growths already made, to put them to rights. Kennedyas, Lapagerias, and all other plants of a twining nature which are grown as pot specimens require similar attention in this respect.

Conservatory.—At no season of the year can the conservatory be made more attractive than at the present, where there is at hand a sufficient number of fine-leaved plants, such as Tree Ferns, Rhopalas, Agaves, Yuccas, and subjects like these of handsome, yet dissimilar habit, to mix with and form a background for the numerous flowering plants now coming in. Where such materials as the above exist in sufficient quantities, the measure of success as to the effect produced will be commensurate with the artistic arrangement of the whole; the aim should be from time to time to vary the general aspect. Where there is an absence of old-fashioned formal stages, which in most conservatories of any pretensions are now generally done away with, there is every opportunity for relieving the monotony resultant from seeing the same plants always occupying the same places. When there is little that is attractive outside, it is doubly necessary to make plant-houses as pleasing as possible with late flowering Camellias, Azaleas brought on in a little heat, forced shrubs, and such herbaceous plants as Dielytras, Solomon's Seal, Spiræa gigantea and S. japonica, late blooming bulbs, Cinerarias, and forced Pelargoniums. There need be no lack of material to produce the most and most varied effect. *T. Baines.*

Orchids.—The many varieties of Cattleya Trianæ that are now to be met with, are so varied in their markings and differ so considerably in the depth of colour of the labellum, as well as in that of the sepals and petals, that a number of these should be sought for and obtained; and some great quantities have during the last few years been sent from their native habitat in New Grenada to some of our leading nurserymen, a personal inspection should be made and a selection made of such as exhibit the most distinct characteristics. These will now be mostly in full bloom; probably, indeed, in some cases the flowers may have appeared soon after the advent of the new year, in which case they will now be over, but others will now be making the house gay and attractive; and whilst the flowers are open and fresh, and as scarcely two of them are exactly alike, advantage should be taken of the opportunity, and either in a memorandum book, or on the label, the form, colour and markings should be noted down, so that at any future time, when any doubt may arise as to these individual traits, a reference may be at hand by which any such inquiry may quickly be set at rest. And not only this, but providing the contingency might arise, that the collection had to be reduced, or the whole to be parted with, it will be found that such plants of almost any species, Cattleyas or otherwise, that can be recommended as distinct and desirable varieties, will always fetch higher prices than those that are simply haphazard, and with which a certain amount of risk is incurred. Among the forms of C. Trianæ there is one which, however, is very rare, the flowers of which are of large size, and of a pure white colour, the only exception being the throat of the labellum, which is of a deep yellow. In many respects this is similar to the Wagneri variety of C. Mossiæ; only in the case of the Trianæ the narrow sepals and broad petals are more observable than is the case with the Wagneri. Another variety more often seen is one the sepals and petals of which are of a bright rose colour, the lip, which is very broad, is of a deep rosy purple, and the throat of a rich orange-yellow, altogether a first-class thing, the colours of the lip being so well defined and distinct. As soon as these have gone out of flower the young growths will start away, the flowering bulb sometimes producing two breaks; very soon these new growths commence to root, and the roots, entering the soil, supply and help on the young breaks, and thus during the greater part of our summer the bulbs increase and get matured and ripened during the time when we have the greatest amount of sun light. Amongst Cattleyas of quite another type mention must be made of C. Leopoldii, C. amethystoglossa and C. guttata. These may be said to represent the long bulbed section, and are not quite so easy to manage as many of the others. The fact that they come from Brazil, and are mostly found on trees, would seem to indicate the need of a little more heat, and a rather drier atmosphere than is recommended for the most of the others, and, if it can be managed, a little more sunlight during the season will be a great advantage and materially assist in the ripening and hardening of the bulbs. The flower-spikes coming up between the stout leaves on the top of the bulb are generally very strong, and will often bring from ten to twenty of their stout, fleshy flowers. The rich rose colour and purple spotting of Cattleya amethystoglossa, and the dark chocolate and crimson of Cattleya Leopoldii, are such that, when in good condition and freely flowered, the plants are objects at once stately and imposing. All plants on blocks must now, either by syringing or careful dipping, be kept moistened, so as to induce the new roots to start away, and assist the first appearance of returning vigour. Make a point to finish up all the potting and surfacing as early as possible, so that it will not require to be attended to when the new roots are pushing away, for often then the risk and damage are very great, and a corresponding check and loss is given to the plant which should be avoided by all means if possible. *W. Swan, Falconfield.*

FRUIT HOUSES.

Peaches and Nectarines.—Where a plentiful and successional supply of ripe fruit has to be provided for the London season, it involves the employment of two or three houses, which at this time will be in different stages of active operation. In the foremost division the fruit will now be of sufficient size to indicate its progress as being almost certain, and the foliage on the trees will be sufficiently dense to admit of any superfluous space being removed without detriment. In regard to the number of fruit to be retained for maturity, much must depend on the variety, the season of ripening, the size and condition of the tree, and local circumstances. Large fruit is intrinsically much more valuable than small, and as such in general is held in high esteem, this should also be considered. As a rule, we estimate that a tree which is in a healthful state, which covers an area of 200 feet of trellis, should be capable of producing about fifteen dozen of good fruit. When there is a profuse abundance of fruit, which is usually the case after making due allowance for any loss which may happen through the attacks of mildew, or gum, or imperfectly formed stones, the rest should be pulled off at once, and in the case of Peaches, such should be reserved for making tarts, as these are much appreciated in some places. In doing this, it is almost needless to add that the most prominent ones on the upper side of the walls should be retained. In like manner go over the trees now, and where the shoots which have recently been pinched-in are too thickly placed sufficient should be removed by a clean cut with a knife to afford those which are retained every advantage of solar and other influences. On mild occasions the temperature should range from 55° to 60° at night, and from 65° to 70° by day, allowing the maximum degree as the standard under other conditions. Ply the syringe twice every day over the trees, rain-water being preferable for this purpose if any sedimentary deposits are present in that which is commonly used. Continue to give the requisite attention to stopping and tying-in in later divisions; and as soon as those which are required to furnish the trees will admit of being heeled in at the base, it should be done, particularly if symmetrical training is much studied. The temperatures in the first and second divisions should now be identical; in later ones, where ripe fruit is not required before July, more air should be given, and a lower temperature will suffice in all cases. After the fruit is well set dust the surface of the mulching material over with a thin sprinkling of guano once every week; this will impart a stimulating effect to the atmosphere, which is highly beneficial to vegetation. *G. T. Miles, Wycombe Abbey.*

Melons.—The first batch of plants, which were selected for growing and fruiting in pots, plunged in a bottom-heat of 85°, will now be making rapid progress, as few plants grow faster than the Melon when generously treated. By the time fruitful kinds like Gilbert's Victory of Bath and Scarlet Gem have filled two-thirds of the trellis, they will commence showing male blossoms on the main stems, and fruit blossoms at the first joint on the laterals. These, where very early fruit is wanted, will require a change of treatment to ensure a good set, assuming that the strongest plants were placed at the warmest end of the pit these should be selected for the first crop, and as dry heat is favourable to the production of pollen, syringing may be discontinued for a few days; and if water is withheld from the roots until the plants show signs of flagging they will set freely without the aid of fertilisation. When two to four fruit begin to swell the points must be pinched out of the leaders, also the laterals at the first leaf beyond the fruit; the remainder of the laterals may be stopped to the first joint, to prevent crowding of the foliage; syringing and watering with liquid liquid manure must be resumed, having previously top-dressed with a compost of turf, lime rubbish, and rotten dung. To insure a succession the remaining plants should be stopped once, when every break will produce a female blossom. Make further sowings for succession, always bearing in mind that vigorous young plants are preferable to those which have become pot-bound; also that they will be ready for turning out in a month from the time the seeds are inserted in the soil. Attend to the earthing, stopping and training of plants in dung pits, making the soil firm by means of rammig when in a dry state. Renovate linings and guard against injury from rank steam by leaving a chink of air on at night. *W. Coleman.*

Orchard-house.—In the management of this department it is very important that the soil in which all stone-fruit trees are growing should be brought into a thoroughly moist state before the blossoms begin to swell. It frequently happens that pot trees are kept too dry all through the winter, and when this is the case the buds fall off just as they are beginning to move. Apricots, Peaches, and Nectarines show the effect of drought first, but Plums and Cherries are also affected by it, and all set the best crops of fruit when the roots are wintered in soil the reverse of dust-dry. A mulching of fresh loam in the orchard-house will be attention to the fertilisation of all early kinds as they come into bloom, and protection from frost, should it set in very severe, by the use of blinds, which are best fixed on rollers the same as for shading, or light pieces of tiffany may be thrown over individual trees without injury to the blossoms. If the weather is bright by day and frosty at night, the ventilators may be opened about 9 A.M. and closed at 3 30 in the afternoon. In low, damp situations, particularly in dull weather, the atmosphere must be kept as dry as possible, and artificial fertilisation will require a little extra care. Where Figs are grown in unheated houses, trees which have been wintered in dry sheds or cellars should now be potted or top-dressed, and placed in their summer quarters at the warmest end of the house, where the syringe can be plied freely and frequently. One of the best kinds for this purpose is Brown Turkey or Lee's Perpetual. *W. Coleman.*

KITCHEN GARDEN.

Operations in this department crowd upon us now so thick and fast, and most of them are so equally imperative, that the value of our previous recommendations to take time by the forelock and keep well ahead with all operations connected with the trenching up and preparation of the soil for the reception of seeds will be best appreciated by those who have been best able to get forward with all such work. The heavy rains of the past winter have been very trying, and cultural operations have been greatly retarded. As I before advised a little extra manual labour thrown into this department now will be found to be pressing, greatly assist to prevent the produce being short or inferior in the succeeding months. The planting out of Lettuces, Cauliflowers, and Cabbages, which have been stored through the winter, should be completed at once, so that we may appropriate the soil liberty for other important purposes, such as pricking out the earliest sown plants of the Autumn Broccolis, Cauliflowers, Brussels Sprouts, and Lettuces, as before recommended. These prickings out of such early crops are of very great advantage to the kitchen gardener, if he can keep them growing freely, and plant them out in their quarters for succession as soon as they are fit for the purpose, for if allowed to become either too much drawn or stunted they will turn in prematurely, and it will be just a chance whether any of them arrive at that state of perfection to which they may be grown by generous and timely cultivation. The principal sowings of Celery for the main crops should now be pretty well ready for pricking out. This is another of those crops in which to succeed perfectly there should be no check in the growth; thus, in order to make the plants sturdy and robust, do not sow them too thickly in the frame, and as soon as they are well up take every opportunity of hardening them by a free exposure to the air when the weather is suitable, and prick them out on the open border about the end of the month, or a little later according to the weather, taking care to protect them for a time by bending rods over them and covering with mats. After such a mild and moist winter slugs are certain to be more than usually troublesome, and dressings of quicklime and soot should be kept in readiness in a dry state to throw over the surface when stirring the soil amongst advancing crops and where digging and trenching is in progress. These surface stirrings amongst plants and dressings are absolutely indispensable at this season, because the plants do not grow away fast enough to escape these voracious enemies, and must be assisted by such means as are at our disposal. Successional sowings of Longpod and Windsor Beans must be followed up in quantity proportioned to the demand. Sowings of Peas for the main crops should be kept up; three good sorts for this sowing would be G. F. Wilson, Culverwell's Prolific, and Ne Plus Ultra. Culverwell's is a grand Pea, highly to be recommended. Another sowing of Early Dutch Turnips should be got in, and also a bed of Early Horn Carrot, to succeed those advancing in pits or frames, which will now require a considerable amount of air to prevent their being drawn up weakly. The principal beds for the main crops of Onions should be prepared at once, and the seeds sown on the first really fine day, when the soil is sufficiently dry for a heavy roller to be passed over it without clamming. *John Cox, Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, MARCH 17, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Mar. 19	Sale of Mr. Marsham's Collection of Minerals at Stevens' Rooms.
		Royal Horticultural Society: Meeting of the Fruit and Floral Committees at 11 A.M., and Scientific Committee at 1 P.M.
WEDNESDAY,	Mar. 21	Royal Botanic Society: Regent's Park Spring Show.
		Newcastle-on-Tyne Horticultural Spring Exhibition (two days)
		Sale of Camellias, Azaleas and Roses, at Stevens' Rooms.
THURSDAY,	Mar. 22	Sale of Lilium auratum and L. Krameri at Stevens' Rooms.
		Sale of Mr. Wilkins' Collection of Stove and Greenhouse Plants, by Stevens, at Leyton.
SATURDAY,	Mar. 24	Sale of Shrubs, Fruit Trees, Gladioli, &c., at Stevens' Rooms.

THE letter of Mr. P. BARR, in our last issue, calls attention to a defect in the management of the LINDLEY LIBRARY, which we trust the Council of the Royal Horticultural Society will speedily see their way to remove.

The Library, as well as some of the portraits in the Council-room, are, it may be well to remind our readers, invested in the hands of Trustees for the good of the public. The benefit was never intended to be limited to the Fellows of the Royal Horticultural Society. The Society at the time of the institution of the Library, had none of its own, its former valuable collection having disappeared in one of the many attacks of impecuniosity to which the Society has been liable. It was, therefore, considered best that the Library should be placed in the hands of Trustees, to prevent such misfortunes as befell the former collection; and that it should be deposited at South Kensington in the rooms of the Royal Horticultural Society, where it would be most useful for horticultural purposes. This was agreed on, and the Society further undertook to provide and pay a proper librarian. It is not necessary to tell all the history of the Library; how, for a time, it was, so to speak, huddled away in a sort of den (since swept away), where access to the books was all but an impossibility. After a time the books were transferred to the Council-room of the Society, where they were carefully and systematically arranged by Professor DYER. Subsequently the care of the Library devolved upon Mr. HEMSLEY.

With the scanty funds at their disposal, the Trustees can do no more than keep up the periodicals, pay for the binding of the yearly volumes, and occasionally indulge in the luxury of a new book. Some use has been made of the Library; the officers of the Society in particular have found it all-important to them, but the difficulties mentioned by Mr. BARR no doubt prevent a much freer use of it by outsiders. What is wanted is the housing of the Library in an apartment where it would readily be accessible at all reasonable times; while the more constant services of a competent librarian are also to be desired. Some former Councils seem to have treated the Library as a nuisance, and an unwelcome intrusion; others have ignored it; others, again, have been profoundly ignorant of it. The present Council, however, is more horticultural in its aspirations than some of its predecessors, and has shown more sympathy with the horticulturists and a greater appreciation of their wants. We may, therefore, not unreasonably look to them to remedy the matters justly complained of by Mr. BARR. A voluntary subscription from the Fellows of, say, ten shillings a year, or even five, would go a great way towards fitting up a proper room and paying a librarian. We are certain the Trustees would gladly co-operate in any measures calculated to enhance the utility of the Library, and promote the scientific status of the Society; and that there need be no fear of the Society's interests being neglected in the matter is clear from the circumstance that the Treasurer and Secretary of the Society are *ex-officio* Trustees, the other members of the trust being Mr. WILSON SAUNDERS, Mr. THOMAS MOORE, and Dr. MASTERS.

THE issue of the SCHEDULE of PRIZES of the PELARGONIUM SOCIETY, for the exhibition to be held during the ensuing summer, offers an opportunity of again inviting attention to its operations. One object of the Society is to promote the improvement of the different sections of the Pelargonium—a work which is best done by specialists, since it requires that the operator should take a special interest in the pursuit, and bring to bear upon it the light of special experience. For this cause alone the Society deserves support and encouragement; but it is equally worthy of sympathy for its efforts to facilitate the introduction of novel forms, and to give system and method generally to the practice of hybridisation in this particular class of plants.

That the limit of improvement or of variation in the Pelargonium is not reached is quite evident, since scarcely anything has yet been done with the cut-leaved and scented-leaved kinds; and the recent appearance of what have been called "regal" Pelargoniums—varieties of great promise in a decorative point of view—affords further evidence of this fact.

That there is scope for the operations of this Society, which is by no means antagonistic, but rather supplementary to more general institutions, is evident, because by its instrumentality a very large collection of the new double Zonal Pelargoniums were got together last summer, and grown under uniform conditions, which enabled both amateur fanciers and members of the trade to form a true estimate of their merits.

The prize-list which has been issued for the show to be held on June 20 next comprises some twenty-four classes, amongst which considerably over £100 are offered as prize-money. The date has been fixed especially to fit the blooming season; and not only the Zonals, but the large-flowered show sorts, the fancies, the hybrid Ivy-leaved sorts, and the Cape species are provided for, liberal prizes being offered for each. Among the Zonals a distinction has been made between the model flowers of the florists' class and the decorative sorts belonging to the Nosegay and hybrid Nosegay groups; and in the large-flowered or show type the same endeavour has been made to give increased prominence to the showy so-called "regal" and "decorative" varieties.

To accomplish all this, and to carry forward its work with sufficient spirit, the Society needs an accession of members, which ought to be forthcoming from amongst the admirers of the several groups of Pelargoniums, since the Society caters for them all.

The schedule, as stated in our advertising columns, may be had on application to Mr. MOORE, Botanic Garden, Chelsea; and intending subscribers should send in their names and contributions to Dr. DENNY, Stoke Newington. The ordinary annual subscription is one guinea.

—— WE trust it may be found practicable to amalgamate the FEAST OF ROSES with the outpourings of benevolence on July 4. Should the rosarians desire to have their special symposium all to themselves they might accomplish that at a light luncheon; and then, all grateful for the honour of appearing at the court of the queen of flowers, and for the pleasures of meeting with kindred spirits, they might show their sympathy with horticulture in general, and with distressed or decayed horticulturists in particular, by presenting themseves at the Benevolent feast. Rosarians are not likely to be deaf to the calls upon their sympathy, if only the opportunity be afforded them. Hence we trust it may yet be found practicable to combine the festival of the Roses with the feast of benevolence, to the advantage of all concerned.

—— The Council of the Royal Horticultural Society propose instituting at the Chiswick Gardens this season, under the direction of the Fruit and Floral Committees, comparative trials of the following subjects:—Of vegetables, viz., Tomatos, Cabbages, Savoys, Turnips, new Peas, and new Potatos; of flowers—Epacrises, Gloxinias, Begonias, Cannas, new Zonal Pelargoniums, Stocks, Asters, and new annuals. Fellows of the Society, and those desiring to contribute subjects for this purpose, should communicate with Dr. HOGG, Secretary to the Society; or Mr. BARRON, Superintendent at the Royal Horticultural Society's Gardens, Chiswick.

—— A very fine specimen of the beautiful white Himalayan RHODODENDRON ARGENTEUM is now in flower in Messrs. DOWNIE & LAIRD'S Winter Garden, at West Coates, Edinburgh. A specimen of Rhododendron Falconeri with twenty-two flower-buds upon it will also be in flower in the same house in about ten days' time, together with a large number of well set plants of other varieties which the firm are forcing into flower with the view of holding an exhibition, which we hear is to be open during the last week of this month and the first fortnight in April.

—— The *North British Advertiser* reports that a large meeting of the horticulturists of Edinburgh and neighbourhood was held at No. 5, St. Andrew Square, on March 6, to consider what steps could be taken in order to secure the better recognition of NEW AND RARE PLANTS, whether native or imported, and also of a better mode of ensuring that certificates should be granted in a manner which would carry more weight in the trade than they do at present. After Mr. DUNN, of Dalkeith Gardens, who was in the chair, had explained the object of the meeting, and the matter had been fully discussed, a deputation was appointed to meet the Council of the Royal Caledonian Horticultural Society, in order to get them to appoint a fruit, floral, and scientific committee, somewhat after the manner of the Royal Horticultural Society of London, which would meet at least once a month, and would therefore be in a better position to take cognisance of any novelties than the Caledonian Society, which at present can only take cognisance of what is brought forward at their shows, which are held only three times annually. When this matter was arranged, Mr. D. SYME, of the Lawson Company (Limited), suggested the expediency of forming a Horticultural Club or Mutual Improvement Society, whereat papers relative to all branches of horticulture could be read and discussed. Some conversation having taken place on the subject, the suggestion was highly approved of by all present, and a committee was appointed to draw up rules for the new society. After a vote of thanks to the Chairman, the proceedings terminated.

—— It is to be hoped that full trial will this season be made of Mr. WORTHINGTON SMITH'S alleged PREVENTATIVE OF THE POTATO DISEASE, called SALUS, and which is in the hands of Messrs. WHEELER, of Gloucester and 59, Mark Lane. The preparation consists of "compounds of sulphur and potassium," and the theory is that this preparation will kill the fungi, infusoria, mites, &c., in the soil before they attack the Potato, Cucumber, or other plant. Prevention, then, rather than cure is the object to be aimed at, seeing that cure is often impossible from the nature of things. Mr. SMITH claims for his compound that it is new, that it benefits the constitution of all plants, and at the same time it destroys the originators of diseases in plants. We trust that experiments will be made as far as possible to test the value of this substance. In the case of the Potato disease it must be ascertained definitely beforehand whether there are any resting-spores in the soil. It is not many people who have sufficient patience and ability to make this preliminary experiment.

—— We have lately examined some flowers of DOUBLE CYCLAMEN, which possess some interest from their regularity and from their relation to the structure of other genera of Primulaceæ. In the flowers in question there were ten petals in two rows, the stamens being superposed to, or in front of, the outer row of petals. The inner row of petals then corresponds with the little scales that are met with in the throat of the flowers of Androsace, Soldanella, or Samolus, and of which an indication may perhaps be

found in the little bosses which surround the mouth of the tube in the common Primrose. In one of the Cyclamen flowers, moreover, some of the anthers opened outwardly, others inwardly in regular alternation. At present we do not perceive the signification of this latter peculiarity.

—— In Imantophyllum miniatum princeps, Mr. Bull has the finest variety of this useful Amaryllidaceous plant that has come under our notice. The flowers are larger, more campanulate in form, and altogether smoother in outline, while the colour is a deep orange faintly shaded with rose. Three of the six segments are much broader than in the ordinary form, and very much rounder at the apex. It is as great an advancement on the variety called speciosum as that is on the ordinary I. miniatum, and will be a valuable exhibition plant.

—— In the open competition for designs for laying out Dartmouth Park, as advertised for by the Improvement Commissioners of West Bromwich, the premier premium was awarded to Mr. John Maclean, of Dorrington Park, Derby, and the second to Mr. R. P. Glendinning, Croydon.

—— Some superb examples of Yucca filamentosa variegata can now be seen at Mr. John Wills' Melbourne Nursery, Anerley, the plants being of good size, and the peculiar variegation finely developed. Mr. Bausé, Mr. Wills' manager, is giving these plants a much warmer treatment than is usually accorded to them—they are in an intermediate-house; the generally robust character of the plants, and the radiance of the silvery variegation just now, demonstrates the fitness of this treatment, at this season of the year at least. Mr. Bausé's method of propagating this plant may not lay claim to originality, but it is both rapid and effectual. A well-established plant of this Yucca will throw out a number of tuberous roots like hard knots, which form themselves round the sides of the pot. In course of time these make an upward growth in the form of suckers, and in this way any particular form has been increased. Mr. Bausé may be said to force the hand of the plants, for at intervals they are turned out of their pots and these tuberous roots removed before they have made only upward growth, and then put into small pots in a light sandy soil in a stove-house. Growth soon sets in, and in this manner a tuber will send up three or four shoots, or more or less, which can be removed as soon as they are large enough. The success of this system is shown by the fine lot of young plants Mr. Bausé has gathered about him, and which soon grow into acceptable specimens.

—— It is not often that we have to chronicle such a motive for establishing a great flower show as that which has influenced the Bremen Horticultural Society, viz., to celebrate the 100th birthday of Isaac Hermann Albert Altman. The show is to be held in the Bürger Park at Bremen, from August 15 to 19. The schedule comprises 100 classes.

—— Mr. Bull has another New Double White Epacris in flower, and a grand acquisition it proves to be. This is E. onosmæflora flore-pleno nivalis, a variety at once distinguishable from the double one shown last year for the first time, by reason of the purer whiteness of its flowers and their larger size. Individually the flowers are quite half as large again as those of E. onosmæflora flore-pleno, and are of snowy whiteness as compared with those of the last-named plant, which are distinctly flesh-tinted. The plant is a stronger grower, and produces longer and denser spikes of flowers.

—— An old gardener once remarked that "there were many little ways and means of stealing a march on inclement seasons, and taking advantage of fine ones," and in enumerating these means he instanced that of Sowing Peas in Pots early in March, from which to obtain an early crop, rather than sowing them in the open ground in November. His plan was to sow nine seeds each in pots 4 inches in diameter, selecting as many seeds as he wanted for his early crop. They were then placed in a gentle warmth in a frame or pit, and, when well up, the growing plants were gradually hardened off by exposure to the air, and when 4 inches in height, advantage was taken of a calm day to plant them out in as warm a situation as could be found for them, and with the balls of earth entire as they were turned out of the pots. The groups of plants were placed 6 inches apart in the rows, they were earthed-up at once, and some twigs placed about them for support as well as for protection. A little leaf-mould placed about the roots was, to use his own words, "warmer than common garden soil, and helped them to start freely into growth." The season has been so wet, and the soil so thoroughly saturated with moisture that it is not surprising it should be stated early sown Peas and Beans are having rather a trying time of it, and many failures can be noted. But gardeners will sow early, although the authority referred to above,

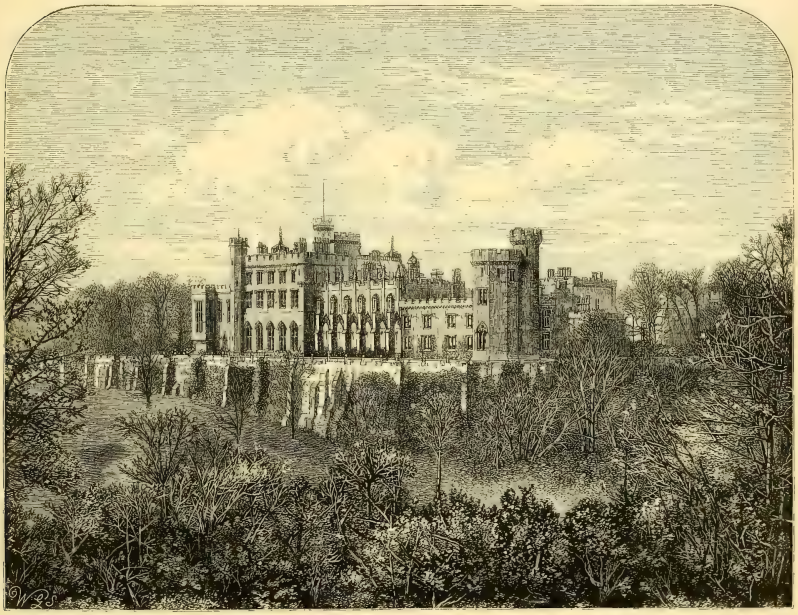


Fig. 55.—Lambton Castle, the seat of the Earl of Durham.

and others, are found asserting that but little is gained by sowing in November in preference to sowing in February or early in March. For early Pea crops a light dry soil, *i.e.*, a soil from which wet is soon drained off, and a warm situation, should be chosen, the drills should be drawn 3 feet apart, and the seed covered to the depth of 2 inches at least. The depth at which Peas should be sown must be regulated by the nature of the soil; if it is of a dry and warm nature the seed may be covered to the depth of 3 inches, or even more: the later the seed is sown as summer is approached the deeper it should be placed in the ground, and not only without injury, but with positive advantage, because a certain amount of moisture is necessary to the well-being of the plants, and they would be more likely to obtain it by deep rather than by shallow sowing. On the other hand, in strong soils which are much more retentive of moisture shallow sowing is to be recommended, even in some instances the sowing of the seeds on the surface, and drawing earth over them, thus forming a ridge. Some have even, in extreme cases, been obliged to raise ridges, and sow thereon. Peas, like other vegetable productions, will not bear stagnant moisture about the roots, and yet will not flourish without a certain supply; and thus deep sowing in one instance, and shallow sowing in the other, seems to be the most rational mode of securing to them the necessary conditions. If these remarks appear to some unnecessary, let it be remembered there are always learners among us, and simple matters are sometimes apt to be overlooked in the attention bestowed on greater ones.

—— The annual report of the MELBOURNE BOTANIC GARDEN for 1875 is occupied with details of the work done in the garden during the year, and is necessarily chiefly of local interest. Mr. GUILFOYLE speaks highly of the Buffalo-grass (Stenotaphrum glabrum) as a lawn grass mixed with Douh—Cynodon Dactylon. This may be a useful hint to gardeners in the south of Europe and other dry climates. Among the plants recommended for trial as a fibre plant is Sparmannia africana.

—— The Belgian committee established for the purpose of erecting a monument to the memory of the late LOUIS VAN HOUTTE have decided on erecting a monument in a new square about to be constructed in the suburb of Gendbrugge, wherein VAN HOUTTE acted as burgomaster for nearly a quarter of a century. The square will be called the Place Van Houtte, and will form part of a new street which will pass in the immediate vicinity of the establishment founded by VAN HOUTTE.

—— Agriculturists who believe in the maxim "Work and learn" will be interested in an article reprinted from the *Langham Magazine* and called AN AGRICULTURAL RIP VAN WINKLE (C. Matthews, 265, Strand, London), in which are very amusingly, and, we may add, convincingly set forth, the principal requirements of modern progressive agriculture.

—— The fine specimen of LIVISTONA AUSTRALIS, upwards of 60 feet high, in the Munich Botanic Garden is, we learn, now in full bloom.

—— The General Secretary of the Central Horticultural Society of France, M. A. LAVALLÉE, after some experience in FORCING THE LILAC, states that he is fully convinced that the cause of the colour not being developed is the high temperature which induces a very rapid growth; that is to say, the plant has not time to form the blue colouring matter of the flowers, and therefore they appear white. Below a temperature of 60° Fahr. the flowers begin to colour, whereas, if forced in a higher temperature in the full light, they come pure white. One of the members present contended that, although this might hold good for the varieties of Syringa vulgaris, it would not for S. persica. It was also mentioned that many vegetable colours, particularly those of flowers, are generated in the dark. Professor DUCHARTRE described the granular nature of chlorophyll as opposed to the liquid colouring matter of flowers, especially the blue-violets and purples, and mentioned that as long ago as 1863 he had proved most conclusively by a long series of experiments, that the white flowers, instead of blue, are due to a high temperature. In one care a part of the plant was inside exposed to a high temperature, and almost close to the glass, and a part outside in the open air. The flowers on the first were perfectly white, whilst those produced on the branches out-of-doors about a fortnight later were of the normal colour. M. LAVALLÉE recommends the variety called Charles X. for forcing because the ladies prefer it; but, as it will not bear forcing till towards the end of December nearly, it should not be selected for the earlier forcing. He also stated that withered flowers of forced Lilac will regain their freshness in about ten minutes if the lower ends of the panicles are placed in very hot water; and this operation may be successfully repeated several times.

—— Mr. MACKELLAR, gardener, Abney Hall, Cheadle, has sent us two flower-heads of FRANCISCEA CONFERTIFOLIA, which are very fine, both having upwards of two dozen fully expanded flowers. He also informs us that even larger heads have been produced by a pot plant about 4 feet through that is under his charge. This is a very beautiful early-flowering stove plant.

—— A writer in the *Bulletin* of the Belgian Horticultural Societies says that he has hit upon a most effectual means of preventing HARES AND RABBITS from gnawing off the bark of his Apple and Pear trees in severe winters. Last November he besmeared the trunks of the trees on two separate occasions with dog's dung, and the effect has been that the hares and rabbits have gone elsewhere for their food. Having himself experienced considerable loss in previous seasons from the ravages of these rodents, he thinks it a duty to make known the cheap and simple remedy he has discovered.

—— A correspondent sends us a cutting from a northern paper, which states that last week, when one of the joiners employed at the Camperdown Linen Works, Lochee, was engaged working upon a plank of wood, he observed what at first seemed to be a large knot in the wood. On closer examination, however, he found it to be something of the nature of bone. Having acquainted the head of the department, Mr. SILVESTER SMITH, of the "find," by his orders the corresponding plank was searched for and got, and the piece of each board containing the curiosity cut out and dressed. On this being done, the appearance was presented of a deer's antlered horn in a state of perfect preservation. The saw had cut almost through the centre of the horn, showing the vacuum in both pieces of wood, and also part of two antlers shooting off from the horn proper. The two planks in which the horn was were in the very centre of the tree, which measured in diameter about 21 inches. The wood was of Sycamore variety. This very interesting and extraordinary curiosity is, we understand, to be sent at once for exhibition to the Dundee Museum.

—— From the *Bulletin de la Société Centrale d'Horticulture de France* we learn that a certain M. DURAND has devised a new kind of collar for fixing young trees to their stakes. It is of galvanised iron, with an interior ring of plaited rushes. The authorities of the city of Paris have adopted it, and the Society awarded the inventor a certificate.

—— STAPHYLEA COLCHICA, which appears from an examination of a series of specimens at Kew to be nothing more than a state or form of S. pinnata, is likely, according to M. LAVALLÉE, to become a useful plant for winter decoration, as it bears forcing very well and produces its elegant white flowers in great profusion. M. CH. BALTET observed that the principal reason why this charming shrub is not so often seen in collections as it deserves is the difficulty experienced in propagating it. However, this has been overcome, and a perfectly easy and successful method of increasing discovered by M. COULOMBIER, of Vitry. It is briefly this—the layering of the young current year's shoots, which in July are sufficiently rooted for separation and planting out. Plants raised in this way are far preferable to those grafted on S. pinnata. Layers of the old wood frequently do not throw roots till the second year.

—— If any one were asked to name a hardy flower of more than usual merit on the score of attractiveness at this season of the year, they would be likely to name ANEMONE FULGENS. This gorgeous native of the South of Europe is not only perfectly hardy, but it is also very early, and is now blooming freely in the open air. Within the rich scarlet flowers there is a black disc, which contrasts in a marked manner. Clumps of this grand Anemone, if planted in sheltered spots with a southern exposure, would, no doubt, bloom early in January when the season proved favourable. As it flowers freely, it may be commended to the attention of those who grow early flowers for market, as bunches of this Anemone would be certain to command a ready sale. It is also well deserving the attention of those who are interested in wild gardening, and are accustomed to plant flowers by the side of woodland walks. There is quite a group of early Anemones suited for the purpose, viz., A. fulgens, the blue A. blanda, the mauve A. apennina, the yellow A. ranunculoides, and the wood Anemone, A. nemorosa, and its varieties. In the open ground A. apennina is fast throwing up its flowers in sheltered places, and the others are coming on with rapid succession. Such a rich group of plants claim and merit attention.

—— We have received a copy of the schedule of prizes to be competed for at the INTERNATIONAL HORTICULTURAL EXHIBITION to be held AT CARLISLE on September 6, 7, and 8 next, under the auspices of the Carlisle and Cumberland Floral and Horticultural Society. There are 218 classes in which money prizes or plate are awarded, and ten in which certificates only are given. The amount of prize money actually offered is nearly £1250. The schedule is divided into fourteen divisions, viz., 1, fruit, open to all; 2, fruit, open to amateurs only; 3, fruits of foreign growth; 4, plants in pots, nurserymen only; 5, plants in pots, for gardeners and amateurs; 6, plants in pots, for amateurs only; 7, cut flowers, for nurserymen only; 8, cut flowers, for gardeners and amateurs only; 9, cut flowers, for amateurs only; 10, dinner-table decorations, open to all; 11, vegetables, for gardeners and amateurs only; 12, vegetables, amateurs only; 13, new plants, open to gentlemen and amateurs; and 14, horticultural requisites. Amongst the principal prizes we note those of £20, £15, £10, and £5 for "a collection of sixteen sorts of fruit, not more than four varieties of Grapes, two sorts of Pines, and two of Melons;" £15, £12, £7, £3, for "a collection of twelve sorts of fruit, not more than four sorts of Grapes, Pines excluded;" £10, £7, £5, £2, for "a collection of ten sorts of fruit, Grapes and Pines excluded;" £15, £12, £10, £8, for "eight varieties of Grapes, one bunch of each;" £10, £8, £5, £3, for "four varieties of Grapes, one bunch of each;" £5, £3, £2, for "a collection of hardy fruits, eight varieties, grown in the open air;" £15, and £7 10*s.*, for the "finest collection of Apples, Pears, Peaches, and Nectarines," grown in the United States or British North America; £20, £15, £10, for "twenty stove and greenhouse plants;" £10, £8, £4, for "six Orchids in bloom;" £8, £6, £2, for "ten exotic Ferns;" £20 £15, £10, for "twelve new plants not yet in commerce, Orchids excluded;" £15, £10, £5, for "fifteen specimens of hardy Conifers;" £25, £10, £5, "for the best collections of twenty-five stove and or greenhouse plants" [Does this mean "stove and greenhouse plants," or "stove or greenhouse plants?"], shown by Continental nurserymen only; £20, £15, £10, £5, for "twelve stove and or greenhouse plants, six to be in bloom, and Orchids excluded;" £10, £6, £4, for "nine stove and or greenhouse plants, in pots not exceeding 12 inches in diameter;" silver cups of the value of £15 15*s.*, £10 10*s.*, and £6 6*s.*, for twelve new plants sent out by Mr. Bull since the commencement of 1874. In addition to these special prizes offered by Mr. Bull, there are others given by Lady Musgrave, Eden Hall, Penrith, for dinner-table decorations; Mr. William Wright, draper, Carlisle, for vegetables; Mr. J. C. Mason, bookseller, Carlisle, for stove and greenhouse plants; J. Jardine, Esq., Arkleton, for hardy fruits; Messrs. Saynor, Cooke & Ridal, for Jargonelle Pears; and Messrs. Mackenzie & Moncur, Edinburgh and Glasgow; Messrs. James Boyd & Sons, Paisley, and Mr. David Lowe, Edinburgh, for Grapes. The entries close on August 30, and intending exhibitors should apply for a copy of the schedule to the Acting Secretary, Mr. JOHN MOUNSEY, Victoria Hall, Lowther Street, Carlisle.

LAMBTON CASTLE,

THE SEAT OF THE EARL OF DURHAM (see p. 341). —This place is situated in the county of Durham, at an easy distance from Fence House Station, on the North-Eastern Railway Company's line, betwixt Durham and Newcastle. As those who have visited this part are doubtless aware, the district is more famed for its mineral wealth than anything particularly prepossessing in landscape effect; yet it must by no means be supposed that the surrounding country is so unattractive as are some of the great coalfields in other portions of the kingdom, as the land is of fair quality for agricultural purposes, and moreover is generally well farmed—a circumstance that contributes so much to a favourable impression, seen either by road or rail.

The home portion of the estate is well timbered, although the trees individually do not attain a large size. The Castle stands with its surrounding pleasure-grounds on the sloping ground on the northern bank of the River Wear, which is here considerably under the influence of the tide. The principal entrance is on the Durham and Newcastle Road, about 2 miles distant from the Castle, through the park; a broad drive leads up to the carriage front, which is on the north side of the building, opposite which is a wide gravelled space divided by an open stone balustrade from a considerable expanse of the richest of green lawn interspersed with trees, and enclosed on the north by a shelter-belt of timber, in front of which are dispersed a few large vases filled with flowering plants, not too numerous, but sufficient for the object in view—to give some specks of colour. At the western end of the mansion is a grass terrace traversed by a broad walk, from which slopes another piece of closely-shaven lawn which at some distance descends quickly. The southern front of the Castle is bounded its entire length, 384 feet, by a gravel terrace 54 feet in width, which is separated from the outer grounds (which here descend precipitately to the river) by an immensely strong buttressed wall, the foundation of which is some 24 feet below the level of the terrace. From this point the noble proportions of the building are seen to advantage, and at once strike the beholder with its substantial character and beauty of outline.

There are also other circumstances connected with Lambton Castle of a peculiarly exceptional nature, which increase the interest attached to it in common with all fine buildings. Some twenty-five years ago the walls began to give way, cracking and shrinking in many parts. The cause was not far to seek: in common with a great portion of the surrounding country the ground on which the Castle stands had been mined under, and when the seam of coal was exhausted the workings were as usual abandoned, after which the upper strata began to sink. In this serious state of matters only one of two alternatives could be followed: either to take down the building and abandon the site, or attempt to build up the old coal-workings. The Earl determined on the latter course; and this gigantic operation was commenced, the magnitude of which would have appalled many. The work occupied between seven and eight years, and in it were used 14,000,000 of bricks: these figures are easier read than the quantity they represent realised. The remedy has proved thoroughly effectual. Iron tie-bars were inserted through the walls in all directions where required, and the work of restoring the building commenced, which lasted four years; and so well was this carried out that nothing is now to be seen of the severe ordeal through which it has gone.

Running immediately in front of it, at a few feet distant, is a low wall, on which are stood at intervals vases containing blooming plants, which lighten up the immense mass of stonework. Coming round to the eastern end there is a walk that winds on a lower level at a short distance from the river in the direction of the flower garden, and another that takes the higher ground in the same direction through the upper portion of the pleasure-grounds.

Rhododendrons appear to succeed well here. Yews and other trees of a kindred nature do fairly, except Wellingtonias, which thrive up to a certain point, and then assume a somewhat stunted aspect. Cedrus Deodara and atlantica and the Hemlock Spruce grow vigorously. Pursuing the course of the lower walk already alluded to we arrive at the flower garden; the design is simple, pleasing, and devoid of formality—the beds arranged on the sides of the walks that take easy curves in different directions. Echeverias and plants of a similar habit are largely intermixed with flowering subjects. A dwarf Tropæolum is extensively used in conjunction with Blue Lobelia. The mass of colour is toned down by plenty of grass in the background, which obviates any approach to glare. This portion of the grounds is divided from the fruit garden by a wall which is separated from a broad walk by a wide flower border well arranged. Next the grass verge is a row of Golden Pyrethrum, then a row of Little Dorrit scarlet Pelargonium; next a 5 feet centre of Blue Viola, backed next the vase with another row of scarlet Pelargonium. The broad central band of Viola is relieved at intervals of about 6 yards by small circular groups of plants, the middle of each consisting of an erect-growing Conifer about 2 feet high, round which are pink Pelargoniums and yellow Pyrethrum. By this means the unbroken line of colour and monotonous even surface is avoided.

From this we arrive at the terrace flower garden fronting the front range of vineries. It is some 115 yards in length, by 20 yards in width. It is separated longitudinally from the fruit garden by a wall surmounted by an ornamental iron railing, covered with Clematis Jackmanni, which was nicely in flower on September 5. Two gravel walks run the entire length, one in front of the Vine border, and the other at the opposite side, leaving a narrow border up to the Clematis-covered railing. This was planted in four rows; next the Box a dwarf Ageratum, then white Alyssum, next Vesuvius Pelargonium, backed by Verbena venosa.

The middle portion of this garden was arranged as follows:—Centre, 5 feet strip of the orange-red Violet Hill Pelargonium, with a row on each side of the white-leaved Flower of Spring; on the outsides of this again a wide strip of blue Lobelia, then a corresponding row on each side of Mangles' Variegated Pelargonium, margined next the Box with Golden Pyrethrum; the central band of Pelargoniums had patches of Iresine planted 6 yards apart, and the blue Lobelia, single plants of Centaurea, at similar intervals, which added much to the general effect. The Vine border on the opposite side of the walk has a winding row of Echeveria running the whole length, with small patches of other bedding plants that do not spread much dotted at considerable distances apart—just sufficient to take off the bare appearance, but not so as to interfere to any extent with sun and air getting to the soil. There is another terrace flower-garden betwixt the two principal ranges of houses running the whole length, and about 30 feet wide, equally well done. The planting may be described as a combination of such things as are generally used in carpet bedding and flowering plants. This and the other terrace-garden is filled with spring bedders after the summer occupants are removed. *T. Baines.*

(*To be continued.*)

Home Correspondence.

Forsythia.—This is the time when search should be made for the female flowers of Forsythia suspensa and the male blossoms of F. viridissima. I have examined many hundred flowers of both species from many individual plants. In all the plants of viridissima the stamens were much shorter than the pistil, which was fully formed, and bore a slender style; in all but one plant of F. suspensa the stamens were much longer than the pistil, which had a very short style, and had early withered. In one plant alone of F. suspensa I found one flower, and one only, with the short stamens and long style; in this the anthers had turned brown, and the ovary had commenced to swell. *J. D. Hooker, Royal Gardens, Kew, March* 12.

The Gardeners' Royal Benevolent Institution.—Having read Mr. Findlay's remarks on canvassing for votes for this Institution, allow me to say that, in a great measure, I share his views. We know that it is natural for any member who is personally known to a candidate, and who feels some interest in the case, to give the latter the benefit of his votes, and to ask other friends to do the same; but when any one with power and influence takes up a case, and carries the candidate past those who have been trying for two or three elections, and lands them safe with votes to spare, who can be surprised that gardeners, not knowing where to look for such support, should give this as one of their reasons for not joining the Institution? I also see Mr. Grieve, in his good and encouraging letter, has dwelt on this point, and also raises the question which, to my knowledge, has been discussed at the Society's meetings—and, as far as I understand it, is, that it would be better to reduce the number of pensioners and give larger pensions; but, on the other hand, it has often been urged that, while the applicants for the pension are in excess of the number to whom pensions can be granted, and who would be glad and thankful to receive the pension in its present form, would it be wise to reduce the number, as all the applicants are fit and proper candidates according to the present rules? The question, I apprehend, can only be decided by taking the sense of a general meeting, but I am led more particularly to offer a few remarks from reading the communication in a recent number of the *Gardeners' Chronicle*. I have spoken to a great many gardeners with a view to their joining the Institution, and have received much the same answer as that set forth in Mr. Clark's letter, but I cannot think this a sufficient cause to keep gardeners who have the means from subscribing, for, supposing this were altered, I fail to see how we could appeal to gentlemen for the support which has hitherto added so largely to the funds of the Institution. It might be that a gentleman who had been a supporter would wish to recommend a candidate for the pension who had not been a subscriber, but he himself had been induced to become one from the fact that it was the Gardeners' Royal Benevolent Institution, and I think I am not wrong in saying that the annual dinner, from which the funds have been largely increased, is based on this principle. There is again a large class of men, such as nurserymen, and especially salesmen in Covent Garden, which latter are excluded by the rules from receiving any support, but who, nevertheless give, not only their money, but their time as well, when asked to do so, towards the support and management of the Institution, and, although I have no authority to speak for them, I have every reason to think it has been done on the understanding that it had something of charity about it, and extended its funds beyond subscribers. Let me here remark, too, that the voting papers clearly show who has been a subscriber, and for what length of time; and if canvassing were diminished, each member has the opportunity of voting for the candidate he considers the most deserving, and I cannot but think that under these conditions the longest subscribers, as a rule, would have the preference; but I still think the Society would never have been what it now is but for the aid it gives even beyond this to non-subscribers. Our worthy Secretary, who has done much to raise the funds, and is ever bringing its claims under the notice of those who are likely to become supporters, would then find that the principal ground on which to fix his appeal had been taken away—in short, according to my opinion, the Institution is quite enough a benefit society to be in any way worthy of its present title. *J. Willard, Holly Lodge Garden, Highgate.*

Royal Horticultural Society.—To the Gardeners of Great Britain.—It is a fact patent to all that the members of the present Council of the Royal Horticultural Society are doing all and everything in their power to induce gardeners to become Fellows or guinea subscribers to the Society. Therefore desire to say to my brother gardeners, "Come and you will be welcome." Many will no doubt begin railing at the bad management of the financial affairs, and no doubt the managers of the Society have taken leaps in the dark, but which of us has not done the same? Forget the past, and a bright and glorious future before you. What signification is there in guinea subscribers not being allowed to vote? Which amongst us all have had good places until we made them good ones, by strictly keeping our employer's interest to the front, and using all our energy to cultivate the gardens under our care to the best advantage? I say, then, no councilship, no generalship can successfully combat against such numbers as we can bring to the Society. Therefore walk first and run after, and in a few years we shall see such orators as our Ingrams, Speeds, and Smiths grace the Council-room. Dr. Hogg is not leaving a stone unturned, and the grand display of the 14th ult. in the large conservatory speaks volumes in favour of the old Society. In conclusion, let me beg of you all to come at once; don't delay. God willing, I shall attend the next meeting, and hope to see all my old friends. They will be welcomed with the right hand of fellowship by those in power, and last, but not least, by a genial smile from the gardener at Burghley. *R. Gilbert.*

—— May I beg the favour of space for a last letter on guinea Fellowships? The Council have adopted the guineas, but, alas! only to the extent of membership without a vote, instead of, as we asked, fellowship with a vote. As our one object has been to infuse good new horticultural blood, and so strengthen the Society, I need hardly say that the restriction renders the concession in this view worthless. I am told it was considered that if a vote had been given, so many persons living in the neighbourhood of the gardens would have become guinea Fellows, that the votes of those not on the spot might have been swamped. Taking the idea from a member of Council after the last general meeting, I suggested to the President that if the

Council would give guinea Fellowships with votes to those living outside the London letters, I thought many good country horticulturists might be induced to come in. This was only on the principle that if you cannot get best you must try for second best, the Society having still its old load of incumbrances on its back, but I thought that our Fellows would get horticultural consideration for their guineas, and that they would leaven the Society. This proposal was not adopted. Some of your readers who have given their names as would-be guinea Fellows ask what they ought to do. I think our best course is to go on quietly collecting names, and waiting, trusting to the chapter of accidents: the Council may recharge their policy. It is an unpleasant reflection that for country horticulturists to give their guineas without getting a vote would be, I think, merely to that extent to bolster up a state of things which the experience of now very many years has shown to lead only to constantly recurring seasons of discomfort and failure. The question is, as I have had to repeat over and over again, one of simple common sense. Every scientific society with headquarters in London has more or less prospered except the Royal Horticultural Society; there is no science with nearly as many friends as horticultural science. Every other scientific society (excepting the Zoological Society, with its show every day, and the position of which is essentially peculiar) trusts for its support to those interested in its object. The Royal Horticultural Society, except quite at its commencement, has never done so; surely it is a fair inference that if, in this respect, it followed the course of its sister societies, with the advantages of its wide sweep and more general constituency, it would become the most prosperous of all. It now only remains for me to thank you for the valuable space given to me, and to thank those good horticulturists in the country who have taken so much trouble in this matter; their work will assuredly bring fruit hereafter. Four years ago, when guinea Fellowships were first mooted, their supporters were counted by tens, they now are by hundreds, including the best horticulturists of the country. When they come up next (with the gained experience) they should be by thousands. I ought, perhaps, to apologise for having put myself forward, but having served for many years in almost every office of the Society I know exactly its requirements, and having time and means, knowing its past troubles, and seeing a remedy against future ones, it seemed that I ought (no one else having come forward) to undertake the work at first. Before long I became merely the mouthpiece of many of the best and most experienced horticulturists of the country of all ranks, who urged me not to let the matter rest till the guinea Fellowship was accomplished and the Society reconstituted. *George F. Wilson, Heatherbank, Weybridge.*

P.S.—Mr. Fish is probably quite right in supposing that owing to his exertions and those of his friends at the time the show at Bury was held, the Council ran no real risk. The risk was at the commencement, when they proposed to hold the show without the sanction of the Expenses Committee, before the very large guarantee fund was raised. *George F. Wilson.*

Lobelia Emperor William.—Permit me to thank Mr. Morgan for the information he has given respecting this Lobelia. All I can say is, that I have not seen it beyond this immediate neighbourhood, and my only object in recommending it to the gardening public was, that a plant possessing so much merit should be better known and more extensively cultivated. I have not written one word too much in favour of Emperor William. *F. Davidson.*

Palm Seeds from Africa.—Last November I received a packet of Palm seeds which were obtained for me through the kindness of Colonel Gordon. In December I distributed them, not knowing whether they had been gathered fresh, and I am happy to say that Mr. Sowerby tells me that three have vegetated in the Royal Botanic Gardens, Regent's Park; and one of two which I planted myself in Scotland is thriving nicely. The remarkable thing to me is that in less than two months the outer husk was above-ground. The plant is a species of Hyphæne, described in vol. xxiii. *Linn. Trans.*, from seed brought from Africa by me in 1863, and supposed to be new, but a more decided opinion may be formed some years hence if the plants have the good fortune to live. *J. A. Grant, Col., March* 3.

The Weather.—We had 14° of frost here on Saturday night, and to-day, March 12, it is piercingly cold. Apricots are fast opening their blooms, which look well and promising, as do all other fruit trees, but sadly too forward. *J. Sheppard, Woolverstone Park, Ipswich.*

Aspects for Plant Houses.—As Mr. Bester has seen fit to introduce personal remarks into the discussion of this subject, I do not feel inclined to take any further notice of it, indeed if I had had the least idea that he would have taken offence at a little friendly criticism, I should never have written anything on the subject at all. With regard to the proper aspect for span-roofed plant-houses, I confidently leave the matter in the hands of the readers of the *Gardeners' Chronicle* to judge for themselves which view of the subject is the right one. *Aqua Calida.*

The Black Prince Pine-apple.—The fruit of this well-known sort is readily distinguished from most other kinds (particularly when it attains a large size) by the great depth of its pyramidal-formed fruit. The accompanying illustration (fig. 56) represents one which was cut in the last week of October, 1876, which measured 13 inches from its base to the top, and weighed 10 lb. 2 oz. The chief defect in this variety is the liability of some of the pips to become discoloured before the others are perfectly ripe; this is especially the case oftentimes with large fruits, and is very detrimental to it, otherwise its noble proportions render it very attractive, and it is not altogether a bad autumn or early winter variety, and worth a place in all large collections. To remedy its tendency to spot, which generally happens in large fruits, cease to water the plant as soon as the colouring process begins, and if the conditions under which the plant is growing will admit of its being removed, by all means transfer it to a house where only a moderate temperature is maintained and a plentiful supply of fresh air is admitted, and where shading can be applied when powerful sunshine exists. Under these conditions it will assume a bright colour, and will generally finish off perfectly. In the case of those fruits which cannot be removed, to shade the fruit when it begins colouring, and to give more air, will likewise be attended with highly satisfactory results. *G. T. Miles, Wycombe Abbey.*



FIG. 56.—BLACK PRINCE PINE-APPLE.

Dodder on Azalea.—The accompanying Azalea is from a plant I procured from London some time last year. When it came I noticed some very peculiar parasitical-looking roots upon it; and when the roots came in contact with other plants that were placed near the Azalea bearing these strange-looking plants they very soon established themselves upon them. I have tried various means to destroy them without injury to the plant, but it appears nothing short of destroying the plant will effect the purpose. *C. Coombs, Tabley House Gardens.* [The threads are those of a Dodder—Cuscuta—such as is common on wild kinds of heath in the country. Probably it was introduced with the peat in which the plant is potted. Should it flower we shall be able to tell you the species. EDS.]

Fortune's Yellow Rose.—I have grown this Rose here for many years, and Messrs. Paul's plants are, I believe, derived from cuttings sent by me to them. I think it is plain that the colour of the blooms differs in different soils; indeed, it differs in blooms on the same plant, according as they are more or less shaded. I have them sometimes of a bright canary shaded with carmine, sometimes a lively tint of buff, or nearly imitating the tint of a new bronze penny. Occasionally some blooms are splashed rather than striped with a darker shade. Strange to say, I have never seen the Rose except in my own garden. Of the Beauty of Glazenwood I have not before heard. *T. F. R., Pewsey Rectory, Wilts, March* 12.

Whale Oil a Cure for "American" Blight on Apple Trees.—Reading my old friend Mr. John Downie's remarks in last week's *Gardeners' Chronicle* on this subject suggested the following:—Many years ago we had a quarter of standard Apples infested with American blight. My father set me to paint the stems—filling in the "crevices," as he called them—with pure whale oil, not a pleasant operation for the olfactory nerves, but it utterly destroyed the blight, and certainly improved the appearance of the trees generally. The only drawback was a personal one. When we had to "lug away" to get them up for an order, one's hands were much of the same appearance, if not the odour, of a lamp cleaner at a railway station. I have always since, on the slightest appearance of the pest, adopted the whale oil painting, with the best result. I shall certainly try it on scale, for which I hope I may not have the chance, if any crops up with us. *James Cutbush, Highgate.*

Organ Tea.—The words Organ tea originated with me in a local newspaper, and were used in quite a different sense to what has been applied to them by your correspondents in previous numbers of the *Gardeners' Chronicle.* Pennyroyal is known as Organ herb in most of the western counties, and is much prized by old women herbalists as a blood purifier. I saw an old recipe that Organ broth was used in witchcraft to make people see everything double. It was in this sense I used the term Organ tea, in reply to a well known writer in one of the garden periodicals, he having criticised a letter of mine in a local newspaper on the rain for the last ten years. After he had taken great pains and written a volume of figures, we only differed in this wise, he saw my hundreds as thousands, and multiplied them as such: in doing so he created a mare's nest. In my reply I accused him of having had an extra strong dose of Organ tea, and had seen my figures more than double. I hope my friend Mr. Gould's curiosity is now satisfied, as well as others who have asked for an explanation. *William Culverwell, Thorpe Perrow.*

Poisonous Plant.—According to a recent number of the *British Medical Journal*, some Italian sailors, belonging to a vessel lying in Falmouth harbour, were recently poisoned by eating herbs which grow on the shore near St. Just. One of the men who was most affected was taken to the Sailors' Home Hospital, where he died, after suffering great agony. The poisonous plant resembles Watercress, and is mistaken for it by strangers. A few years since two Italians died immediately after partaking of it. The name of the plant is not mentioned, but it is probably Sium latifolium, which grows with Watercress, and is sufficiently like Watercress to deceive unobservant people. The more common S. angustifolium also commonly grows with Watercresses, and is sometimes found in the bundles when exposed for sale in the markets. This plant in infancy has a superficial resemblance to the Watercress, and it is considered dangerous by some authorities. It was a great pest in the late Mr. Smee's Watercress beds. *W. G. S.*

Rhododendron argenteum.—A few days ago, when looking through the gardens at Osberton, the seat of F. J. S. Foljambe, Esq., M.P., my attention was directed to a beautiful specimen of Rhododendron argenteum, which was of the following dimensions and in the best of condition:—Height 12 feet by 10 feet through the branches. At the time of my visit there were over fifty trusses of flowers open, averaging from 9 to 12 inches in diameter; the individual flowers open of a pale pink colour marked with chocolate, the older

bloom changing to white, which gives the plant a very striking appearance. Mr. Woodfield, Mr. Foljambe's able gardener, informed me he found the plant in a pot when he took charge of the gardens nearly seven years ago, and as those kinds of plants are greatly appreciated by the owner, a suitable place was selected in one of the greenhouses, and the plant planted out—the result being one of the finest floral sights I ever saw on one plant. There were several other Rhododendrons planted out in the same house growing into fine specimens. I have never seen the species growing at any other place, and considering it one of the best as an indoor decorative plant I have thought it might be useful to send these few remarks. There are many other things worthy of noticing at Osberton, and any gardener having a little time at command would not regret a visit, and might feel certain of being courteously received by Mr. Woodfield. *Joseph Jefferson, Worksop.*

Paraguay Tea.—I read with interest Mr. Forsyth's recommendation of the Paraguay tea, and his remarks at once reminded me of the tea preparable from our Holly, a weed in many forests adjacent to Hamburg, and in Holstein-Lauenburg. As early as 1855 our late Grand Master of Botany—Hugo von Mohl—made some remarks on this question in *Botanische Zeitung*, p. 39 (January 12):—"Spending last autumn some time in the Schwarzwald, I was informed to my surprise that the leaves of Ilex Aquifolium, a common plant in those mountains, were dried by exposure to sunshine, and then used in lieu of Chinese tea. Since I could not obtain such tea at my place, I collected fresh leaves for an experiment. I had not to make an infusion, but a full decoction, though being a tea drinker and detecting everything that is a surrogate, I found yet that the Ilex tea was not to be despised. I would prefer it, at all events, to what Mate tea I have tasted till now. One should try to obtain a valuable product by roasting the well-selected leaves. I could not learn whether the inhabitants of the Schwarzwald had long used that beverage or whether they only did so after having been informed of the use of Maté tea." As to myself, I tried such tea in 1850 at Sharand, in Saxony, from garden leaves. It was just a drinkable beverage, but neither my friends nor myself were enchanted with it. The leaves had, however, not been roasted long enough. Such things may, too, be regarded as questions of taste. I well remember of the great excitement created when it was recommended to drink tea of Coffee leaves. Enthusiastic gentlemen said that one would in future have to drink one's coffee, coffee tea and Chinese tea each day. When I asked Dr. Lindley of it, he told me he had once tasted it; and with a peculiarly comic expression of his lively physiognomy, he added, no power of the world would engage him to try it a second time. Yet speaking of Ilex Aquifolium, I would recommend it for another purpose. A great difficulty in gardening is to have good hedges under older overshadowing trees; Ilex being well adapted for hedges and growing in the woods in the deepest shadow, would appear very suitable for the purpose. It even may have been used for this purpose long since, though I do not remember having seen it. *H. G. Reichenbach, f.*

Desfontainea spinosa.—Would your correspondent "H.," who wrote the "Notes from a Lancashire Garden" in your issue of February 24, kindly say in what position he grows his Desfontainea spinosa and what sort of soil he grows it in? *J. B. C.*

Reports of Societies.

Edinburgh Botanical: *March* 8.—Dr. Cleghorn, Vice-President, in the chair. The following communications were read:—

I. Professor E. Morren on Vegetable Digestion. By Isaac Bayley Balfour, Sc.D., F.L.S.

II. On some Fossil Plants from the Calciferous Sandstone near Edinburgh, agreeing with species figured and described by Stur in his *Die Culm Flora*, published at Vienna in 1875. By C. W. Peach, A.L.S. (Specimens of the fossils referred to were exhibited.)

III. Notes on the Open-air Vegetation at the Royal Botanic Garden. By Mr. McNab. (See p. 337.)

IV. Miscellaneous communications.

1. Professor Balfour exhibited specimens, which had been sent to him from the Royal Gardens, Kew, of the Screw Bean (or Mesquit), (Strombocarpus pubescens), a small tree indigenous to the north of Mexico and Arizona. The Screw Bean, it appeared, was largely used in these countries for feeding cattle and horses, and it also produced a very good gum. The British Consul at Toronto, who had recently called attention to the Bean, had recommended that it should be grown in India, Ceylon, Australia, and the Cape, where—in dry seasons especially—it would doubtless prove a great boon.

2. Professor Balfour read a communication which he had received from the Rev. David Landsborough, noticing the growth of Pittosporum tenuifolium, a New Zealand plant, in the open air at Mauchline. The plant, which is evergreen, was grown from seed brought from Canterbury, New Zealand, by J. Deans, Esq., in 1865, and is now 10 feet 6 inches high.

3. Professor Balfour exhibited grains of Wheat, from Captain Sir George Nares, picked up in Polaris Bay, where it had lain from 1871 to 1876, N. lat. 81° 30′ exposed to all the rigours of the climate. The grains had been tested at Kew, and 64 per cent. were found to be capable of germination. Two Peas and a grain of Maize had also sprouted, which were found amongst the Wheat.

4. Sir Robert Christison, Bart., exhibited fasciated branches of Scotch Fir and Larch, which had been forwarded by Dr. Paterson from Airthry Woods, Stirlingshire.

5. Sir W. C. Trevelyan exhibited specimens of Mandragora officinarum and M. microcarpa at present in flower in his garden at Wallington. The last-named species was noticed in the *Gardeners' Chronicle*, February 17, p. 212.

Notices of Books.

We have received a copy of the second edition of the *Nurseryman's Directory*, "a reference book of the nurserymen, florists, seedsmen, tree dealers, &c., for the United States," and all that we can say concerning it is that a more useless work of its kind it seldom or never passed through our hands. Instead of giving an alphabetical list of the nurserymen, &c.—the handiest of all plans for reference—the compiler has alphabetically arranged the States and the post-offices in each State, and then given the Christian names first, so that any one turning to the book to find the address of any particular American nurseryman, whose surname only may be known to them, must wade through it page by page until they find what they want. A useful Directory truly! A list of foreign nurserymen and seedsmen given in an appendix is very amusing. There are only two addresses given under England, and the same number under Scotland. France is credited with twenty-one names, several of which are wrongly spelled; and under Germany are a dozen names, five of which, on a closer examination, we find belong to Holland and two to Belgium.

—— The *Villa Gardener* for the present month contains an article which may be commended to Mr. Ruskin. It is entitled "Horticulture as a manly exercise." The editor of course has no difficulty in proving his point, and we see no reason why the *utile* should not be combined with the *dulci*. The waste of force in rowing, cricketing, and the like becomes rather an appalling consideration when one considers how much more profitably it might be employed, and with at least equal pleasure. The article "Stoking" may be commended to all young gardeners as a subject for their special study.

—— The *Journal* of the Bath and West of England Society for 1876 contains *inter alia* a *resumé* of the controversy as to the mode of reproduction and specific identity of the fungi producing the Potato disease, wherein full justice is meted to Mr. W. G. Smith. It is a pity that the Royal Agricultural Society of England does not follow the example of its provincial contemporary. Dr. Peard, the author of the paper alluded to, has also a note on the cultivation of Fears and Apples in gardens, based in a great measure on the teaching of Dubreuil.

—— The last issued number (88) of the *Journal* of the Linnean Society contains, in addition to some additional reports on the botany of the *Challenger* Expedition, Mr. Bentham's paper on the arrangements of Monocotyledonous plants. An index, much more elaborate than usual—one which is indeed an analysis rather than a mere index—closes the volume, and bears testimony to the assiduity of the editor.

Publications Received.—Le Bulletin Horticole.—Gardeners' Monthly.—Grevillea.—The Entomologist.—Révue Horticole.—Science Gossip.—Villa Gardener.—Révue de l'Horticulture Belge.—Monatsschrift des Vereines zur Beforderung des Gartenbaues, in d. K. Preuss. Staaten.—Journal de la Société Centrale d'Horticulture de France.—Bulletin d'Arboriculture.—Bulletino della R. Società Toscana di Orticoltura.—Journal of the Bath and West of England Society, 1876.—Le Moniteur de l'Horticole Belge. Cultivated Plants, their Propagation and Improvement; by F. W. Burbidge (Blackwood).—De l'Epuration des Eaux d'egouts; par C. Joly (Paris, Michels). The author recommends well-devised irrigation as the solution of this vexed problem.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, MARCH 14, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading at 9h. Past Midnight.	BAROMETER. Departure from Average of 16 years.	TEMPERATURE OF THE AIR. Highest.	TEMPERATURE OF THE AIR. Lowest.	TEMPERATURE OF THE AIR. Range.	TEMPERATURE OF THE AIR. Mean for Day.	TEMPERATURE OF THE AIR. Departure from Mean from Average of 15 years.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Degree of Humidity. Sat. = 100.	WIND.	RAINFALL.
										Average Direction.	
Mar.	In.	In.	°	°	°	°	°	°			In.
8	29.70	+0.15	41.4	30.7	10.6	35.4	−1	28.8	76	NNW: NW	0.04
9	29.92	−0.02	41.1	29.0	12.1	34.6	−5	29.3	83	NE: ENE.	0.00
10	29.94	+0.01	41.4	29.0	12.4	34.4	−6	22.5	70	SE. ESE.	0.00
11	30.03	+0.12	42.3	26.0	16.3	33.2	−7	15.6	77	E	0.00
12	29.63	−0.28	48.1	29.5	18.6	38.7	−2	31.6	90	SSW: SW.	0.00
13	29.64	−0.26	50.0	30.0	20.0	41.5	+3	35.3	89	WNW: W.	0.01
14	29.73	−0.15	55.3	43.7	11.6	48.5	+7	43.1	78	WNW	0.00
Mean	29.81	−0.10	45.8	32.6	13.1	38.5	−2	32.3	79	variable	sum 0.05

March 8.—A fine day, partially cloudy. Cold wind. Rain fell in morning. Frequent snow showers afterwards.
— 9.—A fine day, cold and cloudy. Very heavy clouds from 5 to 6 P.M.
— 10.—A very fine clear day. Cold.
— 11.—A brilliantly fine day. Cloudless, cold.
— 12.—A very dull cloudy day. Slight rain 4 P.M., windy.
— 13.—A dull day. Frequent drops of rain.
— 14.—A fine day, cloudy at times. Mild.

London: *Barometer.*—During the week ending Saturday, March 10, in the neighbourhood of London the reading of the barometer at the level of the sea decreased from 30.06 inches at the beginning of the week to 29.84 inches by noon on the 4th, increased to 29.92 inches by the morning of the 5th, decreased to 20..33 inches by the afternoon of the 7th, increased to 30.14 inches by noon on the 10th, and was 30.13 inches at the end of the week. The mean reading for the week at sea level was 29.89 inches, being 0.07 inch below that of the preceding week, and 0.22 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 46½° on the 5th to 41½° on the 8th and 10th; the mean value for the week was 43¼°. The lowest temperatures of the air observed by night ranged from 29° on the 9th and 10th to 20° on the 4th; the mean for the week was 32½°. The mean daily range of temperature in the week was 10⅜°, the greatest range in the day being 13° on the 9th, and the least 5⅓° on the 4th.

The mean daily temperatures of the air, and the departures from their respective averages were:—4th, 42°.3, + 1°.8; 5th, 39°.3, − 1°.2; 6th, 37°.2, − 3°.3; 7th, 35°.9 − 4°.6; 8th, 35°.4, − 5°.1; 9th, 34°.6, − 5°.9; 10th, 34°.4, − 6°.2. The mean temperature of the air for the week was 37°, being 3°.5 below the average of sixty years. The highest readings of a thermometer with blackened bulb in vacuo, exposed to sun's rays, were 85° on the 5th, 92° on the 8th, and 108° on the 10th; on the 4th the highest reading was 56½°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 24½° on the 8th, and 26½° on the 9th and 10th; the mean of the seven low readings was 29°.

Wind.—The direction of the wind was variable, and its strength brisk. The weather during the week was dull, and the sky generally very cloudy. Snow fell on the 7th and 8th.

Rain fell on three days during the week; the amount collected was 0.50 inch.

England: *Temperature.*—The highest temperatures of the air observed by day were 54° at Manchester, and 53° at Truro, Plymouth, and Sunderland; at Liverpool and Hull 45° was the highest temperature. The mean value from all stations was 49½°. The lowest temperatures of the air observed by night were 26° at Wolverhampton and 27° at Eccles; at Liverpool 32½° was the lowest temperature. The general mean from all stations was 29½°. The range of temperature in the week was the greatest at Manchester, 26°, and the least at Liverpool, 12½°. The mean range of temperature from all stations was 20°.

The mean of the seven high day temperatures was the highest at Plymouth, 49½°, and the lowest at Liverpool, 41½°; the mean from all stations was 43¾°.

The mean of the seven low night temperatures was the lowest at Wolverhampton and Eccles, both 31°, and the highest at Truro, 38.2°; the mean value from all stations was 33.2°. The mean daily range of temperature was the least at Liverpool, 6.1°, and the greatest at Plymouth, 14.1°; the mean daily range of temperature from all stations was 10°.

The mean temperature of the air for the week from all stations was 38°, being 3° lower than the value for the corresponding week in 1876. The highest was 42.5°, at Truro, and the lowest 35.2° at Wolverhampton.

Rain fell on every day in the week at Plymouth and Bradford, and on five or six days at most other stations. The amounts measured varied from 1 inch at Nottingham to three-tenths of an inch at Bristol; the average fall over the country was half an inch.

The weather during the week was generally dull, cloudy, and cold, with frequent showers of hail and snow.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 56° at Paisley to 46° at Greenock. The mean value from all stations was 50°. The lowest temperatures of the air ranged from 26° at Paisley to 31° at Leith. The general mean from all stations was 28.3°. The mean range of temperature from all stations was 21.5°.

The mean temperature of the air for the week from all stations was 38°, being 1.5° lower than the value for the corresponding week in 1876. The highest was at Paisley, 39.3°, and the lowest at both Dundee and Aberdeen, 37.4°.

Rain.—The amounts of rain measured varied from 1 inch at Edinburgh, to a quarter of an inch at Leith and Perth; the average fall was half an inch.

DUBLIN: The highest temperature of the air was 54°, the lowest 27°, the range 27.1°, the mean 41.4°, and the fall of rain 0.44 inch.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—BACON.

174. THE WHITE ROSE OF YORK.—Which was the true white Rose of York? It could not have been the Rosa alba, because that, though only a variety of R. canina, was not introduced until the end of the sixteenth century. I suppose the red Rose of Lancaster was the Provence Rose. *Henry N. Bilcombe, Bitton Vicarage.*

175. GOLD AND SILVER FISH.—I should feel much obliged if any of your correspondents could inform me where I should be able to obtain gold and silver fish for an outside aquarium? *Joseph Murdoch, Gr. to C. F. Tregellas, Esq., Green Heyes, Warwick.* [Any of the aquarium dealers in Covent Garden and elsewhere would suppiy you.]

Answers to Correspondents.

ABUTILON ROSÆFLORUM: *B. S. W.* Your new hybrid is a very pretty and distinct variety, with bell-shaped drooping flowers of a pleasing salmon-tinted rose colour, veined with rosy crimson. It will no doubt make a very useful decorative plant.

AZALEA AMŒNA: *E. H.* The flowers of your semi-double seedling of this pretty Azalea are of a clear bright rose-colour, brighter than in any other we remember to have seen, and with a pleasing flush of magenta.

BRUSSELS SPROUTS: *W. B. B.* We do not consider your Variegated Brussels Sprout to be desirable either for use or ornament.

CINERARIAS: *R. & A. Smith.* A fine richly coloured and very showy strain of medium-sized flowers, some of which are extremely beautiful.

DISEASED MUSHROOMS: *J. F.* The Mushrooms are attacked (and their gills obliterated) by a parasitic mould, not yet in fruit. Such instances are not uncommon, and the Mushrooms are not fit for the table.

INSECTS IN RAIN-WATER: *C. B.* Without seeing the specimens it is impossible to give a satisfactory reply: a disquisition on probabilities which may not apply would be the only result. If "C. B.," however, will put a few of the animals from his flower-pots into a phial with spirits, and a few of those from his filter into another, and send them to us, we will do our best to resolve his doubts.

MAHOGANY: *F. J. Dreschler.* The grub taken in the piece of wood has nothing to do with the boring. These are the work of a species of Teredo. The Mahogany must have been left for some time in the sea before shipment—portions of the shell are still visible in the borings. The grub seems to be the larva of a weevil. *A. M.*

NAMES OF PLANTS: *Young Beginner.* 1, Rhododendron barbatum. The other Rhododendron we do not recognise, and the Camellias, being garden varieties, we cannot undertake to name them.—*J. Cocker & Sons.* The fronds sent are those of Nephrolepis tuberosa, not N. exaltata, which is a plant of larger growth.

NEAPOLITAN VIOLETS: *E. G. N.* We are not aware that there is more than one variety of Neapolitan Violet in cultivation.

PELARGONIUMS AND IRESINE: *S. A.* From the appearance of the leaves, and the very clear descrip tion given of the heating apparatus, we have not the least doubt that there has been a slight escape of gas from the brickwork which encloses the furnace, and which forms the striking-pit mentioned. The escape has not been very large, otherwise it would have affected all the plants in the house. In all cases where horticultural buildings are warmed with flues, the furnace should be built completely outside the house, for even if enclosed with a large amount of brickwork, the expansion that takes place from the heat of the fire when burning brisker than is necessary in cold weather, will cause a sufficient displacement of the brickwork to allow the gas to escape. The flue also, described as made of tiles, is the most dangerous heating medium that could be used, as from the accumulation of soot which inevitably takes place in a flue of any description, it is liable, even with the greatest care in stoking, to occasionally take fire, in which case there is always the greatest danger of the tiles cracking and admitting the sulphurous fumes into the house to an extent that will destroy or seriously injure the plants. A well built brick flue is much to be preferred to the tiles, inasmuch as the mischief above alluded to is not likely to occur through the soot within it taking fire.

SEEDS: *B. Anderson.* The seeds are probably those of a cucurbitaceous plant, perhaps a species of Luffa. We cannot say more for certain.

SLUG: *E. Morgan.* It is the true ear-shaped Testacella.

THE WALTHAM CROSS GRAPE: *J. McI.* According to your own showing your experience of this Grape is so very limited that it scarcely justifies such sweeping denunciations, even supposing all your statements to be accurate. The Fruit Committee has guided in its judgment the question, and we do not know that any kinship to the Black Hamburgh has been claimed for it. We have not seen a sample of the Waltham Cross this year, but we remember that Mr. Douglas, of Loxford Hall Gardens, exhibited a splendid bunch of it in January, 1876.

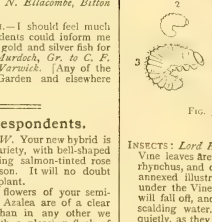


FIG. 57.—OTIORHYNCHUS PICIPES.

INSECTS: *Lord Hill.* The weevils which attacked your Vine leaves are those of a member of the genus Otiorhynchus, and closely allied to O. picipes, fig. 5 in the annexed illustration. To trap them, hold a sheet under the Vines, and then by shaking the leaves they will fall off, and may be killed by immersing them in scalding water. The operation must be done very quietly, as they drop down as soon as disturbed.

WEED: *S. T.* The weed is one of the wild species of Geranium—probably G. molle, which is a common pasture weed. We do not recognise the seeds.

WIREWORM: *A. E. R.* Fork in a dressing of ammoniacal liquor freely. Then the gaswork, or give the ground a dressing of spirits of tar.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff privately. The Editors would also be obliged if by such communications being sent as early in the week as possible. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.*

CATALOGUES RECEIVED:—Louis Van Houtte (Ghent, Belgium), Catalogue of Stove and Greenhouse Plants, &c.—Messrs. Cripps & Dartington, Cirencester, Calendar of New Agricultural Seeds, &c.—J. B. A. Delcuil (Marseilles), Catalogue of Amaryllis, Begonia, Echeveria, &c.—H. Walton (Edge End Nurseries, Brierfield, Burnley, Lancashire), General Plant Catalogue.

ERRATA.—For "pickle," at p. 307, col. *c*, 13th line from the top, read "fickle."—In our Covent Garden report last week an error was committed by the accidental transposition of a short paragraph, and Mr. Webber was thereby made to affix his signature to a statement for which he was not in reality responsible, and which, we further learn, was inaccurate, the price stated being considerably greater than was in reality paid.

COMMUNICATIONS RECEIVED:—J. B.—W. C.—R. P. G.—C. B. & Co.—E. M.—F. M.—T. B.—H. L. & Co.—A. H.—J. O'D.—I. D.—R. G.—J. D. W.—E. S. D.—C. C.—C. Y. M.—J. M. R.—W. S. (next week)—J. A. S.—North.—Constant Reader.—J. A.—Bob.—J. C.—W. R.—J. R.—A. J. M.—W. T. D.—New Plant Co.

Markets.

COVENT GARDEN, March 15.

The supply of high-class fruits being now very short, prices have somewhat improved, with the exception of Strawberries, which in consequence of some of our large growers having commenced, and the demand not being sufficiently brisk, have experienced a decline, proving what we have always maintained, that it is useless to bring Strawberries in any quantity before Easter. Business more buoyant. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.

	s. d.	s. d.
Azaleas, per dozen	4 0–18 0	Hyacinths, per doz.	3 0–18 0
Begonias, per doz.	6 0–12 0	Lily of Valley, each	1 6– 3 0
Bouvardias, do.	12 0–24 0	Mignonette, per doz.	6 0– 9 0
Cineraria, per doz.	9 0–18 0	Myrtles, do.	3 0– 9 0
Coleus, per dozen	3 0– 9 0	Palms in variety, each	3 6–21 0
Crocus, per dozen	3 0– 9 0	Pelargoniums, scarlet, per doz.	6 0–12 0
Cyclamens, per doz.	12 0–36 0	Primula sinensis, doz.	4 0– 9 0
Cyperus, do.	6 0–12 0	Richardia æthiopica, per doz.	9 0–18 0
Dracæna terminalis	30 0–60 0	Solanums, per doz.	6 0–24 0
— viridis, per doz.	18 0–24 0	Spiræa, per doz.	12 0–30 0
Ferns, in var., p. doz.	6 0–30 0	Tulips, per dozen	1 0– 2 0
Ficus elastica	6–15 0	Valotta purpur., doz.	12 0–18 0
Fuchsias, per dozen	9 0–18 0		
Heaths, variety, doz.	9 0–24 0		
Heliotrope, per doz.	6 0– 9 0		

CUT FLOWERS.

	s. d.	s. d.
Azaleas, 12 sprays	0– 2 0	Lily of the Valley, 12 sprays	0– 3 0
Bouvardias, 12 blooms	1 0– 2 0	Mignonette, 12 bun.	4 0– 9 0
Camellias, 12 blooms	2 0– 9 0	Narcissus, 12 sprays	2 0– 4 0
Carnations, per dozen	1 6– 4 0	Pelargoniums, 12 sprays	1 0– 3 0
Crocus, 12 bunches	2 0– 6 0	— zonal, 12 sprays	0– 3 0
Cyclamen, per doz.	0– 3 0	Primroses, per dozen	1 0– 3 0
Daffodil, dbl., 12 bun.	4 0– 9 0	Primula, dbl., p. bun.	1 0– 2 0
— single, 12 bun.	2 0– 9 0	Roses, indoor, p. doz.	3 0–12 0
Epiphyllum, 12 blms.	1 0– 3 0	Spiræa, 12 sprays	1 6– 4 0
Euphorbia, 12 sprays	2 0– 9 0	Stephanotis, 12 sprays	2 0– 6 0
Gardenia, per doz.	9 0–18 0	Tropeolum, 12 bun.	2 0– 6 0
Heliotrope, 12 sprays	1 0– 2 0	Tuberoses, per dozen	1 0– 2 0
Hyacinths, p. dozen	2 6– 6 0	Violets, 12 bun.	2 0– 4 0
— Roman, 12 spr.	1 0– 4 0	Wallflowers, p. doz.	6 0–12 0

VEGETABLES.

	s. d.	s. d.
Artichokes, per bush.	4 0– ..	Horse Radish, p. bun.	4 0– ..
— Egg. Globe, doz.	4 0– 6 0	Leeks, per bunch	0 2– 0 4
— English, p. bush.	8 0–10 0	Lettuces, Fr., per doz.	1 0– 2 0
— Fr., natural, bun.	4 0– ..	— Cos, per doz.	0 6– ..
— Spruc, per bun.	1 6– ..	Mint, green, bunch	1 0– ..
Beans, French (new), per 100	2 0– 2 6	Mushrooms, per pot	0 6– 1 6
— French, Long-pod, ½-bushel	8 0– ..	Onions, per bush.	5 0– 8 0
Beet, per doz.	1 0– 2 0	— young, per bun.	0 8– 0 10
Brussels Sprts. bush.	7 0– ..	Parsley, per bunch	0 4– ..
Cabbages, per doz.	1 0– 2 0	Peas, green, per lb.	1 0– ..
Carrots, per bunch	0 6– ..	— Spanish, do.	1 0– ..
— New Fr., p. bun.	2 0 ..	— New Jersey, do.	2 0– ..
Cauliflowers, per doz.	2 0– 4 0	Radishes, per bunch	0 1– 0 3
Celery, per bundle	1 6– 2 0	Salsafy, per bundle	1 0– ..
Chilis, per 100	3 0– ..	Seakale, per punnet	1 6– 2 0
Cucumbers, each	1 0– 1 6	Shallots, per lb.	0 6– ..
Endive, per doz.	1 0– 2 0	Spinach, per bushel	5 0– 5 0
— Batavian, p. doz.	2 0– 3 0	Tomatas, per doz.	2 0– 6 0
Garlic, per lb.	0 4– ..	Turnips, per bundle	0 4– 0 6
Herbs, per bunch	0 2– 0 4		

FRUIT.

	s. d.	s. d.
Apples, per ½-sieve	2 0– 8 0	Peaches, per doz.	0 0– 0 0
Cobs, per lb.	1 0– 1 6	Pears, per doz.	1 0– 2 0
Grapes, per lb.	8 0–16 0	Pine-apples, per lb.	2 0– 5 0
Lemons, per doz.	1 0– 2 0	Strawberries, p. oz.	1 6– 2 0
Oranges, per 100	4 0–10 0		

SEEDS.

LONDON: *March 14.*—Nothing of special interest has transpired in the seed trade during the present week. With the near approach of the sowing season there is, of course, rather more business doing, but the transactions for the most part are of no magnitude, being quite of a hand to mouth character. With fine weather considerable activity is anticipated on our market, a large majority of the provincial dealers having not as yet made their usual purchases in Mark Lane. English red Clover seed the supply diminishes every week, while the limited foreign stocks held in London are receiving no augmentation. The significant absence of consignments from the United States is calculated to impart strength to the trade on this side. In addition to the recent export demand for Clovers for France, the supply here is being further reduced by shipments to Germany—these latter consisting mainly of choice selection parcels. Alsikes show no quotable variation. For white Clover there is a fair sale at the moderate currencies now prevailing. Trefoils also move off freely at late rates. Grass seeds with a good demand doing are unchanged in price. For Lucerne and Sainfoin there are buyers at last week's currencies. Spring Tares are in slightly improved request. Canary seed appears to have met a check in its downward career; and more money is now asked in Holland. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

POTATOS.

The Borough and Spitalfields markets reports state that trade continues steady, but the supplies are more than equal to the demand, and for certain descriptions prices are not very well supported. Scotch Regents, 95s. to 105s. per ton; Kent do., 85s. to 110s.; Essex do., 80s. to 100s.; rocks, 65s. to 90s.; flukes, 120s. to 160s.; Victorias, 100s. to 150s.—The Potatos imported into London last week consisted of 16,060 bales from Hamburg, 4484 from Antwerp, 8757 from Ghent, 1081 from Brussels, 1000 from Ostend, 101 sacks from Boulogne, 600 bags from Bremen, 134 from Dordrecht, 80 tons from Rouen, and 57 bags from Rotterdam.

SPECIAL NOTICE.

GRAND FINE-ART GIFT.

THE FINEST AND MOST VALUABLE GIFT EVER OFFERED.

EACH READER of this PAPER will be entitled to receive from the NATIONAL FINE-ART UNION, 35, Great James Street, London, W.C., a copy (23 inches by 16 inches) of the beautiful Steel-Plate Engraving, entitled

WINDSOR CASTLE.

(COPYRIGHT.)

This grand work may fairly be considered as one of the finest productions of high art of modern times. It is from the celebrated picture painted by E. Duncan, Esq., and is engraved in the finest style on steel by T. A. Prior, Esq.

The originality of treatment brings the scene most vividly before the beholder, and makes it difficult for any one to look upon it and realise the fact that they are miles away. Upon an eminence to the right of the picture stands the stately historic pile of WINDSOR CASTLE, with the Royal Standard flying. The scene in which gay courtiers have played their parts, and in which the more sober business of the nation has been consummated, must always be one of great interest to Englishmen; and when, as in this case, the most consummate artistic ability is brought to bear upon it, the picture gains a new value as an artistic production. At the foot of the Castle is the historic town of Windsor, resting secure in the protection the Castle affords, and forming a striking contrast to the remaining gaiety of the scene. To the left runs our noblest of English rivers, with its rippling wavelets dancing in the sunlight, and reflecting the fleecy clouds sailing overhead, while the life upon the water gives an animation to the picture nothing can excel. Here is a crack Etonian crew, that may perchance one day compete in our national Boat-Race, clumsily getting athwart a barge (which, with its swan-like sails filled with wind, is rapidly speeding down the river), while their better-steered rivals are leaving them behind; and there is a party of fishermen embarking in their well-found punt, eager for a day of the sport old Izaak Walton loved so well. The magnificence of the foliage and general treatment of the whole picture is most unique, and leaves nothing to be desired

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☞ *The Picture is well worth handsomely framing, and its artistic merit and intrinsic value will render it a desirable addition to every household.*

Potatos for Exhibition.

HOOPER AND CO., Covent Garden, offer FOUR PRIZES in the next Potato Exhibition, to be held at the Westminster Aquarium early in October, for FOUR DISHES of DISTINCT NEW VARIETIES. They recommend the following, which they can supply, as well suited for growing for that purpose :—

CENTENNIAL, new American Red-skin, 3s. 6d. per lb.

COVENT GARDEN PERFECTION, an English seedling, white, rough skin, 2s. 6d.

SUPERIOR, deep red, American Kidney-shaped, 2s. 6d. per lb.

SUCCESS, large, flat, white, 2s. 6d. per lb.

LADY WEBSTER, flattish round, white, with red streaked eyes, 2s. per lb.

IMPROVED PEACH BLOW, flattish round, pinkish white, red at the eyes, 3s. 6d. per lb.

One pound of each of the six varieties forwarded on receipt of remittance for 15s.

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CHARLES LEE AND SON (Successors to Messrs. John & Charles Lee), of the Royal Vineyard Nursery, Hammersmith, W., beg to announce that, in consequence of the Retirement of Mr. John Lee from the business, they have TAKEN OVER the ENTIRE NURSERY and SEED TRADE so successfully carried on for many years by the late Firm, and they trust the same liberal patronage so long given to Messrs. John & Charles Lee will be continued to the New Firm.

Charles Lee & Son pledge themselves to devote all their energy to raising First-class Stock in every department, which the large resources at their command will enable them to supply with considerable advantage to the Public both as regards quality and price. With a view to a more extensive production of Stove and Greenhouse Plants of the best quality they intend to place entirely rebuilt their extensive ranges of Glass on a new site, a portion of the old Nursery being taken up for building purposes. All orders to be addressed to

CHARLES LEE AND SON, Royal Vineyard Nursery, Hammersmith, W., where the general business of the Nursery and Seed Trade will be carried on : or to

Mr. DIXON, Feltham Nursery ; Mr. CANNON, Ealing Nursery; Mr. WEBB, Arboretum, and Mr. MARSLEN, Wood Lane, Isleworth.

LARGE CAMELLAS, AZALEAS, &c.

Twelve large CAMELLIAS, 4 to 8 feet, removed last year into pots, now breaking, will make fine plants for turning out or growing there, 30s. bargain ; fifty handsome plants, 18 inches, bushy, best sorts, 30s. to 36s. per dozen. Fifty handsome plants AZALEAS, 9 to 12-inch heads, full of flower-buds, handsome, 24s. to 30s. ; half-specimens, 2s. 6d. each. Four handsome strong EUCHARIS AMAZONICA. No. 16 pots, 7s. 6d. each. Fine plant GOLDIEA CYANOCARMAA, 24 inches, 5s. 6d. Fine plant BLECHNUM CORCOVADENSE, 5s. One fine plant GARDENIA, 3 feet, coming into flower, 15s. One fine plant STEPHANOTIS LEE and SON, Royal Vineyard Nursery, Hammersmith, W., where the general business of the Nursery and Seed Trade will be carried on : or to

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A. E. BARNAART AND CO., NURSERYMEN, Vogelenzang, Haarlem, Holland, have a large quantity of SCOTCH FIRS, 3-yr., 2-yr. transplanted, and BLACK AUSTRIAN PINES, 2-yr., 2-yr. transplanted, which they can offer at very low rates. Samples and prices may be obtained from

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LEE'S PRINCE CONSORT VIOLET BLOOMS.—As there is little prospect of the above beautiful Violet being "let out" in plants, G. LEE has decided to offer the BLOOMS to the Nobility and Gentry for Table Decoration and other purposes, at the following rates :—Single Blooms, with long stems, for mixing with other flowers, 3d. to 6d. per dozen ; if three or more dozen are ordered, postage and package free. In Bouquets, flat or round (which please state), from 3s. to 30s. per dozen ; if three or more dozen are ordered, carriage-paid package free.

Orders will still be booked for Plants (conditionally) at 10s. 6d. for four plants and 6d. for package, or 30s. for one dozen plants and 4s. for package ; less than four plants not sent out. VICTORIA REGINA, 6s. per dozen plants ; less not sent out.

GEORGE LEE, F.R.H.S., Market Gardener, Clevedon, Somerset.

To the Trade.

WILLIAM FLETCHER has the following STOCKS to offer :—

CRAB, 35s. per 1000. | PEAR, 40s. per 1000.
CHERRY, 40s. per 1000.
ACER NEGUNDO, 3 to 4 feet, 20s. per 1000. Also
APRICOTS, Maiden, 55s. per 1000.

Ottershaw Nursery, Chertsey, Surrey.

CHARLES NOBLE, Bagshot, can offer the following :—

ROSES, Dwarf, 4s. per dozen, 25s. per 100, 210s. per 1000.
PEACHES and NECTARINES, dwarf-trained, 21s. per dozen, 150s. per 100.
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" " " for immediate effect, 2½ to 4 feet, and same through, 42s. per dozen, 300s. per 100.
" Seedling, 1½ to 3½ feet, 24s. per dozen, 200s. per 100.
" PONTICUM, 1½ to 2 feet, bushy, 6s. per dozen, 35s. per 100.
KALMIA LATIFOLIA, 1 to 1½ foot, buds, for potting, 75s. and 100s. per 100.
ANDROMEDA FLORIBUNDA, buds for potting, 75s. and 100s. per 100.
ERICA CARNEA, very fine, 21s. per 100.

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H. AND F. SHARPE can still supply the following varieties of SEED POTATOS, raised from choice selected Stocks, viz. :—

Rivers' Royal Ashleaf,	Early Foxe's Seedling,
Myatt's Prolific Ashleaf,	Robson's Challenge,
Alma Kidney,	Walker's Improved Regent,
Model,	Paterson's Victoria,
Hundredfold Fluke,	Red-skin Fleurball,
King of the Flukes,	Paterson's Alpha,
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Early Dalmahoy,	Extra Early Vermont,
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Bresee's King of the Earlies,	American Wonder,
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Seed Growing Establishment Wisbech.

ALTERNANTHERAS, and other CARPET BEDDING PLANTS.—At 2s. 6d. per dozen, 8s. per 100, 70s. per 1000 :—Alternantheras of all the varieties, Antennaria tomentosa, Arenaria balearica, Iresine Lindeni, Lamium aurea var. Lobbi, pumila magnifica (true), from cuttings, the best bedder, Echeveria glauca, Cultivation, Mentha gentilis gibraltaricum, Sagina procumbens. At 2s. per dozen, 10s. per 100, 80s. per 1000 :—Achillea umbellata, Coleus Verschaffelii, Kleinia repens, Leucophyton Brownii, Santolina incana. At 1s. per dozen, 5s. per 100, 40s. per 1000 :—Cerastium arvensis (green), tomentosum (white), Lobelia pumila gracilis erecta, from cuttings ; Sedums of all varieties best suited for Carpet Bedding.

For cash with order, packing included.

WM. MILES, West Brighton Nurseries, Coulsdonville, Sussex.

Lobelia Ebor—Lobelia Ebor.

J. C. PADMAN, Providence Nursery, Boston Spa, near Tadcaster, has pleasure in informing all lovers of really good Bedding Plants that he is propagating his new LOBELIA EBOR to meet the second week in May. Price 6d. each, 3s. 6d. per dozen, 24s. per 100. A writer in the *Gardeners' Chronicle* of February 10, 1877, says :—

"Last season I had the following varieties placed side by side to enable me to compare exactly their various merits :—Bluestone, Ebor, pumila magnifica, Lustrous, pumila grandiflora, Brilliant, Mazarine Gem, Cobalt Blue, flore-pleno, and Wellamii ; I found Ebor the best of the Lobelia compacta class. It is scarcely known except in Yorkshire, but for effect it certainly eclipses all others. Its colour is dark and intense that it may justly be called purple, and if planted side by side with pumila grandiflora the contrast is most pleasing and very effective."

See also "Cannell's Floral Guide" for 1877, p. 83.

Specimen Coniferæ, &c.

W. G. CLARKE, Wellington, Somerset, offers the following, at low prices :—

Libocedrus decurrens, 12 feet.	Picea Webbiana, 14 feet.
Thuja Lobbii, 15 to 17 feet.	Picea nobilis, 2½ to 3½ ft. (fine).
Cedrus atlantica, 20 to 12 feet.	Cryptomeria japonica, 6 to 10 feet.
Cedrus Deodara, 8 to 15 feet.	Fitzroya Benthamiana, 7 to 12 ft.
Cedrus robusta, 5 to 9 feet.	Spanish Chestnuts, straight,
Cupressus Lawsoniana, 9 to 11 ft.	fine. And others.

Special prices on application.

NEW PLANTS
FOR MAY, 1877.

FRINGED PELARGONIUM, ROYALTY, 10s. 6d. each.

PICOTEE, PRINCESS OF WALES, 5s. each.

Orders are now being booked, and will be sent out on and after May 1.

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REGENT STREET, LEAMINGTON.

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Flowers in Bloom all the Year round.

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12 ASTERS, splendid varieties,
2 STOCKS, " "
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6 EVERLASTING FLOWERS,
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1 oz. MIGNONETTE, large flowered,
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59, VICTORIA STREET, LONDON, E.C.
Carriage free on receipt of Post-office Order.

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PICEA NORDMANNIANA, 1000, fine. For sizes and prices see Catalogue.
PINUS CEMBRA, 10,000, very fine, well-rooted :—
2 to 3 feet, 5s. per dozen, 30s. per 100.
2½ to 3½ feet, 6s. per dozen, 25s. per 100.
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PINUS STROBUS (Weymouth Pine), various sizes.
PICEA BALSAMEA (Balm of Gilead), fine healthy plants, various sizes.
RETINOSPORA, fine.
CRYPTOMERIA ELEGANS and others, in perfect health.
LIBOCEDRUS DECURRENS (Thuja gigantea), very good, See CATALOGUE.
JAMES SMITH, Darley Dale Nurseries, Matlock.

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Terms cash.
Market Gardens, Biggleswade, Beds.

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PRUNUS MYROBALANA—Best Stuff for Mending Old Fences, or Making New ones.

It will grow vigorously in the poorest soil, and bears clipping like Whitethorn. Its stiff hard branches and dangerous thorns effectually prevent cattle or evil-disposed persons getting through fences made of it.

Plant four to six in a yard.

Price 3s., 4s. 6d., and 6s. per 100 ; 25s., 35s., and 50s. per 1000.

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COCOA-NUT FIBRE REFUSE, for Propagating, Potting, &c. Cheapest and best advertised. MANURE, from Blood, Bone of Animals. PEAT, LOAM, SILVER SAND for Orchids, and fine SPHAGNUM, &c. Before purchasing anything as above write for sample and price, sent free. Goods delivered free to Rail or Wharf.

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COCOA-NUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand testimonials. Four-bushel bag, 1s., bag included ; truck-load, loose, free to any Rail, 35s.

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FENTON'S Specially Prepared and Guaranteed SHODDY MANURE, for POTATOS, HOPS, VINES, &c. :—

No. 1, concentrated, 12 to 18 per cent. ammonia.
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Bone Brown added, 3 to 6 per cent. ammonia.
(Dr. Sibson's analysis.) Free on rail in Yorkshire, bags included. Also
BONE-SCENTED GREY and BLACK SHODDIES,
ROUGH BEDDING SHODDIES, &c.

Sold by all respectable Agricultural Merchants ; manufactured by FERRAR FENTON, Dewsbury, Yorkshire.

MILLER AND JOHNSON (ESTABLISHED 1835)
Manufacturers of the highest quality of
ARTIFICIAL MANURES
For BEET, CORN, and GRASS CROPS.
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Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 4s. 6d. per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17s. per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5s. 6d. each.

Fresh SPHAGNUM, 10s. 6d. per sack.

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PEAT.—A few hundred Tons of superior Peat, delivered at the Farnborough Stations on the South-Western and South-Eastern Railways, 12s. 6d. per ton.

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ROLLER-CRUSHED BONE, for Vines, Plants, &c. Priced LIST post-free. Can only be obtained of

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ODAMS' MANURES,
FOR ALL CROPS.

Manufactured by the NITRO-PHOSPHATE and ODAMS' CHEMICAL MANURE COMPANY (LIMITED), consisting of Tenant-Farmers occupying upwards of 150,000 acres of Land.

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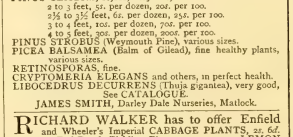
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SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, powdered, 6s. ; per gallon, 3s. 6d. Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardener*, and by many first-class Gardeners.

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The *Gardeners' Magazine* says :—" We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

J. SMITH, The Royal Label Factory, Stratford-on-Avon.

Indestructible Terra-Cotta Plant Markers.

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Wholesale Russia Mat Merchants.

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Light Warm, Fixed or Portable Sheds, Huts, Store-Houses, Cattle Shelters, Harvesters' Tents, &c.
Roofing Purposes of all kinds with or without Corrugation.
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This material is made in various colours, one of which is a beautiful unique shade of green, absolutely devoid of arsenic in any form.

Rolls of 50 yards and upwards, from 2 feet to 4 feet wide, or Panels and Slabs, can be obtained on application to

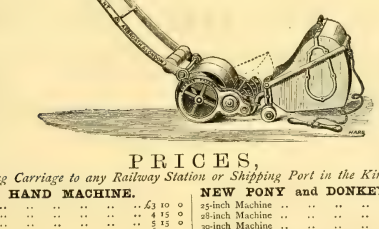
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The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The *Side-Plate* or *Bottom Blade* is made with *Two Edges*, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the Grass escaping the Box when the Machine is in use during the prevalence of wind.



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10-inch Machine	£3 10 0
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The Hand Machines are all fitted with Silent Movement, and can be used either with or without the usual Front Rollers.

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30-inch Machine	£20 10 0
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The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

Price, for the 48-inch, 42-inch, and 36-inch Machines, 40s. extra; for the 30-inch, 30s. extra. Silent Movement, 20s. extra. Boots for Horse's feet, 29s. per set.

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25-inch Machine	£13 10 0
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The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

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Are warranted to give ample satisfaction, and if not approved of can be at once returned.

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These are as strongly plated, and are in every respect at least equal to what other houses are selling as their first quality at very much higher prices.

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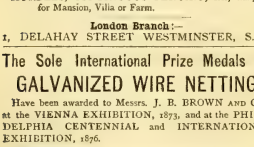
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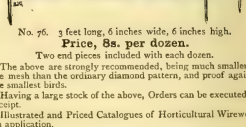
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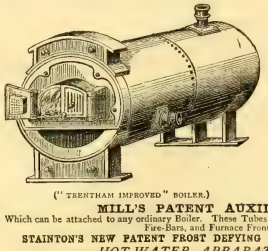
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"TRENTHAM IMPROVED" BOILER, with Waterway End and Smoke Consumer.
"TUBULAR," and every other Boiler of known merit or excellence.
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Which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boiler, Fire-Bars, and Furnace Fronts ever yet introduced to the public.
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This is admitted by all who have seen it to be the finest and most effective Viola for bedding that has yet been raised. It produces flowers of immense size and substance, and is of a bright violet-purple colour. It was awarded a First-class Certificate by the Royal Caledonian Horticultural Society of Edinburgh.

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This is a splendid variety, with very distinct and effectively-marked foliage, the groundwork of which is of a very rich golden yellow, with a broad, well defined zone of bright, bronzy crimson. Its habit is very free, and foliage large and of great substance, causing it to stand all weathers remarkably well.

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ENDLESS-FLAME-IMPACT
HOT-WATER BOILERS.

GUARANTEED

The most Powerful, the most rapid, the most Economical, the Simplest, and the Cheapest in the World.

"The **Boiler of the Future.**' I have no doubt about this."—WM. THOMSON, *Tweed Vineyards.*

From the "Gardener," March, 1877.
WRIGHT'S PATENT
ENDLESS FLAME-IMPACT BOILER.

"This boiler is attracting a good deal of attention in the horticultural world at the present time; and as I have just had one of their largest-sized ones fitted up here, and have now got it well tested, perhaps a few lines from me upon its capabilities may not be without some advantage to some of your numerous readers. I have had some experience as to the annoyance and extra labour caused by badly-constructed boilers, and any improvement effected in these to save labour and fuel demands the attention of all interested parties.

"To give your readers a better idea of the work this boiler has to do, I may begin by stating that our hothouses consist of a range having a total length of 192 feet, a ridge-and-furrow-roofed greenhouse being in the centre, two lean-to Vineries on each side, with Camellia-house and general plant-house at each end; on opposite side of wall we have a Fern-house, partly lean-to and partly span, 50 feet in length, varying in width from 10 to 20 feet. Attached to end of boiler-house is the laundry, with a drying chamber fitted up with about 250 feet of 4-inch piping.

"The whole of the above houses are heated with hot water, and have a total of about 3200 feet of 4-inch piping. We had formerly two oval flue boilers, one being 4 feet 6 inches long, the other 4 feet long. With these two boilers kept hard fired we always found great difficulty in keeping up the temperature during frosty weather, and had frequently to lose a night's sleep attending to the fires. On the last day of last year the larger boiler came to grief—the water from it drowned out the fire; and in taking down some of the brickwork it was found to have cracked beyond repair. To be thus left in the middle of winter with only the one boiler was no joke. I had to look out for another without delay. I have given a good deal of attention to the construction of hot-water boilers, and I must say I had never seen one that came up to my idea of what a boiler should be until some time ago my attention was called to a drawing of Wright & Co.'s Boiler, which appeared in the *Gardener.*

"After talking the matter over with my employer, W. S. Mitchell Innes, Esq., he at once granted permission to get the boiler I had formed such an opinion of. I at once put the order into the hands of Messrs. Meikle & Philp, hothouse builders and hot-water engineers, Torphichen Street, and they have fitted it up and attached the piping in the most complete manner. I also got some additional high-pressure valves attached, so that if anything should at any time go wrong it can be attended to without disturbing the piping.

"And now as to the capabilities of the boiler for the work. As formerly stated, I had considerable difficulty in keeping up the heat with the two oval flue boilers kept hard at work. I now find that with the remaining oval flue boiler idle, I can heat up the whole of the houses and the laundry to a degree they never were before, and that with much less coal than it took to fire *one* of the oval flue boilers.

"Our chimney consists of a flue 79 feet long, led horizontally through centre of back wall, with 15 feet of a perpendicular stalk. Some doubt was expressed that, as we required a chimney pipe attached to boiler about 6 feet long, there would be deficiency of draught; but we have found the opposite to be the case. I attached a 6-feet length of 8-inch stove pipe, with elbow at boiler, and cleaning door on the angle, and as I found the draught very strong I got a throttle-valve damper fitted into the bend of the stove pipe, and am able to regulate the fire to a nicety, and by banking-up the fire at 10 P.M. and closing the damper fully half round, I can leave it to its work with the greatest confidence till the usual time of commencing labour the following morning: and instead of, as formerly, having to sit up firing the half of the night at times, and sometimes whole ones, we can retire to rest at a reasonable hour, confident of sleep being undisturbed by unpleasant dreams of plants and fruits going to ruin. In concluding my remarks I may say that not the least of the good qualities of this boiler is its portability. We had not the slightest difficulty in putting it down in our contracted stokehole through a trap-door 4 feet long by 2 feet broad, and fitting it up in a recess 4 feet square, and I am confident that with the assistance of two men I could take the whole to pieces and have it again in full working order in two hours. I have no hesitation in saying that for rapidity of circulation, small consumpt of fuel, portability, and cleanliness, it has no rival, and have no doubt this boiler will win its way; and where one is high in price it will effect a considerable saving, and as there is good fire space in it it will be found a capital boiler for burning wood and other fuel."—J. CLARK, *The Gardens, Pierson's Green, Canterbury.*

[We have a very high opinion of this boiler, and predict that it will take a foremost place in heating hothouses and all other buildings, and shall have some further remarks to make about the principles of it next month.—ED. *Gardener.*]

"I think yours the most perfect '**Heat Trap**' yet invented. —DAVID THOMSON, *Drumlanrig Gardens.*"

For full details and particulars as to the various sizes made, and prices, please see our pamphlet, entitled, "HOT-WATER BOILERS AND HEATING," which will be handed to all applicants, post-free.

We are prepared to supply **Thirty Different Boilers** of all powers, sizes, and heights, and can vary these to suit any particular situation or requirement.

WM. WRIGHT & CO.,
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Improved India-rubber Socket-rings
FOR THE
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Description of Sketch :—
A. The Rubber Ring as rolled into the Socket.
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These Rings are made any size to order. All ordinary sizes are kept in stock.
Illustrated Price List on application.

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HEAT REGULATOR,
AN APPARATUS FOR REGULATING THE HEAT IN HORTICULTURAL BUILDINGS.



A, Iron Box fitted up water-tight. B, Pipe or Supply of Water from Boiler. C, D, Pipes for Circulating Hot-Water. E, F, Pipes for Return of Water to Iron Box. G, Pipe for Returning Water to Boiler. H, I, J, K, Piston-Rods for Opening and Closing Valves.

The advantages of these Regulators are that houses may be kept at different degrees of heat, or the circulation of water and heat entirely stopped in one part and not in others. They may be fitted with as many valves as required, and are particularly adapted for forcing houses where top and bottom heat is used. They may be fixed in any part of the apparatus most suitable for working, without regard to the position of the Boiler.

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"Gentlemen,—I am happy to inform you, now that the late severe winter is past, that the Hot-Water Apparatus erected by you does its work to my entire satisfaction. As to the two Heat Regulators, which represent thirty valves, I have had ample opportunities of practically proving them, and unhesitatingly admit they are far superior to any other valve; in fact, I think it the greatest improvement that has come out for horticultural purposes.

"I am, Gentlemen, yours truly,

"R. H. STRONE,
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TRENTHAM GREENHOUSE BOILER,



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☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

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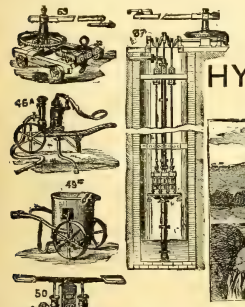
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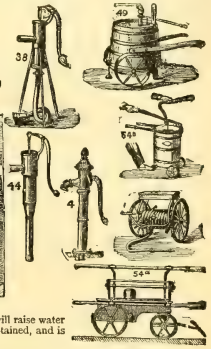
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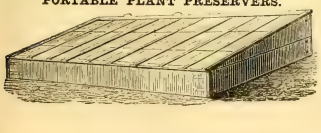
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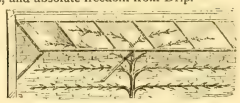
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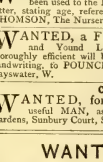
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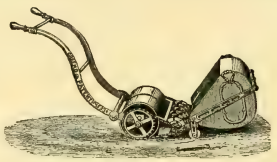
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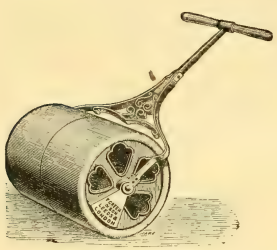
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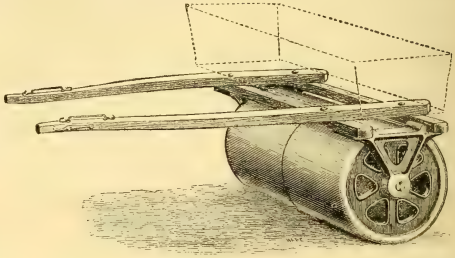
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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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☞ NOTICE to ADVERTISERS.

FRIDAY NEXT, *March* 30, *being* GOOD FRIDAY, *the* "GARDENERS' CHRONICLE" *will be published on* THURSDAY, *at 2 p.m.*

ADVERTISEMENTS *for* NEXT WEEK *must therefore reach the Office not* LATER *than* WEDNESDAY MORNING, *the* 28*th inst.*

CRYSTAL PALACE.—AURICULA SHOW, April 24; GREAT FLOWER SHOW, May 12; ROSE SHOW, June 23. Schedules for the two latter can be had on application to

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BRUSSELS SPROUTS SEED.—Warranted the best Covent Garden Giant. Price per pound, with every particular, on application.
T. BORROWDALE, Swanley, Kent.

WANTED, Cuttings of GERANIUMS, Vesuvius, Madame Vaucher, Master Christine, any sort Tricolor, and good Bicolors, also CALADIUMS and ALOCASIA LOWII. ORCHIDS, TUBEROSES, LILY OF THE VALLEY CLUMPS, SEEDS, &c., may be had in EXCHANGE.
W. F. BOFF, 203, Upper Street, Islington, N.

WANTED, THOMPSON'S GOLDEN CHAMPION VINES, Rooted Cuttings, Planting and Fruiting Canes. Please state lowest price quotations to
F. C. HEINEMANN, Seedsman, Erfurt, Prussia.

WANTED, DWARF BOX EDGING. Send sample and price to
JAS. GARAWAY AND CO., Durdham Down Nurseries, Clifton, Bristol.

WANTED, BRITISH QUEEN STRAWBERRIES, Fruiting Plants, in pots. Quote price per 100, and size of pots, to
B. MALLER, Nurseryman, Lewisham, S.E.

WILLIAM WALKER has a large stock of splendid GREEN TREE BOX to offer, from 3 to 4½ feet. Price on application.
Packington Nursery, one mile from Ashby-de-la-Zouch Station.

RHODODENDRONS.—All the finest named varieties, nice bushy plants, full of blooming buds, are offered at a low price per dozen or 100. CATALOGUES sent on application.
W. H. ROGERS, Red Lodge Nursery, Southampton.

RHODODENDRONS. 3-yr. Seedlings, 6 to 10 inches, transplanted; 4-yr. Seedlings (fine), 8 to 10 inches, transplanted; 12 to 18 inches, transplanted.
For prices, which are low, apply to
HENRY FARNSWORTH, Matlock Bank, Derbyshire.

PONTICUM RHODODENDRONS, —for Cover—2½ to 3 feet, fine, £8 per 1000.
J. JACKSON, Nursery, Kidderminster.

HAWS, or THORN QUICK SEED.—Sound Haws, fit for sowing at present, or spring coming, guaranteed free from soil or other mixture, and thoroughly well preserved. About 30 tons on hand. For lowest prices apply to GRANT AND CO., Park Nursery, Portadown, Ireland.

PALMS.—For Sale, handsome Prize Specimens. Apply to
W. JACKSON AND CO., Nurseries, Bedale.

SPRUCE FIRS.—Fine, well-furnished, 2 to 2½ feet, 2½ to 3 feet and 3 to 4 feet. A quantity of good Plants of the above to be Sold cheap, to effect a clearance. Prices on application to
E. LACK, The Nurseries, Wellingborough, Northamptonshire.

SPRUCE FIRS, well rooted, from 4 to 8 feet, are offered at a low price in any quantity from a dozen to 1000.
W. H. ROGERS, Red Lodge Nursery, Southampton.

BIRCH, 5 to 8 feet, 50s. per 1000. PEARS, Hessell, Standards, 75s. per 100. APRICOTS, Maiden, 90s. per 100.
WILLIAM FLETCHER, Ottershaw Nursery, Chertsey, Surrey.

CUPRESSUS LAWSONIANA, 2 to 3 feet, good plants, 15s. per 100. RETINOSPORA PISIFERA, 2 to 3 feet, 20s. per 100.
E. COOLING, Mile Ash Nurseries, Derby.

POTATOS for SEED.—Improved Victorias, Paterson's Flukes, Excelsior, Breese's Prolific, Dalmahoys, Bryanston Kidneys, Queens, Bovinias, Climax, Hundredfold Flukes, Emerald, Compton's Surprise. Very low: per ton for cash.
W. COCKS, Monks Hall, Gosberton.

CUCUMBER PLANTS, Telegraph.—Strong plants now ready
A. WATKINS, Nursery, Bishop Stortford, Herts.

CUCUMBERS.—Cooling's King and Fearnought, the two best in cultivation, 2s. 6d. per packet each, post-free.
E. COOLING, Seed Merchant, Derby.

To the Trade.

ASPARAGUS, Giant, 1-yr., 2-yr., 3-yr., and 4-yr., fine.
JAMES BIRD, Nurseryman, Downham.

ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

LADY HENNIKER APPLE GRAFTS—Post-free, 6 for 12. 6d., 12 for 2s. 6d., 50 for 8s., 100 for 15s. A splendid Kitchen or Dessert Apple, weighs 18 oz., bears freely on one-year's wood. Pyramids 3s. 6d., Standards 5s. each.
EWING AND COMPANY, Eaton, Norwich.

VINES.—Splendid Planting Canes of leading varieties, perfectly ripened without bottom-heat, and a few extra strong Canes for Immediate Fruiting.
JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

Vines, Vines, Vines.—The Planting Season.

THE COWAN PATENTS' COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Canes of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

Grape Vines.

B. S. WILLIAMS has still on hand a large stock of MUSCAT of ALEXANDRIA and SCOTT'S MUSCAT, strong Planting or Fruiting Canes, 5s. each. Early orders respectfully solicited.
Victoria and Paradise Nurseries, Upper Holloway, N.

Gentlemen's Gardeners, Amateurs, and Others BEGINNING

GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mere.
Price List on application.

SALES BY AUCTION.

City Auction Rooms, 38 & 29, Gracechurch Street, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the City Auction Rooms, as above, on THURSDAY, March 29, at half-past 12 o'Clock precisely, a first-class collection of CARNATIONS, PICOTEES and PINKS of fine growth; a superb assortment of 500 Standard and Dwarf ROSES, selected FRUIT TREES, hardy AMERICAN PLANTS, CONIFERÆ and EVERGREEN SHRUBS, choice GREENHOUSE PLANTS, DAHLIAS, LILIUM AURATUM, Imported and other FLOWER SEEDS, &c.

On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, &c., 98, Gracechurch Street, E.C., and Leytonstone, E.

Cheltenham.

UNRESERVED SALE of Mr. James Cypher's unrivalled Collection of Exhibition STOVE and GREENHOUSE PLANTS.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL the above noted COLLECTION of PLANTS, by AUCTION, on the Premises, the Queen's Road Nurseries, Cheltenham, on WEDNESDAY and THURSDAY, April 11 and 12, at half-past 12 o'Clock precisely.

May now be viewed. Catalogues are now ready and may be obtained (6d each, returnable to purchaser) on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C.

For full particulars see *Gardeners' Chronicle* of March 17.

Imported and Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 26, at half-past 12 o'Clock precisely, a large consignment of ONCIDIUM MACRANTHUM, just arrived per s.s. *Tasmania*, in the finest possible condition, and consisting of probably the largest masses that ever reached this country; fine plants of the pretty ODONTOGLOSSUM MUSEUM and the rare NANODES MEDUSÆ. ONCIDIUM SERRATUM, ODONTOGLOSSUM CLAVICEPS, and some large masses of CATTLEYA TRIANÆ. An importation of GRAMMATOPHYLLUM REMPLERIANUM and G. ELLISI; several small collections of Established ORCHIDS.

On view the morning of Sale, and Catalogues had.

Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, March 27, at half-past 12 o'Clock precisely, a COLLECTION of ESTABLISHED ORCHIDS, including many very choice and rare species, and the following :—

Odontoglossum ceeptrum	Odontoglossum cirrhosum
Oncidium phymatochilum	Masdevallia Harryana cœrulescens
Lælia anceps Barkeriana	Oncidium superbiens
Dendrochilum filamaceum	Cattleya Trianæ splendens
Cattleya Wagneri	Odontoglossum nævium
Oncidium macranthum hastiferum	Masdevallia Lindeni
Odontoglossum superbiens	Cymbidium eburneum
Trichopilia gloriniæflora	Oncidium tetracopis [andræ
Dendrobium McCarthiæ	Odontoglossum crispum Alex-

and several good established plants of

ODONTOGLOSSUM VEXILLARIUM,
ODONTOGLOSSUM ROEZLII,
a fine lot of the beautiful
ODONTOGLOSSUM CORONARIUM.

Also an importation of the handsome

CŒLOGYNE GLANDULOSA,
DENDROBIUM BARBATUM,
DENDROBIUM AUREUM,
and the true DENDROBIUM ALBUM.

Wight, in describing this beautiful Dendrobium in *Icones Plantarum Indiæ Orientalis*, says :—"This is one of the handsomest of the genus I have yet met with ; large pure white flowers."

On view the morning of Sale, and Catalogues had.

Lælia elegans.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, March 27, a quantity of fine plants of LÆLIA ELEGANS, just arrived in good condition ex *Neva* from Brazil. Some of the plants are very large and fine, with from 20 to 50 stems—two of them gigantic masses, having about 100 stems each.

On view the morning of Sale, and Catalogues had.

Highly Important Sale of East Indian Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 29, at half-past 12 o'Clock precisely, a very large quantity of fine EAST INDIAN ORCHIDS, consisting of Dendrobium Wardianum, D. crassinode, D. Devonianum, D. Falconeri, D. aureum, D. heterocrapum, D. thyrsiflorum, D. chrysotoxum and others, Vanda coerulescens, the new Cypripedium Boxalli (offered for the first time), Aerides, Saccolabiums, &c. At the same time will be offered a quantity of plants of CATTLEYA MAXIMA from the Province of Manabi, just received by R. M. S. and two very fine established plants of PHALÆNOPSIS SCHILLERIANA, in flower. All are in the finest possible condition, and amongst the East Indian Orchids are many specimens of a size rarely seen.

On view morning of Sale, and Catalogues had.

Edmonton, N.

To NURSERYMEN, FLORISTS, and OTHERS.

MR. F. W. SEARLE has been favoured with instructions to SELL by AUCTION, at the Angel Hotel, Edmonton, on WEDNESDAY, April 11, at 6 for 7 o'Clock in the evening, the LEASE, STOCK, and GOODWILL of PREMISES situate and known as Grove Street Nursery, Snell's Park, comprising about half-an-acre of ground, with five Greenhouses and Stock of about 30,000 Bedding and Greenhouse Plants, held on lease of which fifteen years are unexpired. This small concern offers a most desirable opportunity for those seeking for a Nursery situate within easy distance of the Markets, on a good road, and within 5½ miles of town.

May be viewed, and Catalogues had of the Auctioneer, Tottenham and Enfield, N.

WANTED, to RENT, IMMEDIATELY, within 10 miles of London, several GLASS-HOUSES, suitable for Growing Cucumbers, Plants, and Cut Flowers, for Market. No stock required. Letters to

A. B., Mr. Payne's, Stationer, Henry Street, St. John's Wood, N.W.

TO BE SOLD, or LET for a Long Term, a SIX-ROOMED HOUSE, 1 ACRE of GROUND, and about 10,000 Feet of GLASS, with Stock suitable for growing Cut Flowers : about 7 miles from Covent Garden Market.

P. C., *Gardeners' Chronicle* Office, W.C.

To Gardeners, Florists, &c.

TO BE LET, as from Lady Day, a capital NURSERY GROUND, with or without a Residence, situated within 2 miles of Covent Garden Market, comprising Seven large Glass Houses, heated, and upwards of an Acre of Land. For particulars apply to

Messrs. LANDER AND BEDELLS, Surveyors, 6, John Street, Bedford Row, W.C.

To Florists, Nurserymen, and Others.

TO BE LET, or the GROUND LEASE TO BE SOLD, a very VALUABLE PROPERTY, with large frontages to Edgware Road and St. John's Wood Road, where the business of a Florist has been many years carried on. There is a good House and other suitable buildings on the ground. Apply to

Messrs. RUSHWORTH, ABBOTT AND RUSHWORTH, 22, Savile Row, W.

To Nurserymen, Florists, and Others.

TO BE LET, at £146 per annum, the whole of those old-established NURSERIES and GRAPERIES, together with the detached seven-roomed DWELLING-HOUSE situate at Worthing (lately carried on by Messrs. Baker & Son, for over twenty years), consisting of handsomely-fronted Show Houses and Shop, about 60 feet long, numerous large Span Houses, Vinery, Propagating Houses, a Melon Pit, &c., with complete Heating Apparatus ; the whole in good going order. Vines in forward condition. Plants, Utensils, and other Stock at a valuation. Immediate possession can be given. For further particulars apply to

Messrs. FENNER, HILTON, AND GIFFORD, Accountants, 12, Bond Street, Brighton ; 2, Gresham Buildings, London, E.C. ; and 4, Mount Pleasant, Tunbridge Wells.

Lilium Kramerii.

MESSRS. PROTHEROE AND MORRIS beg to announce that they have just received from Japan a large Consignment of LILIUM KRAMERII, which they propose including in an Early SALE at the Auction Mart, Tokenhouse Yard, E.C.

Bowdon Nurseries.

SELLING OFF.—These Nurseries having to be Cleared by Christmas next, the whole of the TREES and SHRUBS are now offered at a reduction of twenty per cent. from Catalogue prices. CATALOGUES on application.

R. THORNHILL, Bowdon Nurseries, Bowdon, Cheshire.

New Spring Catalogue.

CHARLES TURNER'S CATALOGUE of PLANTS is now ready, and may be had free on application. The Royal Nurseries, Slough.

CUCUMBER PLANTS.—For Sale, Rollisson's Telegraph and Lord Kenyon's Favourite, very strong plants, in 60's and 48's.

E. COX, 114, Loughborough Road, Brixton, S.W.

HOLLYHOCKS.—Lists of Varieties, with their colours and price, on application ; also TEA ROSES, in pots.

L. WOODTHORPE, Glazenwood Nursery, Braintree, Essex.

WATERLOO or VICTORIA MARROW PEAS.—A few qrs. for disposal, good picked sample. ALFRED READ, Seedsman, 28, Kirkgate, Newark.

LARGE TREE FERNS.—For Sale, Three, suitable for a large Fernery, or Conservatory, or Winter Garden. Further particulars and price apply to

THOMAS FERGUSSON, The Gardens, Shale Crow House, Keswick, Cumberland.

GERANIUMS, Autumn-struck, from Stores. —Mrs. Pollock, Crimson Queen, Cloth of Gold, Cloth of Silver, Vesuvius, Beaton's Yellow, May Queen, White Perfection, 9s. per 100 ; Waltham Seedling, 7s. per 100 ; Cash.

W. BROADBRIDGE, Wellesbourne, Warwick.

To the Trade.

HOLLYHOCKS.—Choice named, consisting of nearly 200 of the newest and best sorts, fine plants, free from all disease, 90s. per 100.

J. JACKSON, Nursery, Kidderminster.

Trade.

DWARF ROSES, on Manetti, extra extra fine Plants, 25s. per 100, £10 per 1000.

Planting SEASON SALE, 15s. per 100. Terms cash with orders.

RICHARD LOCKE, The Rose Farms, Red Hill, Surrey.

SYMPHYTUM ASPERRIMUM, or CAUCASIAN PRICKLY COMFREY. — Whole Roots and Crowns PURCHASED after Examination. Send full particulars to

THOMAS CHRISTY AND CO., 155, Fenchurch Street, London, E.C.

BEN. REID AND CO., NURSERYMEN, Aberdeen, beg to offer the following trees, special quotations on application :—

ABIES DOUGLASII, 2 to 4 feet.
CEDRUS ATLANTICA, 1½ to 3 feet.
DEODARA, 1½ to 2½ feet.
CUPRESSUS LAWSONIANA, 2 to 5 feet.
THUJOPSIS BOREALIS, 4 to 7 feet.
AZALEA PONTICA, 1½ to 3 feet.
ASH, Mountain, 6 to 10 feet.
BEECH, 2 to 3 feet.
CHESTNUT, Horse, 3 to 6 feet.
LARCH, 1 to 2 feet.
SERVICE, 4 to 6 feet.
BALM OF GILEAD, 1 to 2 feet.
SPRUCE, Black American, 1½ to 3 feet.

The Forest Tree Nurseries, Aberdeen.—March 21, 1877.

Superior New English Scarlet Runner Beans.

FREDERICK GEE has to offer a few Quarters of the above, at 35s. per bushel, for cash. These are a very rare article this season, and are far preferable to Foreign, which are now being sold : also a few Quarters of EARLY LONGPOD BROADS, at 72s. 6d. per bushel ; common WINDSORS, at 20s. ; fine Selected BROAD WINDSORS, at 14s. per bushel.

Seed Establishment, Biggleswade, Beds.

To the Trade.—Grass Seeds.

BOLTON AND CO. have to offer their New SEEDS, mixed for Permanent Pasture and Meadow Lands. So far as can possible it is made to suit the nature of the soil for which the Seeds are required. Prices on application. Purchasers of large quantities will find liberal terms.

BOLTON AND CO., Seed Merchants, Wood Green, London, N.

LARGE EVERGREEN SHRUBS.
PINUS AUSTRIACA, 6 to 10 feet.
SPRUCE FIRS, 8 to 10 feet.
PORTUGAL LAURELS, perfect pyramids, 6 to 8 feet.
SIBERIAN ARBOR-VITÆ, 6 to 8 feet.

The above were all transplanted spring, 1876, and will remove any distance with safety. Price on application to

FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

H. AND F. SHARPE'S Wholesale Spring CATALOGUE of HOME-GROWN AGRICULTURAL and GARDEN SEEDS is now ready, and may be had on application. The prices will be found very moderate.

Seed Growing Establishment, Wisbech.

To Market Gardeners and Others.

S. BIRD has to offer good, young, pricked-out plants of BATH COS LETTUCE, at 5s. per 1000, or 500 for 3s. Cash with order to

S. BIRD, Nursery, Farnham.

To the Trade.—Mangel Wurzel Seeds, 1876 Growth.

H. AND F. SHARPE invite the attention of the Trade to their fine selected stocks of home-grown MANGEL SEEDS, raised from fine picked bulbs. Special offers and samples on application to their Agents

Seed Growing Establishment, Wisbech.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LIST for 1877.

Extra Strong SEAKALE, 2s. per dozen.

RICHARD SMITH, Nurseryman, Worcester.

Hardy Florists' Flowers.

THOMAS S. WARE'S New SPRING CATALOGUE of the above, including Pansies, Violas (Bedding), Pentstemons, Dwarf Roses, Picotees, Phlox, Pyrethrums, and others, for immediate Planting, may be had free on application.

Hale Farm Nurseries, Tottenham, London.

ALTERNANTHERAS, good stuff, shaken out and forwarded free.
ALTERNANTHERA AMŒNA, 12s. per 100.
ALTERNANTHERA MAGNIFICA RED, 12s. per 100.
ALTERNANTHERA PARONYCHIOIDES, 8s. per 100.
CLOVES, old English, true, 20s. per 100 pairs.
WILLIAM HOLMES, Frampton Park Nurseries, Hackney, London, N.E.

Centaurea candidissima or ragusina,
PACKAGE FREE.

WOOD AND INGRAM offer fine plants of the above, thoroughly established in single pots, at 20s. per 100, or £9 per 1000. Not less than 50 will be sold at the 100 price, or 250 at the 1000 price.

The Nurseries, Huntingdon.

To the Trade.—Mangel Wurzel Seed.

BOLTON AND CO. offer a fine stock of BERKSHIRE PRIZE YELLOW GLOBE MANGEL, a variety well known for its long producing qualities : also an improved LONG YELLOW, a very desirable kind. They can also offer a limited quantity of the celebrated GATE POST MANGEL. Prices on application.

BOLTON AND CO., Seed Merchants, Wood Green, London, N.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. Is perfectly hardy, and the roots improve annually. The only secret of success is a rich soil, to keep up free growth. 12s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.

RICHARD SMITH, Nurseryman, Worcester.

Green Ivies of sorts in four kinds.

ROBERT PARKER, having a surplus stock of the above, will be pleased to supply, suitable for edgings, pattern beds, covering banks, &c ; will be pleased to dispose of them in quantities, at very low prices. Names, sizes, and prices per dozen, 100, or 1000, will be given on application.

Exotic Nursery, Tooting, Surrey, S.W.

Verbenas, Verbenas, Verbenas

WILLIAM BADMAN offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, at 12s. per 100 ; or turned out of pots, 10s. per 100. Good rooted Cuttings, 6s. per 100, 50s. per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S.E.

Pelargoniums, Pelargoniums.

JAMES HOLDER AND SON have a fine healthy Stock of the above to offer, at the following low prices : 24 fine, var., per 100, distinct, 12s., hamper and package included ; also extra strong plants, in 32-pots, 18s. per dozen, in 48-pots, 9s. per dozen, 60s. per 100, basket and packing extra. Crown Nursery, Reading.

Important Notice.

JAMES HOLDER AND SON beg to inform their numerous customers, and the public generally, that the PELARGONIUMS advertised by them are not the Zonal Class, but consist of Show, French, and Fancy varieties. The Stock and Collection is First-class, as certified by numerous testimonials received from various parts of the country.

Crown Nursery, Reading.

Genuine Garden Seeds.

WM. CUTBUSH AND SON have for many years held some of the finest Stocks of SEEDS in the Trade, and they believe that no house can possibly supply better quality. CATALOGUES post-free on application.
HIGHGATE, LONDON, N.; and BARNET, HERTS.

Good Verbenas, Cheap.

S. BIDE has now a splendid stock of good, strong, healthy VERBENAS, free from any disease, consisting of White, Purple, Scarlet, Pink, and various other colours, at 6s. per 100, or in pots at 8s. per 100, for cash. Send orders early to
S. BIDE, Alma Nursery, Farnham.

THE NEW PLANT and BULB COMPANY beg to call special attention to their NEW LIST (No 31), just published. Contents:—New Hardy Bulbs, New and Rare Lilies, New Hardy Cyrtopodium, New Ferns, Seeds of New Hardy Flowering Plants, &c. All of sterling merit, and at low prices. Post-free on application.
Lion Walk, Colchester.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.
Mr. WEBB, Calcot, Reading.

WEBB'S PRIZE COB FILBERTS, other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

Delphinium cardinale.

W. THOMPSON, SEEDSMAN, Tavern Street, Ipswich, begs to offer SEEDS of the above-named handsome hardy perennial, SCARLET LARKSPUR, distinct from D. nudicaule, in packets post-free for thirteen stamps. His Descriptive CATALOGUE for 1877 is now ready, and should be seen by all Amateurs of Hardy Plants. Post-free to any address.

Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUIT TREES (by THOMAS RIVERS) is now ready: also CATALOGUE of Select ROSES. Post-free on application.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Special Offer.—150,000 Vesuvius.

WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, 10s. per 100; or from store-pots, 8s. per 100, 75s. per 1000, package included. Terms Cash.
Cemetery Nursery, Gravesend, S.E.

SEEDS—SEEDS—ALL KINDS.—Before ordering your Seeds, send for Illustrated CATALOGUE, which contains full Directions,
How, When and What to Sow.
PENGILLEY AND POOL (successors to the Heatherside Nurseries Company), 59, Queen Victoria Street, London, E.C.

To the Trade.

STANDARD and DWARF ROSES of the leading sorts—splendid Plants, no better in the Trade, well-ripened wood—about 15,000 Standards and 5000 Dwarfs, guaranteed true to name. For lowest prices apply to
GRANT AND CO., Park Nursery, Portadown, Ireland.

To the Trade.—Turnip Seeds.

H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.
Seed Growing Establishment, Wisbech.

IVY, Irish (Hedera canariensis).—Good plants, 3s. per dozen, 20s. per 100, 80s. per 1000. Eighteen other kinds. See CATALOGUE.
LAURUSTINUS (Viburnum tinus).—Nice plants, with fine roots, 9 to 12 inches, 3s. per dozen, 15s. per 100, 5/6 101. per 1000; 15 to 18 inches, 4s. per dozen, 20s. per 100, £8 per 1000.
JAMES SMITH, Darley Dale Nurseries, near Matlock.

VERBENAS, VERBENAS, VERBENAS, —Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6d. per 100, 50s. per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, best prize flowers, for 6s. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

HARDY HEATHS, 100,000:—
12 plants in 12 varieties, 6s.
24 plants in 24 varieties, 12s.
50 plants in 25 varieties, 25s.
100 plants in 40 varieties, £2.
For varieties see CATALOGUE.
ANDROMEDAS, various.
LEDUMS, various.
JAMES SMITH, Darley Dale Nurseries, Matlock.

GLADIOLI for EXHIBITION, carriage free.—50, in 25 superb varieties, 7os.; 25, in 25 superb varieties, 37s. 6d.; 24, in 12 choice varieties, 35s.; 12, in 12 extra fine sorts, 20s.
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

GLADIOLI for GENERAL DECORATION.—100, in 50 choice sorts, 10os.; 50, in 50 fine varieties, 55s.; 50, in 25 fine sorts, 35s.; 25, in 25 choice varieties, 30s.; 24, in 12 fine varieties, 21s.; 12, in 12 fine sorts, 12s.; 12, in 12 good varieties, 9s.; 12, in 12 popular sorts, 6s.
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

GLADIOLI in MIXTURE.—White ground varieties, splendid, 4s. per dozen; brilliant scarlet and dark red varieties, 4s. per dozen; yellow ground varieties, 5s. per dozen; choicest mixed, all colours, 3s. per dozen.
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

GLADIOLUS BRENCHLEYENSIS.—Extra fine flowering roots of this splendid scarlet, 12. per dozen, or 6s. per 100.
DANIELS BROS., The Royal Norfolk Seed Establishment, Norwich.

ROYAL BOTANIC SOCIETY
OF LONDON.

FIRST SPRING EXHIBITION,
March 21, 1877.

AWARDS OF PRIZES.

12 STOVE and GREENHOUSE PLANTS, in 12-inch pots.
1st, Mr. G. Wheeler, Gr. to Sir. F. H. Goldsmid, Bart.

6 FORCED HARDY SHRUBS, in flower.
1st, Mr. J. W. Moorman, Gr. to the Misses Christy, Kingston.

6 GREENHOUSE AZALEAS, in 12-inch pots. (Amateurs.)
1st, Mr. A. Ratty, Gr. to R. Thornton, Esq., The Hoo, Sydenham.
2d, Mr. James, Gr. to W. F. Watson, Esq., Isleworth.
3d, Mr. G. Wheeler.

6 GREENHOUSE AZALEAS, in 12-in. pots. (Nurserymen.)
1st, Mr. Charles Turner, Slough.

6 CHINESE PRIMULAS. (Open.)
1st, Mr. James. | 2d, Mr. G. Wheeler.

6 HARDY PRIMULAS. (Open.)
1st, Mr. R. Dean, Bedfont, Hounslow.

6 FORCED ROSES. (Nurserymen.)
1st, Mr. Charles Turner.

6 DEUTZIAS. (Open.)
1st, Mr. James.
2d, Mr. Douglas, Gr. to F. Whitbourne, Esq., Loxford Hall.

12 CYCLAMENS. (Open.)
1st, Mr. James.
2d, Mr. Geo. Edmonds, Hayes, Middlesex.
3d, Mr. H. B. Smith, Ealing Dean Nursery.

6 CYCLAMENS. (Amateurs.)
1st, Mr. H. Little, Hillingdon Place, Uxbridge.
2d, Mr. J. James.

6 Pots LILY of the VALLEY. (Open.)
1st, Mr. Douglas.
2d, Mr. J. Weir, Gr. to Mrs. Hodgson, Hampstead.

12 HYACINTHS, single spikes. (Amateurs.)
1st, Mr. James Douglas. | 3d, Mr. James Weir.
2d, Mr. J. W. Moorman.

12 HYACINTHS, single spikes. (Nurserymen.)
1st, Messrs. Barr & Sugden. | 3d, Messrs. Osborn & Son.
2d, Messrs. Wm. Cutbush & Son.

12 HYACINTHS, any number of spikes. (Open.)
1st, Mr. Douglas. | Extra, Messrs. Osborn & Son.
2d, Messrs. Barr & Sugden. | ,, Mr. J. W. Moorman.
3d, Messrs. Cutbush & Son.

12 Pots TULIPS, 4 kinds. (Amateurs.)
1st, Mr. James Douglas | 3d, Mr. J. Weir.
2d, Mr. J. W. Moorman.

12 Pots TULIPS, 4 kinds. (Nurserymen.)
1st, Messrs. Barr & Sugden. | 3d, Messrs. Cutbush & Son.
2d, Messrs. Carter & Co.

12 Pots NARCISSI. (Open.)
1st, Messrs. Barr & Sugden. | 2d, Mr. J. Douglas.

12 BULBOUS PLANTS, distinct from any of the above. (Open)
1st, Mr. F. Roberts, Gr. to W. J. Terry, Esq., Peterborough House, Fulham.

MISCELLANEOUS—EXTRA PRIZES.

Messrs. James Veitch & Son, for a Collection of Hyacinths and Tulips.
Messrs. Barr & Sugden, for a Collection of Hyacinths.
Messrs. Wm. Paul & Son, for a Collection of Cut Camellias (ten boxes).
Mr. B. S. Williams, for a Collection of Plants.
Messrs. Wm. Cutbush & Son, for a Collection of Hyacinths.
Messrs. Carter & Co., for a Collection of Hyacinths and Tulips.
Mr. H. B. Smith, Ealing Dean Nursery, for a Collection of Cyclamens.
Mr. Charles Edmonds, Hayes Nursery, for a Collection of Cyclamens.
Messrs. Osborn & Son, for a Collection of Hyacinths.
Messrs. Carter & Co., for eight Dielytras.

BOTANICAL CERTIFICATES OF MERIT.

Messrs. Veitch & Sons, for Adiantum æmulum.
Messrs. Veitch & Sons, for Croton Earl of Derby.
Messrs. Veitch & Sons, for Eurycles australasicus.
Messrs. Veitch & Sons, for Nephrolepis Duffi.
Messrs. Veitch & Sons, for Panax laciniatus.
Messrs. Veitch & Sons, for Alsophila pycnocarpa.
Messrs. Veitch & Sons, for Alsophila philippinensis.
Messrs. Veitch & Sons, for Masdevallia Chimæra.
Mr. B. S. Williams, for Panax laciniatus.
Mr. B. S. Williams, for Dennstædtia davalliodes Youngii.
Messrs. Rollisson & Son, for Pulteneea rosea.

FLORICULTURAL CERTIFICATES OF MERIT.

Mr. James, Isleworth, for Cinerarias Purple Gem, Mary, Thomas Winter, Jane, Mrs. Watson, Thomas Stent, Mrs. Winter.
Messrs. Veitch & Son, for Hyacinths Orange Queen, Globosa, Marquis of Lorne, Queen of Lilacs.
Mr. Charles Turner, for Tree Carnation Rose Perfection.
Mr. George Edmonds, Hayes Nursery, for Cyclamen persicum rosea grandiflora, White Swan.

LYE'S FAVOURITE.—The handsomest and best Potato ever offered. Indispensable for Exhibition. This variety will be the greatest Prize Winner of the season. We have purchased the entire Stock of Mr. James Lye, Clyffe Hall, Market Lavington, and parties wishing to grow this remarkably handsome and beautiful variety should order at once, as the stock is getting very limited. It can only be obtained direct from us. Price 5s. per lb. Orders of 20s. and upwards carriage free.
DANIELS BROS., The Royal Seedsmen, Norwich.

NEW GERANIUMS—
EMOINES.
DAME BLANCHE } Good double whites,
MADAME AMELIA BALTET } 3s. 6d. each.
DEPUTY BRICE, 2s. 6d. each.
DEPUTY VIOX, 2s. 6d. each.
The above received First-class Certificates from Royal Horticultural Society during summer 1876.
BEAUTY of OXTON (Bull), 1s. 6d. each.
KONIG ALBERT, double Ivy-leaf, 6s. per dozen.
Post free. Post-office orders payable to
FREDK. PERKINS, Nurseryman, Regent Street, Leamington.

ROBERT AND GEORGE NEAL, of Wandsworth Common, Upper Tooting, and Garrett Lane Nurseries.
These Nurseries comprise about 50 Acres of well-grown and a most useful assortment of STANDARD, ORNAMENTAL, FOREST, FRUIT, and ROSES, and SHRUBS, all of which are in a most healthy and fit condition for removal. A personal inspection invited. The CATALOGUES free on application.
The Nurseries are within a few minutes' walk of the Clapham Junction and Wandsworth Common Railway Stations.

New Bedding Tropæolum, "Hunter."

DOWNIE AND LAIRD have much pleasure in offering for Spring delivery the above Tropæolum, which has been raised by Mr. Andrew Hunter, gardener to Lord Shand, New Hailes House, near Edinburgh. This is an excellent Bedding Tropæolum, surpassing its parent Cooperi, being of a dwarfer habit, and we can with perfect confidence recommend it. The Editor of the *Gardeners' Chronicle* says, "It grows about 6 inches high, is very neat and compact in habit, and a most profuse bloomer, the flowers being of medium size, nice form, and of a bright scarlet colour." Strong, per dozen plants, 12s.; each, 1s. 6d. Usual discount to the Trade.
West Coates Nursery, Edinburgh.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden.—"Gee's superior Bedfordshire-grown Plants and Seeds have attained much celebrity."—*Vide Bedford Mercury*, July 29, 1876. "The soils of the district offer facilities enjoyed at few places for bringing away plants, and under the skill and perseverance of Mr. F. Gee they are turned to good account."—*Vide Agricultural Gazette*, July 31, 1876. See other opinions of the Press, also a Treatise on the Cabbage. CATALOGUES, lowest prices, &c., on application to FREDERICK GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

W. F. BOFF offers easy growing, free-blooming Hyacinths, 12s., 30s., and 42s. per dozen.
TUBEROSES, 2s. per dozen, 12s. per 100.
LILY of the VALLEY, imported clumps, 9s. per dozen.
CALCEOLARIAS, yellow, rooted cuttings, 5s. per 100.
203, Upper Street, Islington, N.

Verbenas, &c., large selection of 200 varieties.

GEORGE SMITH, FLORIST, &c., 61, Penrose Street, Walworth, has to intimate he has a large stock of VERBENAS, &c.; they are extra healthy, established and strong, furnished with prepared cuttings. New 1876, 3s. 6d. per dozen; older sorts, 4s. per 100; rooted cuttings, 8s. per 100.
GERANIUMS, Scarlet, Pearson's and other raisers', 31.p.doz.
CLOVES, Crimson, strong, 2s. per dozen, 16s. per 100.
CAMPANULA, Double Blue, 2s. per dozen, 16s. per 100.
TROPÆOLUM JARRATII, fit for specimens, 9s. per dozen.
Cash. LIST free.

Shallot Seed.

DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild; with ordinary treatment bulbs have been grown 10 and even 12 inches in circumference—by far the best method for growing the Shallot. Treatment same as Onions. Price 1s. per packet. May be had of all Seedsmen in sealed packets, and Wholesale of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C., or
E. R. DAVIS, Nursery and Seed Warehouse, Yeovil.

LOBELIA ERINUS ERECTA, fl. alb— pleno—the First double white Lobelia.—A beautiful novelty, most valuable for Bedding purposes, as well as for Pot Culture; it forms handsome small erect and dense tufts, of 3 to 4 inches height, of good form and foliage, flowering freely and in great abundance in pots, as well as in the open ground. Prices: per 100, 60s.; per dozen, 9s.; each, 1s.
A. BAUER, Nurseryman and Seedsman, Danzig, Prussia.

AZALEA INDICA, Splendid New, EMPEREUR DU BRESIL (J. Verschaffelt)—Good plants, 12s. each; strong plants, with buds, 20s. each.
TRIOMPHE DES DOUBLES BLANCS (J. Verschaffelt). —Good Plants, 12s. each; larger size, no more to hand.
Four for three to the Trade
For full description *vide* CATALOGUE No. 19, sent free on application.
N.B.—A few fine plants, well set with buds, of the beautiful AZALEA, IMPERATRICE CHARLOTTE, are still disposable, at 5s. each, or six plants for 25s.
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MESSRS. JNO. STANDISH AND CO.'S CATALOGUE for Autumn, 1876, and Spring, 1877, is now ready, and may be had, post-free, on application.
It contains the following:—

Plants of Recent Introduction.	Conifers.
Stove and Greenhouse Plants.	Hardy Climbers, Clematis, &c.
Plants for Winter Forcing.	Rhododendrons, Azaleas,
Azalea indica and Camellias.	Kalmias, &c.
Tree Carnations and Ericas.	Roses, Standards and Dwarfs,
Ferns and Lycopods.	also in pots.
Hardy Trees and Shrubs.	Fruit Trees.
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Dutch Bulbs, Flower Roots, &c.	

Royal Nurseries, Ascot, Berks.

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THOMAS S. WARE'S CATALOGUE of the above for the present year is Now Ready, and includes New, Rare, and Choice Perennials, Bamboos, and Ornamental Grasses, Bog Plants, and Aquatics; also, a few Bulbs. Post-free on application.

Hale Farm Nurseries, Tottenham, London.

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H. AND F. SHARPE can still supply the following varieties of SEED POTATOS, raised from choice selected Stocks, viz. :—

Rivers' Royal Ashleaf,	Early Fox's Seedling,
Myatt's Prolific Ashleaf,	Robson's Challenge,
Alma Kidney,	Walker's Improved Regent,
Model,	Paterson's Victoria,
Hundredfold Fluke,	Red-skin Flourball,
King of the Flukes,	Paterson's Alpha,
Fluke Kidney,	Early American Rose,
Early Bunyhoy,	Extra Early Vermont,
Early Oxford,	Eureka,
Bresee's King of the Earlies,	American Wonder,
Bresee's Dwarf Prolific,	Climax.

Seed Growing Establishment Wisbech.

CHARLES NOBLE, Bagshot, can offer the following :—

ROSES, Dwarf, 4*s.* per dozen, 25*s.* per 100, 210*s.* per 1000.
PEACHES and NECTARINES, dwarf-trained, 21*s.* per dozen, 150*s.* per 100.
RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1½ to 2 feet, 21*s.* per dozen, 150*s.* per 100.
" " " " for immediate effect, 2½ to 4 feet, and same through, 42*s.* per dozen, 300*s.* per 100.
" Seedling, 1½ to 3½ feet, 24*s.* per dozen, 200*s.* per 100.
" PONTICUM, 1½ to 2 feet, bushy, for planting, 35*s.* per 100.
KALMIA LATIFOLIA, 1 to 1½ foot, buds, for potting, 75*s.* and 100*s.* per 100.
ANDROMEDA FLORIBUNDA, buds, for potting, 75*s.* and 100*s.* per 100.
ERICA CARNEA, very fine, 21*s.* per 100.

Scotch Fir and Black Austrian Pines.

A. E. BARNAART AND CO., NURSERYMEN, Vogelenzang, Haarlem, Holland, have a large quantity of SCOTCH FIRS, 2-yr., 3-yr., 2-yr. transplanted, and BLACK AUSTRIAN PINES, 2-yr., 2-yr. transplanted, which they can offer at very low rates. Samples and prices may be obtained from

Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

CHARLES LEE AND SON (Successors to Messrs. John & Charles Lee), of the Royal Vineyard Nursery, Hammersmith, W., beg to announce that, in consequence of the Retirement of Mr. John Lee from the business, they have TAKEN OVER the ENTIRE NURSERY and SEED TRADE so successfully carried on for many years by the late firm, and they trust the same liberal patronage so long given to them by John & Charles Lee will be continued to the New Firm.

Charles Lee & Son pledge themselves to devote all their energy to raising First-class Stock in every department, which the large resources at their command will enable them to supply with considerable advantage to the Public both as regards quality and price. With a view to a more extensive production of Stove and Greenhouse Plants of the best quality they intend to almost entirely rebuild their extensive ranges of Glass on a new site, a portion of the old Nursery being taken up for building purposes. All orders to be addressed to

CHARLES LEE AND SON, Royal Vineyard Nursery, Hammersmith, W., where the general business of the Nursery and Seed Trade will be carried on ; or to

Mr. DIXON, Feltham Nursery ; Mr. CANNON, Ealing Nursery; Mr. WEBB, Arboretum, and Mr. MARSLEN, Wood Lane, Isleworth.

Potatos for Exhibition.

HOOPER AND CO., Covent Garden, offer FOUR PRIZES in the next Potato Exhibition, to be held at the Westminster Aquarium early in October, for FOUR DISHES of DISTINCT NEW VARIETIES. We recommend the following, which they can supply, as well suited for growing for that purpose :—

CENTENNIAL, new American Red-skin, 3*s. 6d.* per lb.
COVENT GARDEN PERFECTION, an English seedling, white, rough skin, 2*s. 6d.*
SUPERIOR, deep red, American Kidney-shaped, 2*s. 6d.* per lb.
SUCCESS, large, flat, white, 2*s. 6d.* per lb.
LADY WEBSTER, flattish round, white, with red streaked eyes, 3*s.* per lb.
IMPROVED PEACH BLOW, flattish round, pinkish white, red at the eyes, 3*s. 6d.* per lb.

One pound of each of the six varieties forwarded on receipt of remittance for 15*s.*

HOOPER AND CO., Covent Garden, London, W.C.

Lobelia Ebor—Lobelia Ebor.

J. C. PADMAN, Providence Nursery, Boston, near Peterboro', has pleasure in informing all lovers of really good Bedding Plants that he is propagating his new LOBELIA EBOR to send out the second week in May. *Price* 12*s.* 6*d.* per dozen, 24*s.* per 100. A writer in the *Gardeners' Chronicle* of February 10, 1877, says :—

"Last season I had the following varieties placed side by side to enable me to compare critically their various merits : —Bluestone, Ebor, pumila magnifica, Lustrous, pumila grandiflora, Brilliant, Mazarine Gem, Cobalt Blue, flore-pleno, and Wellsiana ; Bluestone and Ebor the best of the Lobelia compacta class. It is scarcely known except in Yorkshire, but for effect it certainly eclipses all others. Its colour is so dark and intense that it may justly be called blue, and if planted side by side with pumila grandiflora the contrast is most pleasing and very effective."

See also " Cannell's Floral Guide " for 1877, p. 83.

ALTERNANTHERAS, and other CARPET BEDDING PLANTS.—At 12*s. 6d.* per dozen, 8*s.* per 100, 70*s.* per 1000 :—Alternantheras of all the varieties. Antennaria tomentosa. Armeria balearica, Jerusine Lindeni, Lamium aurea var. Lobelia pumila magnifica (true), from cuttings, the best bedding Lobelia in cultivation ; Mentha pulegium gibraltaricum, Sagina procumbens, At 2*s.* per dozen, 10*s.* per 100, 80*s.* per 1000:—Achillea umbellata, Coleus Verschaffeltii, Kleinia repens, Leucophyton Browni, Santolina incana. At 1*s.* per dozen, 5*s.* per 100, 40*s.* per 1000 :—Cerastium arvensis (green), tomentosum (white), Lobelia pumila grandiflora (true), from cuttings : Sedums of all varieties best suited for Carpet Bedding.

For cash with order, packing included.

WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

FLOWER SEEDS.

Flowers in Bloom all the Year round.

PURCHASE

Pengilly & Pool's Collection E.,

Price 10*s. 6d., comprising*—

12 ASTERS, splendid varieties,
12 STOCKS, "
12 ANNUALS, Hardy, "
6 EVERLASTING FLOWERS,
6 PERENNIALS, Hardy,
3 GRASSES, Fancy,
12 ANNUALS, Tender,
1 oz. MIGNONETTE, large flowered,
1 oz. SWEET PEA, finest sorts.

59, VICTORIA STREET, LONDON, E.C.

Carriage free on receipt of Post-office Order.

AVENUE TREES.

PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 8 inches at 4 feet from the ground.

LIMES, 12 to 20 feet high, and girthing 6 to 10 inches at 4 feet from the ground.

POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 6 inches at 4 feet from the ground.

ANTHONY WATERER

Has to offer many thousands of the above. They may be seen growing at Knap Hill. They are straight, handsome, and well rooted, and altogether the finest Trees of the kind to be found in any nursery in Europe.

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ESTABLISHED 1785.

SPECIALITIES.

ROSES, FRUIT TREES, CONIFERS.

Address — CRANSTON & CO., KING'S ACRE, near HEREFORD.

AVENUE TREES.

PLANES, 12 to 14 feet.
CHESTNUTS, Horse, 11 to 12 feet.
CHESTNUTS, Scarlet, 9 to 10 feet.
LIMES, 12 to 14 feet.
POPLARS, Canadian, 12 to 14 feet.
CHESTNUTS, Spanish, 9 to 10 feet.
POPLARS, Lombardy, 15 to 20 feet.

All with clean strut stems.

CHARLES LEE & SON,
Royal Vineyard Nursery and Seed Establishment,
HAMMERSMITH, W.

SPRING FLOWERING PLANTS :—

PRIMROSE, double yellow, 3*s.* per dozen, 20*s.* per 100.
" double lilac, 2*s. 6d.* per dozen, 15*s.* per 100.
" double purple-crimson, 6*s.* per dozen, 45*s.* per 100.
" double crimson, true, 18*s.* per dozen.
" single yellow, flowers in scapes, 9*d.* per dozen.
CARDAMINE PRATENSIS fl.-pl., 1*s.* per doz., 20*s.* per 100.
SISYRINCHIUM GRANDIFLORUM, in pots, 3*s. 6d.* per dozen.
PANSY, Blue King, strong, 2*s.* per dozen, 10*s* per 100.
VIOLA, Blue Bell, strong, 2*s.* per dozen, 10*s.* per 100.
" Intea Grievei, strong, 2*s.* per dozen, 10*s.* per 100.
PÖLYANTHUS, sorts, strong, 3*s.* per dozen, 12*s.* per 100.
DAISIES, white and red, 3*s. 6d.* per 100.
WALLFLOWERS, double German, 6*s.* per 100.
" single dwarf yellow, 6*s.* per 100.
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GLOXINIA CRASSIFOLIA GRANDIFLORA.—Magnificent strain, quite distinct : sown now will flower in autumn. Erecta and horizontalis, separate or mixed, 1*s.* and 2*s. 6d.* per packet.
PETUNIA, double large-flowered.—Yields a large percentage of double flowers, 1*s. 6d.* per packet.
STEPHANOTIS FLORIBUNDA. — Remarkably free-flowering variety from the Mauritius, 1*s. 6d.* per packet.

CATALOGUES free on application.

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PRUNUS MYROBALANA—Best Stuff for Mending Old Fences, or Making New ones.

It will grow vigorously in the poorest soil, and bears clipping like Whitethorn. Its small but very hard branches and numerous thorns effectually prevent cattle or evil-disposed persons getting through fences made of it.

Plant four to six in a yard.

Price 3*s.*, 4*s. 6d.*, and 6*s.* per 100 ; 25*s.*, 35*s.*, and 50*s.* per 1000.
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PICEA NOBILIS, 10,000, fine, healthy, well furnished plants, will carry balls of earth :—
1½ to 2 feet, 8*s.* per dozen, 60*s.* per 100.
2 to 2½ feet, 22*s.* per dozen, £8 10*s.* per 100.
2½ to 3 feet, 36*s.* per dozen, £14 per 100.
3 to 3½ feet, 60*s.* per dozen.
PICEA NORDMANNIANA, 5000, fine. For sizes and prices see Catalogue.
PINUS CEMBRA, 10,000, very fine, well-rooted :—
2 to 3 feet, 18*s.* per dozen, 80*s.* per 100.
2½ to 3½ feet, 6*s.* per dozen, 25*s.* per 100.
3 to 4 feet, 10*s.* per dozen, 70*s.* per 100.
4 to 5 feet, 18*s.* per dozen, 120*s.* per 100.
PINUS STROBUS (Weymouth Pine), various sizes.
PICEA BALSAMEA (Balm of Gilead), fine healthy plants, RETINOSPORAS, fine.
CRYPTOMERIA ELEGANS and others, in perfect health.
LIBOCEDRUS DECURRENS (Thuja gigantea), very good, See CATALOGUE.

JAMES SMITH, Darley Dale Nurseries, Matlock.

Cheap Plants—Special Offer.

WILLIAM BADMAN offers, as under, all healthy stock, well-rooted cuttings :—
VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 10*s.* per 100 ; well-rooted cuttings, 6*d.* per 100, 50*s.* per 1000 ; Tricolor, Mrs. Pollock, 20*s.* per 100.
CALCEOLARIA, Golden Gem, 5*s.* per 100, 40*s.* per 1000.
LOBELLIA, speciosa (true), 3*s.* per 100, 20*s.* per 1000 ; Blue-stone and pumila grandiflora, all from cuttings, 5*s.* per 100, 40*s.* per 1000.
PELARGONIUMS, Vesuvius, from stores, 8*s.* per 100, 75*s.* per 1000 ; Jean Sisley, 10*s.* per 100 ; Madame Vaucher, 10*s.* per 100, 85*s.* per 1000 ; Master Christine, 12*s.* per 100 : all from single pots.
" Tricolor, Mrs. Pollock, 20*s.* per 100 ; Crystal Palace Gem, 12*s.* per 100 ; Flower of Spring, 12*s.* per 100 ; May Queen (Turner's), 15*s.* per 100.
HELIOTROPE, finest dark, good bushy plants, 12*s.* per 100 ; rooted cuttings, 6*s.* per 100.

Packed free. Terms, cash.
Cemetery Nursery, Gravesend, S.E.

Splendid New Melon, 1877.

CHARLES LEE AND SON (Successors to Messrs J. & C. Lee) have the pleasure to announce that they have purchased the entire Stock of Mr. Wm. Tillery's HYBRID GREEN-FLESH MELON, which they now offer for the first time. It has already earned a high reputation in London and the provinces for its many excellent qualities, among which may be mentioned a remarkably high and exquisite flavour at all seasons of the year—perfection of shape and size for dessert—a thin rind and melting flesh, with an overflow of perfumed juice. It is also a heavy cropper, and forces well.

Dr. HOGG has spoken of this excellent Melon in the highest terms, and after tasting it pronounced it a fruit of the highest merit.

Mr. CULVERWELL, of Thorpe Perrow, fellow judge with Mr. FOWLER, of Harewood House, at the Leeds Horticultural Show, where they awarded a First-class Certificate to " Mann's Hybrid Green-flesh Melon," speaks of it as "an exceedingly fine Melon, especially at that early season—the early part of June."

Mr. INGRAM, of Belvoir Castle, writes, in the third week of October, " that in spite of the disadvantage of a long term of gloomy weather, at the end of the season of the year, ' Mann's Hybrid Green-flesh Melon ' was sweet, tender in flesh, very juicy, and distinct in character."

Messrs. Charles Lee & Son are now prepared to offer this very useful and delicious new Melon in sealed packets, at 3*s. 6d.* per packet.

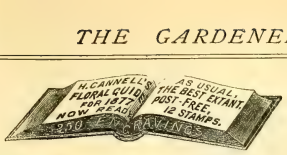
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Cabbage Plants.

H. I. HARDY begs to offer a quantity of strong Autumn-sown Plants, all true :—
ENFIELD MARKET, } 3*s. 6d.* per 1000.
ROBINSON'S DRUMHEAD, }
LETTUCE PLANTS, Autumn-sown—CHAMPION and SIBERIAN COS, 7*s. 6d.* per 1000.

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H. I. HARDY, Stour Valley Seed Grounds, Bures, Essex.



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Редакція, "Вѣстникъ,"

"St. Petersburg.

"Dear Sir,—Many thanks for your 'Floral Guide.' I will strongly recommend it to the Fellows of our Society and to the readers of our periodicals as the best and plainest index of the choicest and most valuable new varieties of flowers and florists' plants and their seeds.—Believe me, Sir, yours most truly,

"P. WOLKENSTEIN, *Secretary of the Imperial Russian Horticultural Society.*"

GLENNY *says thus*:—"H. Cannell's 'Floral Guide' is, as usual, full of practical information and liberally illustrated. It partakes more of a standard work than a catalogue, and should be in the possession of every lover of a garden."

"The Vicarage, Thornton Steward, Bedale, March 2, 1877.

"*The* Rev. H. FITCH *says*:—Accept my best thanks for your most excellent and beautiful catalogue, or rather Floral Guide, received by this morning's post."

H. C.'s Seed List is also by far the most valuable ever issued; sent post-free to all applicants.

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JEFFERIES' LITTLE QUEEN COS LETTUCE,

Per Packet, 1s. 6d.,

Is the Earliest, Best Flavoured and Best Coloured Lettuce in cultivation.

MR. FARLEY, *The Gardens, Valentines, says*:—"Your Little Queen Lettuce proved a good selection, although the weather was very adverse to the trial."

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A Packet of this excellent Lettuce will be included in all our Collections of Vegetable Seeds.

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JEFFERIES' TWO GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' THREE GUINEA COLLECTION OF VEGETABLE SEEDS,

Are the best obtainable. For particulars, obtain our "Illustrated Garden Guide."

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THE NEW ROSE,

QUEEN OF BEDDERS (NOBLE),

Perhaps the Finest Rose for Bedding ever sent out.

COLOUR OF "CHARLES LEFEBVRE."

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that flowers were cut daily from June to November 20, 1876.

Good Plants will be sent out, in strict rotation, at 10s. 6d. each,

COMMENCING FIRST WEEK IN MAY.

CHARLES NOBLE, BAGSHOT.

NEW PLANTS, 1877.

CHARLES LEE & SON,

SUCCESSORS TO

MESSRS. JOHN AND CHARLES LEE,

OF THE

Royal Vineyard Nursery,

HAMMERSMITH, near LONDON,

Have the pleasure to offer the following very beautiful and interesting

NOVELTIES,

now offered by them for the first time:—

BEGONIA COLTONI.

This distinct and beautiful Begonia was raised at the Royal Vineyard Nursery. The colour of the flowers is quite new in Begonias, being of an orange-crimson. It is a most abundant bloomer, and the flowers are of the largest size. It received a First-class Certificate from the Floral Committee of the Royal Horticultural Society in 1875. Good plants, price 10*s.* 6*d.* each.

BEGONIA RODWELLI.

This lovely Begonia was also raised at the Royal Vineyard Nursery. The flowers are of a bright vermilion-scarlet, and of the largest size; and the plant is a very abundant bloomer. It received a First-class Certificate from the Committee of the Royal Horticultural Society. Good plants, price 10*s.* 6*d.* each.

CORNUS MASCULA AUREA ELEGANTISSIMA (J. & C. Lee).

This elegant and lovely hardy shrub was raised from seed in our Isleworth Nursery, and has been proved to be perfectly constant in its beautiful variegation. A broad margin of pure gold surrounding a bright green centre is of itself a sufficient attraction, but when in July the tips of the leaves become suffused with the brightest carmine it is impossible to give an idea of the beauty and elegance of the plant, which will bear a favourable comparison with the best variegated stove or greenhouse exotics. Suffice it to say, that it has been seen and admired by many amateurs and nurserymen, and has been awarded a First-class Certificate at South Kensington. The habit of the plant is semi-pendulous, and very graceful. Price of maiden plants, 15*s.* each; larger specimens, 21*s.* each. A Coloured Plate may be had on application for 1*s.*

JUNIPERUS VIRGINIANA ELEGANS (J. & C. Lee).

This very elegant variety of the Red Cedar was raised from seed in our own grounds in 1869. It is scarcely necessary to remark upon the hardiness of this plant, but it is due to its character to state that the elegant cream-coloured variegation with which the whole plant is suffused is perfectly constant, and has never been injured by frost or burned in the least degree by the hottest sunshine, although fully exposed in the open air. The plant is of neat and free growth, and received the honour of a First-class Certificate from the Floral Committee at South Kensington, in July, 1875. Price 15*s.* each; larger specimens, 21*s.* each. A Photograph of the plant may be had on application for 1*s.*

POPULUS CANADENSIS AUREA VAN GEERTI (1876).

The golden variety of this noble Poplar sent out in February last by Mr. Charles Van Geert, of Antwerp, has fully borne out in our Nurseries the description he gave of it, and has retained its golden colour much better than either the Golden Catalpa or the Golden Oak during the late tropical summer.

EXTRACT FROM MR. VAN GEERT'S DESCRIPTION.

"We have the pleasure of offering an extremely remarkable variety of the Canadian Poplar, with a foliage which presents during the whole summer the finest hue of golden-yellow. It is in our opinion a most valuable acquisition, and has been pronounced so by every connoisseur who has admired it in our nursery, for the coloured foliage now so frequently met with among low shrubs fails almost entirely among the larger trees. The Catalpa aurea and the Quercus Robur concordia are the only trees known as possessing the same golden foliage; but the former is only a second-sized tree, and the latter has not the vigour of the common Oak. Our golden Poplar, on the contrary, is a first-sized tree, of rapid and vigorous growth. Its eaves are quite as large as those of the common Canadian Poplar, and the yellow hue, instead of looking sickly, has a warm and vigorous tint. The better nourished the tree is, and the more it is exposed to the sun, the more vivid is the golden hue."

Having received in February last a large consignment of this magnificent novelty from Mr. Van Geert, we are enabled to offer nice plants at 7*s.* 6*d.* each.

ABIES EXCELSA AUREA (J. & C. Lee, 1875).

This is decidedly the finest golden Conifer of large growth yet introduced. It is of free growth, and requires to be planted in the full sunshine. In such a position the whole tree is suffused with the richest gold. A First-class Certificate has been awarded to this valuable tree at South Kensington. Price of nice plants, 15*s.* each; larger specimens, 21*s.* each.

LAURUS CAMELLIÆFOLIA (Wood, 1875).

We can still supply a few hundreds of this extraordinary and elegant Laurel. Price 2*s.* 6*d.* each; per dozen, 18*s.*

CHARLES LEE & SON,
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E. G. HENDERSON & SON

Offer the following in Seed, of quality the best that can be had, at per packet :—

CALCEOLARIA—the variety of colours, size, and shape of the flowers is the result of many years' continual improvement ; *2s. 6d.* and *5s.*
CINERARIA—the shape and brilliancy of colour in these flowers is of great importance ; *2s. 6d.* and *5s.*
,, double-flowered, *2s. 6d.* and *5s.*
PRIMULA SINENSIS, in crimson, scarlet, and white (better cannot be had), separate or mixed, *2s. 6d.* and *5s.*
,, ,, double-flowered, true from seed, *2s. 6d.* and *5s.*
CYCLAMEN PERSICUM GRANDIFLORUM—brilliant colours, with large-size petals and perfumed flowers, is the quality here offered ; *1s.* and *2s. 6d.*
BEGONIA, tuberous-rooted (our collection is unequalled), *1s.* and *2s. 6d.*
,, tuberous-rooted, double-flowered, mixed colours, *2s. 6d.*
BALSAM—we trust to none but our own saving—mixed, *1s.* ; nine colours, *2s. 6d.*
PINK, from named collection, *1s.* and *2s. 6d.*
CARNATION, mixed, *2s. 6d.* See Catalogue for separate sections.
MIMULUS, superb strain, same as exhibited every year at the Royal Horticultural Society, *1s. 6d.*
LOBELIA, Brilliant Improved, White Brilliant, Mazarine Gem, speciosa—from pot plants, pumila grandiflora, Lustre Improved, Defiance—the best red, Bluestone, and Magnifica, *1s.* each.
PANSY, English, show flowers, *1s. 6d.*
,, French, blotched, *1s. 6d.*
PETUNIAS, very beautiful, saved in pots, in separate sections at their Wellington Road Nursery, *1s.*
,, double flowered, *1s.* and *2s. 6d.*
SWEET WILLIAM, extra fine, *1s.*
,, from named flowers, *1s.* and *2s. 6d.* [each.
STOCK, East Lothian, scarlet, white, and purple, *6d.* and *1s.*
Intermediate, Brilliantissima, and others. See Catalogue.
AURICULA, extra choice alpine varieties, *2s. 6d.*
SOLANUM, Improved Hybrid, as grown for the London Markets, *1s.*
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GLOXINIA, drooping and erect, *1s. 6d.* each ; mixed, *2s. 6d.*
HOLLYHOCK, from named collection, *1s.* and *2s. 6d.*
PRIMROSE, POLYANTHUS, and OXLIP, best quality, mixed colours, *1s.* each, *2s.*
WALLFLOWER, double German, mixed colours, *6d.* and *1s.*

NOVELTIES in FLOWER SEEDS.

ALONSOA ALBIFLORA.—New distinct species from Mexico, introduced by Mr. Roezl, the distinguished collector, flowering freely, from 12 inches up to 2 feet in height, producing long terminal spikes of pure white flowers with yellow eye. It is recommended for pot-culture, as in the conservatory it will produce a succession of its flowers throughout the autumn and winter when most acceptable for bouquets and table-decoration. It will be found a desirable and useful substitute for Lily of the Valley, as used in our bouquets with so charming an effect when arranged so as to overtop the other flowers by 1 or 2 inches. *1s.*
BROWALLIA ROEZLI, *1s.* COBŒA HIRSUTA, *2s. 6d.*
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MIMULUS BIBLLIANTISSIMA, scarlet self, *1s.*
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ASTER, Firelight, most beautiful and brilliant new quilled variety, *1s.*
SAXIFRAGA NEPALENSIS, fine ornamental species for pot culture, *1s.*
PAPAVER UMBROSA, showy flowers, *1s.*
LIATRIS PYCNOSTACHYA, *1s.*
CANTERBURY BELLS, double frilled flowers, beautiful variety of colours, *1s.*
CUPHEA ROEZLI, *1s.* BAMBUSA GRACILIS, *1s.*

PINE-APPLE NURSERY, MAIDA VALE, LONDON, W.

GODETIA, LADY ALBEMARLE,

First-class Certificate Royal Horticultural Society, August 2, 1876.



A magnificent new variety, growing 1 foot high. Flowers 3½ to 4 inches across, and of the most intense glowing carmine-crimson colour, which being produced in wonderful profusion give the plants the most charming appearance. This is the finest annual ever sent out, and being extremely hardy and easy of cultivation, should be in every garden.

Seed, with full cultural directions, per packet, *1s. 6d.*; post-free.

"We have scarcely any plant of such a lovely shade of colour." *—The Villa Gardener, September, 1876.*

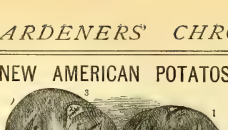
"An extremely beautiful variety bearing flowers quite 4 inches in diameter, of a glowing crimson colour."*—Gardeners' Magazine, August 5, 1876.*

"A remarkable and splendid variety, far superior to any other of the family."*—Journal of Horticulture, Aug. 3, 1876.*

May be had of all Seedsmen, and Wholesale and Retail of

DANIELS BROS.,
THE ROYAL NORFOLK SEED ESTABLISHMENT,
Norwich.

NEW AMERICAN POTATOS.



No. 1. CENTENNIAL.—A seedling of the well-known Brownell's Beauty crossed with the White Pearl Blue ; haulm stout, vigorous, of medium height ; tubers medium and of uniform size ; shape round, somewhat flattened, symmetrical and handsome ; colour deep red ; flesh fine grain, white and mealy ; very productive, and of fine quality.

No. 2. BROWNELL'S SUPERIOR.—Of the same parentage as the preceding. Its tubers are medium to large, kidney-shaped, of a peculiar dark copper colour, very uniform and handsome in appearance ; skin fine and smooth ; eyes few and small ; the haulm is strong and healthy ; the tubers are thickly clustered around the stalks. It is a second early variety, keeps well, and is enormously productive, 673 lb. having been grown from 1 lb. of seed with ordinary farm culture. A Certificate of Merit was awarded this variety at the International Potato Show.

No. 3. IMPROVED PEACH BLOW.—A cross between the well-known Jersey Pearl Blue and the Excelsior. It partakes of some of the characteristics of each of its parents, having the haulm of the Excelsior, while its tubers resemble the Pearl Blue, though better formed ; while in quality it equals that old standard sort, it is far more productive and matures earlier.

One pound of either of the above varieties will be mailed post-paid to any address in Europe upon receipt of 4*s.*, or its equivalent in English currency.

Remittances can be made in Post-office Stamps or Postal Money Order on New York or London, payable to B. K. Bliss and Son.

The above varieties can also be obtained of Messrs. HOOPER AND CO., Covent Garden, W.C. ; of CARTER, DUNNETT, AND BEALE, London, W.C. ; CHRISTMAS QUINCEY, Peterborough.

Our Illustrated and Descriptive POTATO CATALOGUE, 40 pages, will be mailed free and post-paid to all applicants.

Address, B. K. BLISS AND SON, Seed Merchants, 34, Barclay Street, New York, U.S.A.



VINES.

MUSCAT OF ALEXANDRIA, VENN'S BLACK MUSCAT, WALTHAM CROSS WHITE.

JOHN KEYNES

Has a few of the above, in fine Fruiting Canes, from 1-yr. old eyes. Warranted to fruit six to ten bunches of Grapes.

NO OTHER SORTS LEFT.

The NEW ROSES for 1877 now ready, in very extra fine Plants.

The NEW DAHLIA and VERBENA CATALOGUE ready.

SALISBURY.—March 1, 1877.

New Continental Roses for 1877.

H. BENNETT'S own selection, in the best possible Plants, ready in March.

Descriptive LISTS may now be had post-free on application.

MANOR FARM NURSERY,
STAPLEFORD SALISBURY.

Vines.



E. G. HENDERSON AND SON offer splendid Fruiting Canes of all leading kinds. Planting Canes, *3s. 6d.*, *5s.*, and *7s. 6d.* each ; Golden Queen, Venn's Black Muscat, and Waltham Cross, *42s.* and *60s.* per dozen. Trade supplied.

Pine-apple Nursery, Maida Vale, W.

GROS GUILLAUME GRAPE

(Roberts' Variety).

The largest Black Grape in Cultivation.

Eyes or Scions from fine, strong, well-ripened wood, *10s. 6d.* each
Ditto ditto second size .. .. *7s. 6d.* ,,

For particulars of this remarkable New Grape see *Gardeners' Chronicle* of January 27, pages 102 and 117, or apply to

Messrs. W. TAIT & CO.,
SEED AND NURSERY ESTABLISHMENT,
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RICHARD SMITH'S
GUINEA COLLECTION OF VEGETABLE SEEDS

Contains the following excellent sorts

(Carriage Free):—

PEAS, Ringleader	.. .. ..	1 quart
,, Improved Sangster's	.. ..	2 ,,
,, Veitch's Perfection	.. ..	1 ,,
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,, Prizetaker	.. ..	1 ,,
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TURNIP, Early Snowball	.. ..	1 ,,
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TREE, PLANT, BULB, AND SEED MERCHANTS,

WALTHAM CROSS, HERTS,

Adjoining the "Waltham" Station, Great Eastern Railway.

Inspection of Stock invited.

Priced Descriptive Catalogues free by post.

ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, March 27, at half-past 12 o'Clock precisely, a Collection of ESTABLISHED ORCHIDS, including many very choice and rare species, and the following :—

ODONTOGLOSSUM SCEPTRUM	MASDEVALLIA HARRYANA CŒRULESCENS
ONCIDIUM PHYMATOCHILUM	ODONTOGLOSSUM CIRRHOSUM
LÆLIA ANCEPS BARKERIANA	ONCIDIUM SUPERBIENS
DENDROCHILUM GLUMACEUM	CATTLEYA TRIANÆ SPLENDENS
CATTLEYA WAGNERI	ODONTOGLOSSUM NÆVIUM
ONCIDIUM MACRANTHUM HASTIFERUM	MASDEVALLIA LINDENI
ODONTOGLOSSUM SUPERBIENS	CYMBIDIUM EBURNEUM
TRICHOPILIA GLOXINIÆFLORA	ONCIDIUM TETRACOPIS
DENDROBIUM McCARTHIÆ	ODONTOGLOSSUM CRISPUM (ALEXANDRÆ)

And several good established Plants of ODONTOGLOSSUM VEXILLARIUM, O. ROEZLII, a fine lot of the beautiful O. CORONARIUM ; also an importation of the handsome CŒLOGYNE GLANDULOSA, DENDROBIUM BARBATULUM, D. AUREUM, and the true D. ALBUM—Wight, in describing this beautiful Dendrobium, in *Icones Plantarum Indiæ Orientalis*, says : "This is one of the handsomest of the genus I have yet met with ; large pure white flowers."

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

HIGHLY IMPORTANT SALE OF EAST INDIAN ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 29, at half-past 12 o'Clock precisely, a very large quantity of Choice EAST INDIAN ORCHIDS, consisting of DENDROBIUM WARDIANUM, D. CRASSINODE, D. DEVONIANUM, D. FALCONERI, D. SAUVISSIMUM, D. HETEROCARPUM, D. THYRSIFLORUM, D. CHRYSOTOXUM, and others ; VANDA CŒRULESCENS ; the new CYPRIPEDIUM BOXALLI, offered for the first time ; AERIDES, SACCOLABIUMS, &c. At the same time will be offered a quantity of Plants of CATTLEYA MAXIMA, from the Province of Manabi, just received by R.M.S. *Nile ;* and twenty-five fine established Plants of PHALÆNOPSIS SCHILLERIANA, in flower. All are in the finest possible condition, and amongst the East Indian Orchids are many specimens of a size rarely seen.

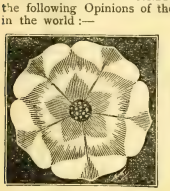
On view the morning of Sale, and Catalogues had.

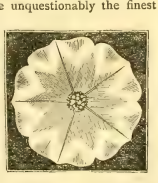
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HOME-GROWN FLOWER SEEDS.

H. CANNELL, F.R.H.S.,

Begs to remind the Public generally that his Business is exclusively devoted to FLORIST FLOWERS and their SEEDS only, and as a proof of his superior strain he simply appends the following Opinions of the Press of his PETUNIAS, which are unquestionably the finest in the world :—





From "Gardeners' Magazine," August 19.

"Mr. H. Cannell continues at Swanley the careful cultivation of florists' flowers, and desires to prove to us that he is in earnest. His mode of procedure is agreeable and convincing, for we have just received from him a boxful of seedling Petunias and Fuchsias of the most sumptuous character. To describe them is simply impossible, and perhaps the best we can do is to recommend those who are interested in such things to run down to Swanley to see and judge for themselves. At all events, we place it on record that we have never seen a finer lot of Petunias and Fuchsias than we have now before us."

Extract from the "Garden," August 5, 1876.

"BEAUTIFUL PETUNIAS.—Mr. Cannell, of Swanley, has sent us a whole flower garden of Petunias of the most beautiful and varied colours. We fancied we had some knowledge of the way in which Petunias varied, but had no conception that the variation was so great until we received this batch. Words, however, fail to convey any adequate idea of their variety and beauty."

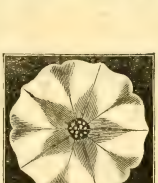
"Journal of Horticulture," August 10, 1876.

"Just on the eve of going to press we have received a box of blooms of Single Petunias from Mr. Cannell, Swanley, Kent, which for size, richness of colour, and purity of marking, surpass all that have previously come under our notice."

Extract from the "Gardeners' Chronicle," August 12, 1876.

"We have received from Mr. H. Cannell of Swanley, Kent, samples of Petunia flowers of a remarkably fine strain, selected from a bank of flowers occupying a house 100 feet long, which we have since seen. The flowers are generally very large, some beautifully striped in a great variety of patterns, some of the richest velvety crimson. One variety was specially noticeable, and to us entirely novel and particularly fine."





Seed, 1s. and 2s. per Packet.

Your address on a halfpenny card will bring you the most instructive and best Illustrated FLOWER SEED CATALOGUE ever published.

H. CANNELL, Swanley, Kent.

The Greatest Novelty of the Season.

MIMULUS MOSCHATUS
HARRISONI.

Awarded a First-class Certificate by the

Royal Horticultural Society and Royal Botanic Society of London, 1876.

This exquisite plant is a Hybrid between the Large Spotted Mimulus and the Giant Musk. The flowers are as large as the former, with the rich golden-yellow colour of the latter, exquisitely spotted on the lower segments with rich brown. Its habit is recumbent and neat, blooming at every joint, thus producing an abundance of elegant flowers which are brilliant and interesting. A few plants will effectually brighten and scent a Conservatory or Greenhouse. It will succeed admirably in all situations where it can be freely supplied with moisture, although a cool shady place is the best. Being an excellent Bedding Plant, and especially adapted for Rockwork, it will be rapidly brought into requisition, and its universal cultivation will quickly be accomplished. Its easy culture and other qualities will secure for it a popularity and extensive sale. It continues to bloom from March until December, and retains its scent throughout the year. As a free-growing odorous plant it is admirably adapted for Asylums, Hospitals, and other Public Institutions.



NATURAL SIZE.

Harrison's New Musk.

OPINIONS:—

From THOMAS MOORE, ESQ., *Chelsea Botanic Gardens, Nov. 17, 1876.*

"I was much pleased with your hybrid Musk as exhibited at South Kensington. I thought it likely to make a useful decorative 'everybody's' plant, fit for the conservatory or the cottage."

From SHIRLEY HIBBERD, Esq., F.R.H.S., *Stoke Newington.*

"Harrison's Musk is one of the most interesting of the novelties of the season, for the Musk in its old form is a universal favourite, and in this new variety we see it improved in all its attractive characters, so that it may rank with the florists' flowers, while continuing to charm us with its refreshing odour."

From Mr. A. F. BARRON, *Chiswick Gardens, N.*, *Nov. 13, 1876.*

"I like Mimulus Moschatus Harrisoni very much. It is as strongly perfumed as the ordinary Musk plants, with the addition of large yellow flowers, like the common Mimulus. It is sure to be largely grown as a window plant."

From Mr. R. DEAN, *Nurseryman, &c., Ealing.*

"MIMULUS MOSCHATUS HARRISONI.—This is a bold-growing perfumed Musk, with large yellow red-spotted flowers. In addition to the spotting, it may give us a race of scented-foliaged Mimulus with flowers as large and beautifully spotted as any now to be found on the improved varieties. This interesting hybrid was exhibited by Messrs. Harrison & Sons, nurserymen, Leicester, and awarded a First-class Certificate of Merit—the highest award a new plant can receive."

From Mr. JNO. WILLS, *Nurseryman, Onslow Crescent, South Kensington, Nov. 13, 1876.*

"I was much pleased with your new Mimulus Moschatus Harrisoni when I saw it exhibited some time since, and consider it a great acquisition, and shall be glad to have some plants of it as soon as it is in commerce."

This beautiful plant will be distributed on or before May 1.

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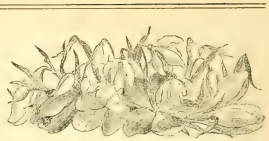
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SATURDAY, MARCH 24, 1877.

HOW TO GROW LILIES.

THERE are few who have not seen and admired the gorgeous beauties of one or other of the many varieties of Lilies now in cultivation, or who have not been charmed by the stately purity of L. candidum and its sweet odour. It was, however, reserved to Lilium auratum to take us by storm, and bring the merits of this beautiful genus of plants prominently before the public. Never before, probably, has there been anything like the demand for a particular flower that has now existed for years for bulbs of this Lily. Hundreds of thousands have been sent over from Japan, and it is to be hoped as many more will follow, that every one who has a garden may feast his eyes on one of the most magnificent flowers it is possible to see. Some of the varieties of Lilies, such as the Martagon, tigrinum, candidum, chalcedonicum, and a few others, will do in almost any kind of soil, and succeed admirably in such as is of a stiff loamy nature. The choice kinds, however, are more particular, and require either peat or plenty of sharp grit, but in the latter case it must be where they can drive their roots down in a cool, moist bottom. The margins of Rhododendron beds, where gaps occur among the plants, is just the place to grow them to perfection, and in no position do they show up so effectively as when backed by the rich glossy deep green leaves of this favourite shrub. Failing a situation of this kind, the next best place is the shrubbery border, as it is essential they should have partial shade and shelter of some kind.

The heads of flowers require it on account of their enormous size and consequent liability to be blown about and damaged by the wind, while the roots will only succeed really well where they are so situated as to be screened from the sun, which causes the ground to become too much heated and robs it of its moisture. This dryness of the soil is one of the most frequent causes of failure in Lily culture, as it generally occurs at or about the time the plants are developing their flowers, when they require more assistance than they do at any other time owing to the demand that is made on the roots, and if these cannot respond in a proper manner the bulbs as a natural consequence become so weak and exhausted that they dwindle away and eventually die altogether. To grow them in the style they may be had, one of the principal and most important things is to keep the foliage fresh and healthy up to the latest period possible, so as to prevent any premature ripening, which must of necessity take place at the expense of the bulb; and this can only be done by affording them an abundant supply of water and mulching the soil immediately surrounding them. Although the price of most of the best kinds of Lilies is somewhat against them, they are of such a permanent character compared with most other plants, that their first cost ought not to be so much a matter of consideration, as they are really cheap in the end, and there is nothing that can at all compare with them in the grand display they make and the small amount of labour entailed in their cultivation.

Unfortunately of late the best and most valu-

able of our hardy plants have been sadly neglected, and almost elbowed out of existence to make room for others, the merits of many of which consist merely in the bigness of their leaves, or whose beauty at the best is only of such short duration, that it in no way compensates for the room they take up under glass, and the constant recurring expense there is in raising them and getting them fit to plant out. In the cultivation of the Lily there is nothing of this, for if a proper position be chosen, and suitable preparation made, they become more vigorous each succeeding year, and increase at such a rate as to form grand masses if left undisturbed. For shrubbery borders, where they can be kept clear of the roots of trees or other surface-feeding plants, there is nothing more suitable to grow than Lilies, and there are few gardens attached to any place but what have an appendage of this kind, all of which would be greatly improved by the introduction of a few clumps of the different varieties of these stately plants.

How to Plant Them.

As the season is now getting advanced, those who contemplate planting them should lose no time in setting about making the necessary preparations. If it is intended to grow them in borders at the front of shrubs, the proper course will be to dig large holes from 2 to 3 feet across, and as much deep, and to fill these in with properly prepared soil, such as a mixture of leaf-mould and the turfy trimmings from the roadside, or any old pasture that has a sharp gritty soil. This should be chopped up small, and the whole well mixed up together, but on no account ought manure to be added in any form, or it will be likely to cause the bulbs to rot away before they are in a sufficiently forward state to make use of it. If applied at all, it should be towards the bottom of the hole where it can only be reached when the plant is in an advanced stage of growth; at which time the roots are actively at work, and can turn it to proper account.

Having filled in the holes with the parings from the sides of paths or roads, or any good turfy loam and peat, which should be rendered tolerably firm by gentle treading, the next thing is to plant the bulbs, either singly, or in groups of three where bold masses are required. Excepting for such as giganteum, with its massive leaves and gigantic stem towering aloft, most of the others look best placed in clumps triangularly at from 6 to 9 inches apart, and the front plant so arranged as to face the border or walk, in which way they are seen to great advantage. In placing the bulbs in position it is of the greatest importance that they should have a good handful of sharp, clean sand under their base, and a shovelful of the same scattered over and around them, which will keep them in a clean, healthy state, and prevent them from rotting—a thing they are very liable to if the soil is allowed to come in immediate contact with them. The proper depth to plant is about 6 inches, and when all is covered in securely with the same kind of mixture as the holes have been previously filled in with, the surface should be mulched over with some half-rotten leaves, cocoa-nut fibre, or any material of that kind, to keep out frost; for, although Lily bulbs are perfectly hardy when they become established, they are readily injured after being fresh-planted, especially if at the time they are forming young growth, or emitting their large fleshy rootlets.

The principal attention required through their growing season is to keep them securely staked and tied as they advance, the best and neatest supports for which purpose are Bamboo rods of suitable length, as their colour and structure so closely resembles the Lily stems that they are scarcely observed, while they are far stronger than any other stick of double their size. It is the practice with many cultivators of Lilies to take up their bulbs after they have done blooming, and to winter them out of the ground; but this tends to weaken them very considerably, as the large fleshy roots that would live in the ground if left undisturbed are completely destroyed; and not only is this the case, but the bulbs shrivel a good deal, thereby losing much of their weight and vital force, which prevents them starting away so strong or flowering with anything like the vigour and freedom they do when not interfered with. This being so, the stems should be simply cut away close to the ground when thoroughly ripe, which they generally are by the end of October; and in order to keep them snug for the winter it is as well to repeat the mulching. Treated in this way they soon become strong and throw up immense stems, that carry from ten to twenty or more of their magnificent flowers, many of which are so strongly perfumed as to scent a moderate-sized garden.

Pot Culture.

For pot culture Lilium auratum is most valuable, as are also the several kinds of speciosum that come in later in the autumn. These give a richness and character in the greenhouse or conservatory at that season quite unattainable by any other plant, and a few pots of each should therefore be grown wherever there is a structure of the above kind to furnish. Single bulbs of L. auratum may be grown in deep 6 or 8-inch pots to great perfection, and are even more suitable to stand among other plants than when numbers are grown together. The best soil for them is a mixture of good fat fibry loam and peat, in the proportion of two-thirds of the former to one of the latter, with just sufficient sand to keep it open and porous, that water, of which they can scarce have too much when growing freely and flowering, may pass readily through. In potting the bulbs should be placed low down in the pot, and simply covered, so as to leave sufficient room to pack rough pieces of turfy loam around the young stems as growth proceeds, in which they will root freely and grow considerably stronger than they otherwise would. In the case of all dormant bulbs, and especially the Lily, any soil used for potting should be in a nice healthy state as to moisture, which will obviate the necessity of having to water till they have started well into growth and are able to take it up before any injury results from its lodging about their base and among the scales of the bulbs, which is a frequent cause of so many coming up weak and afterwards dwindling away altogether. The best place to stand them till they appear above the soil is under the greenhouse stage away from drip, or in any cold pit having a damp firm bottom impenetrable to worms, as there the soil can be kept in much the same state with regard to moisture as at the time of potting, and the longer it remains in that condition without having to water, the stronger and better will the growth be.

After the pots have become well filled with roots and the plants are moving on freely, weak liquid manure applied occasionally will be of the greatest assistance to them till just after the flowers are fully expanded, when its use should be discontinued and less water given as the ripening off proceeds—a process that in no case should be hurried on, as is frequently done by laying them down on their sides. It is quite time enough for this when they begin to show the sere and yellow leaf, and to die off, a time when heavy rains or any excess of wet would prove injurious. At no season, however, will Lilies bear the amount of drying-off that most other bulbs can endure, and the pots containing them should, therefore, be placed to winter where they will not be subjected to currents of air, or in such a position as that the soil would lose too much of its moisture. The great mistake many make who grow Lilies in pots is in not attending to them sufficiently early as regards shifting and dividing, for if this operation is too long deferred it is impossible to perform it without injuring or destroying a large portion of the thick fleshy roots all Lily bulbs have in such abundance when they are in a state of good health, and, therefore, the necessary repotting, &c., should be done as soon after the tops die away as they can be taken in hand. This ought in all cases to be carried out with as little disturbance as possible to the old ball where there are any live roots in possession, and by picking out the soil carefully from amongst them it may be requisite to remove with a sharp-pointed stick.

Raising New Varieties.

In the raising of new Lilies from seed there is a fine field open for the hybridist, and there is no lack of choice varieties to work from. Lilium auratum, when grown out in the open, seeds freely in favourable seasons, and so also does giganteum, both of which are on that account, and from their general superiority over most others, capital sorts to breed from, although there is no reason why efforts to obtain new varieties of great worth and distinctness should be confined to any particular kind. As the flowers do not require any delicate manipulation, such as is needed by most others, any amateur can work at it with equal chances of success as those more skilled in the art. The principal thing is when the blooms expand to remove the anthers from all those to be fertilised, which may be done by clipping them off with a pair of sharp-pointed scissors. This must be accomplished before any of the pollen becomes ripe, otherwise some of it is sure to fall and adhere to the pistil, which Nature has so abundantly provided with viscid matter to insure that at least some portion of the pollen grains may fall on it and adhere, and thus carry out their allotted functions. Plants, as a rule, will always become fecundated with their own pollen much more readily than they will with that from other species, hence the necessity for removing their anthers while they are in an unripe state. Both these and the pistil are so conspicuous in the Lily, and the important part both serve is so generally understood that any attempt here at an explanation would be superfluous. To those unacquainted with either a mere cursory glance will show their several positions and the purposes they are intended to serve, and how readily they may be turned to account in increasing our floral treasures and adding to our pleasures and happiness. It should be borne in mind that bees may frustrate the work, even after the removal of the anthers; and in order to guard against this the flowers to be operated on should be protected by placing very fine gauze or hexagon net over them, keeping the net from chafing against them by using a few twiggy sticks stuck in the ground on which to support it.

When the stigmas are in a fit state, as may be seen by the coating of glutinous matter they will have on them, the ripe pollen from any other Lily may be readily introduced, either by using a camel's-hair brush or by nipping off the anthers and holding them between a pair of tweezers, in which way they can be carried, and the stigma slightly touched till thoroughly coated with the snuff-like pollen. One plant will bear sufficient of this, if judiciously and carefully used, to fertilise a great many, and each separate flower on the same plant may be crossed with as many varieties, and if each is numbered to correspond with a memorandum kept of the kinds employed, the result can be seen afterwards, and the work will thus be rendered more interesting. Having operated on the flowers as above, they should again be protected with the gauze or net, which should be allowed to remain on till the seeds are fit to gather, as birds are fond of them, for I unfortunately lost the whole of mine of last year from their depredations while I considered them safe.

Any one who commences such an interesting branch of gardening as this is sure not to rest satisfied with trying his hand on Lilies, but will seek fresh honours with other flowers equally deserving of attention; and if those who make a blade of grass grow where one never before grew, deserve well of their country, how much more must the originator of any new and beautiful flower do so, the sight and possession of which is destined to be a new source of delight to so many? It is only those who have once tried the occupation of raising plants from seed, the result of artificial fertilisation, that can realise what pleasure there is to be derived from the work, and how absorbingly interesting it is to watch the seedlings from day to day, noting each change in leaf or bud, and hanging with fond hope on the ultimate result to be revealed only when the bloom—so slow for one's impatience in unfolding—shall open that we may see what it is like, and perhaps then, if disappointing as a whole, yet the success is sufficient to give fresh zest, and spur one on to renewed effort. *J. Sheppard.*

New Garden Plants.

Bollea coelestis, *Rchb. f.*; *Gardeners' Chronicle*, 1876, vol. v., 756; *Linnæa*, xli., p. 5 (Orchideæ Roezlianæ).

What a pleasure it is to make the acquaintance of one's species in a fresh state!—and what vexation if they are submitted to such extreme changes by pressing, as is the case in Bollea and Pescatorea. One would not believe in the possibility of such changes, which cause the botanist great embarrassment. After all it is one of the greatest satisfactions of my Orchidic life, to see this wonderful flower, most probably the first ever developed in Europe. It is as large

as a well-formed flower of Mr. Day's Pescatorea. My wild-grown flowers, however, and most of those gathered by Messrs. Klaboch, in 1876, are nearly one half larger. The warm purplish blue tint is darkest and most dazzling as a zone over the middle of the sepals and petals; the other parts are lighter, the tips white. The lip has a very large callus consisting of fifteen nearly contiguous lamellæ, all yellowish white. The anterior part is blue too. The boat-shaped (or, if you like it better, rope-like) column is of a beautiful blue outside, and blue, too, inside, excepting, however, the base, which is of a bright yellowish colour with many reddish spots. It is partially covered with numerous strong hairs, which are of no effect in the living plant, because they are quite pellucid. It is a great satisfaction to know the discoverer. I believe the honour is due, if not to M. Roezl himself, yet to his gallant nephews, who put their hands on Odontoglossum cirrhosum. I have to thank for the great pleasure of seeing the flower Messrs. Backhouse, York. They imported it afresh last autumn. They have a plant with nine old peduncles, from one crown, 15 to 18 inches high. It must be regarded as a very grand plant. *H. G. Rchb. f.*

Cypripedium Boxallii, *n. sp.**

I did not expect when, the other day, I had the splendid C. Hayanianum at hand, that I should have a fresh novelty to describe so soon. There is no doubt of C. Boxallii standing near the well-known C. villosum, Lindl., but it has many points of difference. The bract is much larger, covering the basilar quarter of the superior sepal, and it is besides much broader. The peduncle is covered with dark blotches, which I never saw in C. villosum, and the hairs have alternating pellucid and rather blackish cellules. Both sepals are much broader at their bases, and quite obtuse, while the inferior sepal of C. villosum is very acute. The petals, too, are much less concave. The lip has not the long lateral horns of C. villosum, and the staminode is narrower at its base. In a pencil-sketch at hand, the upper sepal and petal (said to be greenish white) are very nicely marbled with numerous blackish spots. The plant is a discovery of the keen and successful explorer, Mr. Boxall. It comes from Tropical Asia—I suspect from Indo-British States. It is one of the numerous presents I have to thank Mr. H. Low for. *H. G. Rchb. f.*

NOVELTIES.

Among the plants to be sent out this spring, are are the following :—

Dennstædtia davallioides Youngii.—This fine new garden Fern comes to us from Australia. It is no doubt very nearly related to the old Dicksonia davallioides, *alias* Sitobolium davallioides, now referred to the genus Dennstædtia, but it is much larger in its growth than we have ever seen that plant, of which for practical purposes it may therefore be regarded as a giant form. In its native state it is said to produce fronds 17 feet in length; and as seen in this country, under pot culture, it has caudices as thick as one's finger, and fronds of 7 or 8 feet in length. To this stout and vigorous constitution it adds the elegance and gracefulness of minute subdivision, so that its fronds, though large, are utterly devoid of coarseness, and it is, in fact, a remarkably ornamental plant, well adapted for occupying any bold and prominent position in a stove rockery, or even as a pot plant in a collection of stove or greenhouse Ferns it will always hold its position. The caudex, as already described, is as stout as one's finger, and of creeping habit, progressing forward somewhat freely, and throwing up its ample spreading fronds at intervals. The stipes is stout, nearly half an inch in diameter, and of a darkish brown colour below, golden-brown above, and quite smooth. The fronds are nearly ovate in outline, and decompound, the pinnæ 1½ foot long, the pinnules 5 to 6 inches long, lanceolate-acuminate, and the ultimate pinnules, those of the third order, ½—¾ inch long; these ultimate pinnules are obliquely oblong, deeply cut into blunt oblong-toothed lobes, of which those at the base of the anterior side are the largest. The sori are small, placed near the base of these ultimate lobes in the sinus of one of the anterior marginal teeth. The fronds are herbaceous in texture. It will thus be seen that this Fern, while growing to a large size, is one of the most finely cut of all the large-growing sorts, of herbaceous texture, and when throwing out its boldly arching fronds, from an elevated position on rockwork, or from a large pot set up on a pedestal, it will have a very fine effect. I', however, requires to be grown on freely to secure it in this condition, as if starved down to the size of an ordinary trade plant it will appear to be but little different from D. davallioides itself. The plant is in the hands of Messrs. Veitch & Sons, of Chelsea, and of Mr. B. S. Williams, of Holloway, by whom we believe it will be sent out during the ensuing spring. It was unanimously awarded a First-class Certificate by the Floral Committee when exhibited at South Kensington on the 7th inst., and gained a similar award at the spring show of the Royal Botanic Society on Wednesday last. *T. Moore.*

Aralia filicifolia (Ill. Hort., t. 240).—This has been shown by MM. Linden, Bull, Veitch, and Williams, and perhaps by others. The plants are too young for their exact position to be determined, hence the name given is to be regarded as merely provisional. It is a very elegant foliage plant, suitable when small for table decoration. The stems are of a deep olive colour, speckled with white spots; the leaves are dark green, glabrous, twice pinnately divided, with a single lobe at the end; the pinnæ are about eight in number on each side of the midrib, each one being divided nearly to the base into linear, minutely saw-toothed and spine-pointed segments. The younger leaves are more finely cut than those first formed. The plant is a native of New Guinea.

Croton (Codiæum) paradoxus.—A narrow-leaved form, with short footstalks, purplish in the middle, paler at either end. The blade of the leaves measures 10 to 12 inches in length by ½ inch in width, the leaves are in form linear oblong, with a spiny point. They are at first green, but subsequently become variegated with yellow or cream-coloured stripes and spots, especially in the centre on either side of the pink midrib. The under surface is paler, and the central portion of a pale pinkish tint. Some of the leaves are twisted in the centre, others are "interrupted," the blade not being continuous throughout. (Williams.)

Croton fasciatus.—A bold, broad leaved form. Leaves 9—10 by 4—5 inches. Leafstalk about an inch long, brownish in the centre, paler at either end. The blade of the leaf is inversely egg-shaped, tailed, rounded at the base, of a lively green colour, traversed by bright yellow veins, and marked with a few irregular spots and blotches. It is a fine variegated kind, of bold habit. (Williams.)

Croton camptophyllus.—A very narrow leaved form. Leafstalk ½—¾ inch, green in the centre, paler at both ends. Leaves 6—9 inches long by ½ inch wide, in form linear oblong, dilated at the base, and with a central yellow stripe. The apex of the leaf is obtuse or shortly pointed. The leaves are variously twisted and curved. (Williams.)

Croton falcatus.—A form of loose habit. Leaves 15—18 inches by 2—3 inches. Leafstalk 1 inch long, pink in the centre, paler at each end. The leaves are strap-shaped, dilated and rounded at the base, sword-shaped or sickle-shaped, with a dark purple midrib and margins, and with irregular blotches of yellow. The under surface is pale purple with green veins. (Williams.)

ABNEY HALL, CHEADLE.

At any season of the year a visit to the extensive grounds and glass erections at the above gardens, the seat of Sir James Watts, Knt., will be found to be one of peculiar interest and pleasure, for the number of the houses and the general high-class character of the plants under cultivation ensures a fine display of choice subjects at almost any time. It was my good fortune a few days ago to have the opportunity of going through the houses with the gardener, Mr. R. Mackellar, and from a few observations made at the time perhaps a small notice may be acceptable to your readers, and of sufficient interest to find a place in your pages. The grounds and mansion stand just on the borders of Cheshire, about 6 miles in a southward direction from Manchester. The grounds, which are kept in fine order, and are very diversified in appearance, contain a number of very fine specimens of Coniferæ and other shrubs of an ornamental character, among which special mention must be made of an avenue of Cupressus Lawsoniana, and though these in general partake very much of a similar habit and appearance, yet on a closer inspection and comparison it will be found that great variety exists among them, the habit of some being exceedingly beautiful, while others differ so much that it seems scarcely credible that such different forms should spring up from the seeds of probably the same cones.

The conservatory is a large and ornamental structure adjoining the mansion, and in it are planted out some of the finest specimens of Camellias that are to be seen anywhere in the neighbourhood of Manchester or for miles around. Another large house is devoted to these fine plants, and at the present time the blooms may be counted by the hundred. Two grand plants of imbricata, about 20 feet, are literally covered with blooms. The old double white is also very strong, and flowers fine and numerous. Here also are large plants of Storyi, with flowers of fine form, of a deep rose colour; Countess of Orkney, a magnificent form —pure white mottled with pink; the half-expanded flowers of this are very chaste and distinct; Countess of Derby, pure white striped with rose; Cup of Beauty, La Reine, Jubilee, fimbriata, are also represented by fine well-blooming plants; whilst amongst those of a large scarlet type mention may be made of Monarch, the stamens of which are very prominent, and also of one named Triumph, the flowers of which are of an immense size.

From the conservatory, through a small portion of the pleasure grounds and across the kitchen garden, we come to a fine range of vineries, and just adjoining these is also the Peach-house. The Vines in the early house had broken very strong, with foliage good and plentiful. Here the Vines were just flowering, some already being set. The number of bunches, and the size of the greater part of them, would seem to indicate that here again Mr. Mackellar will be amply repaid for the constant care and attention he bestows upon this part of his labours. In the stove were many plants of an ornamental character, whilst for blooming purposes a quantity of Eucharis amazonica is grown, and this winter there has been an abundance of bloom—twenty spikes on one or two of the plants will give some idea of their size and vigour. Here also were two fine plants of Franciscea confertiflora, measuring about 4 feet by 4. The heads of bloom were thickly set all over the plants, some of the trusses having developed from twenty to thirty flowers. These are two plants that it would be difficult to match. Calanthes are grown in great quantity for cut flowers; about ten or twelve bulbs are planted in a 10-inch pot, and in their season are certainly a sight worth looking upon. A number of plants of C. Veitchii among those of C. vestita adds interest and charm to the display. In this house and another adjoining are several specimen Orchids, notably Dendrobium moniliforme, a grand mass, and well flowered; densiflorum, 4 feet through, showing well for bloom; Farmerii, almost as large; while a quantity of nobile are also grown, and when in flower are used for the decoration of the conservatory. Some grand specimens of Yucca filamentosa variegata, as well as a quantity of smaller plants of the same species, are to be met with here, and are all in very fine health.

A house of large size is specially devoted to Azaleas, and in a half-trained, half-natural form are a splendid lot of plants of very large size and in robust health. In the course of a couple of months these will be a picture. A fine lot of hard-wooded plants is also done well here, the principal varieties of Heaths being in many cases plants 3 or 4 feet high, and as much through, whilst a number of half specimens are coming on very freely. A prize plant of Boronia pinnata is in fine health and a splendid colour. I also noticed several fine pans of Nertera depressa in the Peach-house, and feel sure that in their season they will be covered with their pretty orange-coloured berries. I also noticed large quantities of bedding plants in almost every conceivable position, this being a part that is done rather extensively and with great taste. This by no means exhausts the many objects of interest that are to be met with here. It will, however, give some idea of the number and variety of the duties devolving upon the gardener; at the same time I feel I cannot close this notice without bearing testimony to the satisfactory state of everything under his charge, as well also as to the kindness and courtesy that I have, not on this occasion only, but at other times, received at the hands of Mr. Mackellar. *W. Swan, Fallowfield, March* 13.

* *Cypripedium Boxallii, n. sp.*—Juxta C. villosum, Lindl. Caule olivacea marmorata; pilis pellucidis nigroannulatis; bractea ampla lata; sepali summi quartam inferiorem tegente; sepalo utroque bene obtuso, utroque basi latiusculo; petalis basi vix cuneatis, cornubus labelli lateralibus abbreviatis; staminodio basi angusto.—Asia tropica. *H. G. Rchb. f.*

THE GENUS AGAVE.

(*Continued from p.* 303.)

SERIES I.—CORIACEO-CARNOSÆ.—Texture of the leaf rigid, not at all fleshy or yielding to the touch when mature. End spine large, hard and pungent.

Group II. Marginatæ.—Edge of the leaf furnished all the way down from the top to the bottom with a distinct horny border, of the same texture as the teeth.

This group is too large to treat in a single paper, so I will take this time the species that belong to it which have sword-shaped leaves not appreciably narrowed from the middle to the base, leaving for the next time the Marginatæ with broader oblanceolate or oblong decidedly spathulate leaves, and will divide these Ensiformes into two sets, Grandifoliæ and Parvifoliæ.

* GRANDIFOLIÆ.

5. *A.* (*Littæa*) *lophanta*, Schiede; Jacobi, Monogr., pp. 39 and 202.—Acaulescent. Leaves 30—40 to a rosette, rigid, ensiform, 2—3 feet long, 1½ inch broad at the middle, equal in width from the middle to the top of the deltoid base, ¼ inch thick in the centre, rather concave down the face, rounded on the back, not marked with any lines, dull green in the typical form, narrowed gradually to a pungent brown spine 1 inch long, the margin bordered by a very narrow continuous grey horny line, furnished with distant linear grey falcate teeth about a line long. Scape 7—8 feet long, its leaves brown, the lower ones half a foot long. Flowers arranged in a dense spike 4—5 feet long. Capsule 1½ inch long.

Var. *cærulescens*, Jacobi, Cat. 2, p. 3; *A. cærulescens*, Salmdyck; Jacobi, Monogr., p. 38.—Differs from the type by its leaves having a decided glaucous bloom.

A native of Mexico, now widely spread in our collections. Marked by its large, stiff, typically ensiform, dull grey-green leaves, narrowed gradually from the middle to a long point, and by their narrow grey border and small prickles. Although the plant is so well-known there is no figure of it in the flowering stage. Jacobi gives a description of a plant that flowered at Hamburg, but no note was kept with regard to its perianth and stamens, so that I hope the next time one of the numerous plants in this country flowers, some botanist will be communicated with, and a drawing made. There are many varieties in the size and colour of the leaves. Longifolia, of Jacobi, is an unusually large variety; in a specimen seen in the Saundersian collection with 40—50 leaves, forming a rosette 6 feet in breadth. A. cœrulescens, Salmdyck, of which there is a fine plant now at Kew, is clearly a mere variety of lophanta, running into the type through vars. subcaneseens and grisea. Judging from the description alone, I strongly suspect A. Funkiana, K. Koch and Bouché (Jacobi, Monogr., p. 38), to be a form of lophanta with vittate leaves.

6. *A.* (*Littæa*) *univittata*, Haworth; Jacobi, Monogr., pp. 41 and 205; Ref. Bot., tab. 215; fig. 58. Acaulescent. Leaves 50—80 to a rosette, rigid, ensiform, 2—2½ feet long, 2—3 inches broad at the middle, narrowed slightly downwards, and very gradually upwards to a brown pungent point 1 inch long, ¼ inch thick in the centre, dull green, with a broad pale band down the face, faintly lineate on the back, the margin bordered by a narrow, continuous, grey horny line, furnished with hooked, lanceolate prickles, ⅛—¼ inch long, placed ½—1 inch from one another. Scape 4 feet long, exclusive of the spike, its bracts dense and squarrose. Spike 10—12 feet long, 6—7 inches thick; pedicels ¼ inch long; bracteoles lanceolate and deltoid. Perianth green, 16—18 lines long; ovary oblong-cylindrical, ¾ inch long, narrowed gradually into the very short tube; segments thick, ligulate, obtuse, suberect, ½ inch long. Filaments inserted at the throat of the tube, twice as long as the segments; anthers above ½ inch long. Style reaching to the top of the segments.

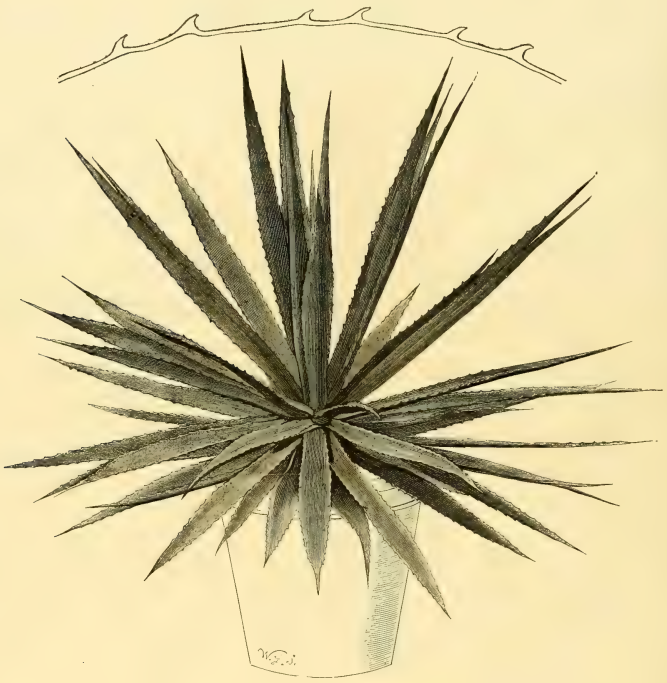


FIG. 58.—AGAVE UNIVITTATA.

A native of Mexico, long known in Europe, and of which all the large collections of the present day contain specimens. An adequate coloured figure will be found in the *Refugium* as just cited, and the plant has also flowered lately both with Mr. Peacock and at Kew. It has the same stiff habit as lophanta, but is always, so far as I have seen, banded down the face, the leaves being more numerous, broader, and not so strictly ensiform, with a faintly lineate back, and a broader border, with rather stronger teeth. I cannot make out from the description that A. ensifera,

Jacobi, Nachtrage, 14, differs from univittata to any appreciable extent.

7. *A.* (*Lettea*) *heteracantha*, Zucc. ?; Jacobi, Monogr., pp. 41 and 206, and Nachtrage, p. 14 ?; Regel, Gartenfl. 1870. p. 4. t. 693 ? ; fig. 59.—Acaulescent. Leaves 50—80 to a rosette, rigid, ensiform, 1½—2 feet long, 2—2½ inches broad in the middle, narrowed gradually to a brown pungent point 1 inch long, ¼ inch thick in the centre, dull green, not vittate, marked conspicuously with numerous darker green lines on the back, furnished with a distinct grey horny border, and numerous strongly hooked lanceolate spines ¼—½ inch long. Scape 3 to 4 feet long. Spike dense, 3 feet long. Perianth greenish, 1½ inch long ; ovary oblong, ¼—⅜ inch long ; tube short, funnel-shaped ; segments equalling the tube. Filaments 1½ inch long, inserted near the throat of the tube ; anthers ligulate, ½ inch long.

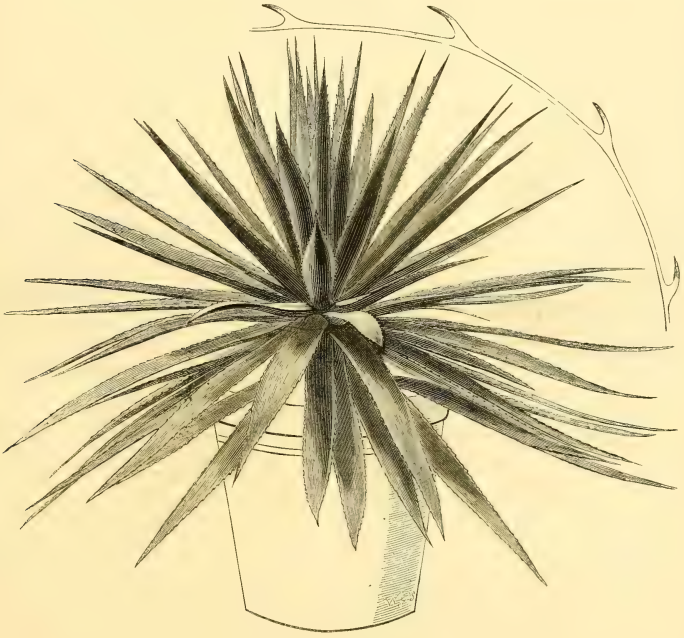


Fig. 59.—Agave heteracantha.

Our figure represents the plant grown in English gardens at the present time as A. heteracantha, but I doubt its being what was intended by Zuccarini, of which the prickles are said to be very large, very close, and deltoid. Our plant is a close ally of A. univittata, but is smaller, not vittate, with larger prickles, and very distinct stripes on the back of the leaf. There is a fine specimen at Kew at the present time. My description of the inflorescence is taken from Regel's figure. It is said to be an inhabitant of Mexico.

8. *A. splendens*, Jacobi, Nachtrage, 2, p. 63.—Shortly caulescent. Leaves 50—60 in a rosette, about 12 feet long, very rigid, slightly narrowed from the middle downwards and upwards to a brown terminal spine 1 inch long, olive-green, not vittate, slightly hollowed down the face, furnished with a continuous broad margin, and crowded very strong lanceolate prickles, from a deltoid base, reaching a length of half an inch. Inflorescence unknown.

Described by Jacobi, from the collection of Baron de Jonge van Ellemeet and Muilman, of Utrecht. The native country is not known ; I have not seen the plant in England. Its alliance is evidently close to A. heteracantha. *J. G. Baker.*

THE ROYAL HORTICULTURAL SOCIETY.

Having reason to know, from conversation with numerous amateurs and others, that the lengthened correspondence which has recently appeared in the newspapers has tended only still further to mystify the public, and consequently to injure the Society even more than was previously the case, I venture to ask the favour of space in your paper that I may briefly draw attention to the following facts, hoping thereby to remove the doubts of many who would be willing to come forward and aid by their subscriptions a Society which has done in the past and is still doing much valuable work.

1st. The Society is now financially in a better position than it has been for several years past, but its income is still most inadequate, but with additional aid it would be able to carry on its experiments and maintain the efficient working of those committees whose labours have been, and are still, so beneficial to the public.

2d. Besides other valuable work, competitive trials of great scientific and practical value have for years been carried on and are still continued at Chiswick, with excellent results, whilst the reports in the horticultural papers are sufficient testimony to the thoroughly successful working of the Scientific, Fruit, and Floral Committees connected with the Society. The fortnightly shows are also a great success, even beyond the most sanguine expectations.

3d. What is now required is to obtain an increase of Fellows and members, and I think it cannot be too well known that those who wish to join the Society can do so on the following terms :—

A. By payment of one guinea per annum, which payment entitles the member to see the gardens at all times, including all shows, *fêtes*, *conversazioni*, and promenades, both at Chiswick and South Kensington, but without giving a vote at the meeting of the Society ; or

B. By payment of two guineas a-year, which entitles the Fellow to one yearly transferable ticket, admitting the bearer every day, and to all shows, *fêtes*, *conversazioni*, and promenades, both at Chiswick and South Kensington, and enabling him to visit the shows at an earlier hour than the general public ; also admitting the bearer with two friends on all ordinary days, to receive forty orders giving free admission to promenades on all days excepting show and special days, to have the right of voting at all meetings, besides other minor privileges ; or

C. By payment of four guineas a-year, which entitles the Fellow to two yearly tickets, both of which are transferable, and which gives the bearer admission every day, and to all shows, *fêtes*, *conver-*

sazioni, and promenades, both at Chiswick and South Kensington; to visit the shows at an earlier hour than the general public, to receive forty orders giving free admission to the promenades and on all days excepting show and special days, the right of voting at all meetings, free admission to the reading-room, besides many other minor privileges.

D. *Fond fide* head gardeners, on payment of 10*s.* 6*d.* yearly, are admitted as members, with the same privileges as those amateurs who pay one guinea per annum.

E. There is now no entrance fee, and any one subscribing is in no way liable for any amount beyond the subscription for the year.

I am surely not too sanguine in expressing the hope that throughout Great Britain, where the love of flowers is so universal, there are many who will be willing to come forward, and at so small a cost to themselves help to support a society which has done so much good in the past, and which, I feel confident, must, with efficient aid, have a very brilliant future. I venture to appeal on its behalf for such support, and shall gladly receive the names of any who are willing to become members, and I shall be happy to obtain the necessary signatures to the nomination papers so as to save as much trouble as possible as regards election, &c. *Harry J. Veitch, Royal Exotic Nursery, Chelsea, S.W.*

—— Having on the 10th written a "last" letter on guinea Fellowships in the Royal Horticultural Society, I hardly venture to trouble you with another. I believed that the matter would have to rest for a considerable time, but circumstances have changed. The day after my letter was sent came an answer from the President. His Lordship's accident had prevented his getting up to the Council. His views as to the policy of the Society in the future are to my mind entirely satisfactory. Then there came a very well-known amateur horticulturist from Clifton, who has great knowledge of business and of the world. He considers that it is so great a gain having the guineas admitted in any shape, that we ought to be satisfied for the present, and to make the most of what we have got. Then a good representative of another section of horticulturists, Mr. Gilbert, gardener to the Marquis of Exeter at Burghley, wrote exactly to the same effect in last week's *Gardeners' Chronicle*. Both these opinions carry weight. Some of our correspondents will not join the present Society; others will not join it while it has the maintenance of the garden at South Kensington, but I believe that by far the largest number will trust to us on the spot, knowing that our only object is the promotion of horticultural science, and will act as advised. I think if fellowship with a vote for those living outside the London letters had been proposed at the general meeting it would have been adopted, and take great blame to myself for not having thought of this. It is now too late for this year, but I think, and have reason for thinking, that if a large number of country horticulturists will join the Society on the terms now offered—that is, membership without a vote, for a guinea subscription—that we have good hope of getting the vote hereafter. Happily, the tickets attached to the two-guinea subscription, having now been made transferable, there is sufficient difference in value between this and the non-transferable ticket given for the guinea subscribers.

On the whole then I would advise those who have given their names as would-be guinea Fellows to accept the guinea membership, and think the influx of a large body of country horticulturists will better strengthen and improve the Society, and besides that, their guineas will be applied to horticultural objects. Those who come up to London will have full consideration for their money, as, judging by the shows on the days of the committee meetings which have been held this year, both the leading nurserymen and amateur cultivators have determined on exhibiting so many Orchids and other beautiful flowers and plants that the shows now held the first and third Wednesday of the month are well worth the subscription. I have only to add that it is to be hoped that those who come in will bear in mind that the greater the number of guinea members the greater consideration they will receive, and that all will try and influence their friends to follow their example. In this neighbourhood, where our canvass was completely successful, the principal argument used was, "You take delight in your garden, we only ask a guinea subscription—will you not give this (or find a substitute) to promote the science which improves gardens?" *George F. Wilson.*

[We have received several communications on the subject of Mr. Gilbert's proposal in our last issue. Our advice to the gardeners is—join in numbers; help the Society, and in due time demand a vote. We believe it would not be refused if anything like a general wish for it were manifest; meanwhile strengthen the gardening element. In this way only can the Society be made truly horticultural and free when the time comes—and it will come—when its fetters can be knocked off. When that time comes, if the horticulturists are not to the fore the South Kensington bondage will be perpetuated. EDS.]

FORESTRY.

HAVING considerately, judiciously, and carefully performed the work of planting either a single tree, a group, or forest, the next and most essential thing to do is to guard and protect the trees from injuries of every kind to which they are liable and exposed. It matters little as to ultimate results whether planting is well or ill performed, if the plants are not properly attended to and cared for afterwards.

Sheep, cattle, horses, deer, and ground game of all kinds are alike undisguised enemies to trees, and the amount of damage inflicted by them is only a matter of extent influenced by circumstances too vast to enumerate. If only the delicate structure of plants was better known and considered, they would doubtless be better cared for, more tenderly nursed and assiduously guarded and protected than they are. Every part of the plant is liable to injury, and no part can be injured without prejudice to the whole structure. If the root is injured the top suffers, and if the buds or leaves are injured the roots correspondingly suffer, although this is not so obvious to the general observer.

Some species of trees are more susceptible of injuries than others. Bruises are more fatal to resinous than to non-resinous species; and others, as the common Beech and Holly, are impatient of any injury or interference with their leading shoots and top buds. The epidermis or inner bark of the Alder may be, as I have frequently seen it, completely stripped off with a knife and replaced without the tree sustaining any apparent injury, while the common Ash and hard woods generally would succumb under similar treatment. The roots also, and especially the neck, or point of connection between the root and the stem, vary greatly in their sensitiveness and liability to injury in various ways.

In operations of levelling ground it is often found necessary to bare the roots of some trees severely, and to bury others too deep with the excavations. Now, with few exceptions the baring of the roots never proves injurious, while, on the other hand, comparatively few forest trees will endure earthing up. Hence, in cases where it is absolutely necessary to raise the earth upon trees, means should be taken to prevent it from coming into close contact with the bark, for which purpose a rubble wall should be built round the tree, leaving a clear space between it and the wall.

The species of trees that suffer least from placing earth against their stems are the English Elm, and the tree varieties of Willow, Lime, and Poplar; and those most impatient of earth laid against them or confinement of any kind are the Beech, Wych Elm, Ash, and the whole family of Pines and Firs. Apart from the actual burying of stems too deep, another and not unfrequent evil is produced by applications of rich manures to the general surface of the ground, such as the folding of sheep amongst them, laying down manurial composts, sewerage from farm buildings, &c. Some species of trees die from such treatment much more readily than others, of which the Beech, Birch, and Wych Elm are specially liable; but, indeed, no forest tree is safe under the influence of liquid manure, and every precaution should be taken in laying down dung-heaps, not only that they be kept a great distance from trees and hedges of every kind, but that provision should be made for conducting all liquid from such heaps into proper receptacles or open ditches, so that none of it may find its way to their roots. Attention should also be paid to all flat, and especially basin-shaped, grounds, after floods and winter rains have ceased, to see that the surface of the ground is not unduly silted up with mud, so as to prevent the water that flows to such parts from finding a passage into the soil and subsoil, for it is found that whatever means prevents the air from entering the soil is injurious to trees. It is this more than anything else that makes stirring the surface of the ground a necessary condition for the welfare of forest trees. The free and frequent use of the forester's footpick cannot in many instances be too strongly recommended, for no implement is better adapted for rendering the soil loose and admitting air to the roots of the plants; and all soils, whether in young plantations, shrubberies, or hedges, where inclined to clay, should be periodically stirred up by means of the forester's footpick.

In old plantations this is not required, as the trees perform the work for themselves by heaving and shaking the soil in which they grow during windy weather; but in all cases where the trees are of an age and size below which the wind can act upon them, free and frequent use should be made of this implement. In many cases, too, it is also of immense advantage, entirely to remove the surface turf, as by doing so the roots are encouraged to spread upon the surface; for, strange to say, the trees never grow better than where a considerable portion of the roots are freely exposed—indeed, I have seen in footpaths through plantations the network of roots so complete as to constitute a solid pavement of woody fibre. In connection with this fact, it may be further stated that all very aged aged and notable trees known in this country have a large proportion of their roots running up on the surface, and in every case the swell of the stem is well exposed. The healthy state of the roots immediately covered with the outer surface of trees sufficiently accounts for old trees remaining in comparatively good health, notwithstanding that the central part of the tree has long since crumbled and decayed, and, were the necessary conditions of root life more perfectly understood, trees might yet attain to a state of perfection, maturity, and age hitherto unknown. *C. Y. Michie, Cullen House, Cullen, March* 13.

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—There are several handsome varieties of the tuberous-rooted Gesneras that are not so well known and generally cultivated as they deserve; their compact habit and moderate growth render them suitable for dispersing amongst larger subjects in a roomy stove, where on the side stages they mix well with other plants. They are especially adapted for small structures. Amongst the best are G. gloxiniæflora (pyramidalis), G. refulgens, G. purpurea macrantha, G. tubiflora (longiflora), G. carnea, G. Leopoldii lilacina, G. magnifica, and G. Mercki. The varied colours of these, from white to crimson, and their free habit of flowering, make them very attractive; soil and treatment such as Gloxinias require answers well for them. The forms of Achimenes known as Tydæas are also deserving of a place in any collection; their disposition to flower later in the autumn than the ordinary Achimenes being a feature not to be lost sight of. Tubers should be started now in shallow pans in sandy soil, and a little leaf-mould added, which will enable their removal for ultimate potting with their roots intact. They will be found most useful for ordinary purposes grown in 8-inch pots, six or seven in a pot. It is a great mistake to crowd too many of such things as these in the pots, as by this means the soil becomes exhausted, which tends to shorten the duration of their flowering. By stopping one-half the number grown when 3 or 4 inches high a succession will be secured. The yellow-blooming species of the rubriana section that have done flowering should not be thrust sideways under stages, or in out-of-the-way corners, where they receive little light or water, but they ought to have enough of both till they evince a natural disposition to die down, as then the tubers begin to get fully matured, and are liable to perish through their season of rest, or to start weakly when growth again commences. Æchmeas, Tillandsias, and Nidularias.—Suckers or offshoots of these that were taken off and placed singly in small pots towards the close of last summer or autumn will by this time be found well rooted, and should be moved on into from 5 to 7 or 8 inch pots, according to the size of the respective kinds. These are most useful warm conservatory and stove decorative subjects, especially when confined to single crowns in small pots. One of the advantages they possess is, they can be stood or required whilst in flower, overhung by taller plants, whereas anything of a softer nature that continues making leaf-growth would be injured by such usage. To keep up an effective display in both stove and conservatory, it is necessary to cultivate a sufficient number of plants that will bear this treatment, otherwise there is a difficulty in finding flowering things that can be placed in the lowest positions on the stages and floors. The Mexican rush-like Russelia juncea is a striking plant either in or out of flower, particularly so when dotted with its bright scarlet tubes. It requires keeping well to the light, with little or no shade, otherwise it does not flower with its wonted freeness. It makes an excellent plant for the side stages in the stove, where, elevated on an inverted pot, it is seen to advantage. It will bear moving to a warm conservatory during its time of blooming, which is in the summer months. Ordinary loam, with not too much

root-room, will suit it. Moderate sized plants in 9 or 10-inch pots are the most useful. Plants of Medinilla magnifica which have been kept comparatively dry and at rest, should now be started. They will bear syringing overhead until the flowers show, after which do not wet them in this way or the panicles are liable to damp; it succeeds best with more atmosphere to sun and a drier atmosphere than the generality of stove plants, by which treatment it will bloom freely even in a small state. The erect flowering M. amabilis is a distinct and handsome kind, a perfect contrast by its upright habit to M. magnifica. Franciscea confertiflora and F. calycina are plants that will last for many years if well cared for and healed well back as they need it; they more than many stove plants are liable to get bare and naked of foliage at the bottom, but old stools headed down are preferable to young plants from the stronger shoots they afterwards make, the quantity of flowers they produce, and the duration of their blooming being dependent on the strength of the previous season's shoots. Now is a good time to cut such back as require it, which will give them a long season of growth and time to get well furnished. After they are fairly broken, they should be turned out, and if the pots they have occupied are large, half the soil may be shaken away, replacing them in others a size or two smaller. Plants that are growing freely will now begin to take more water; in all cases see that it is sufficiently warm before being applied; water used too cold to tender stove plants is much more injurious at this than at any other time of year. It is a good plan to have several large cans that will hold as much as the plants require at one application stood near or over the pipes, where the water they contain will be as warm when wanted for use as the temperature of the house in the hottest part of the day, in which state it will be much more conducive to the health and progress of the plants than if used cold. Be very careful not to admit too much air when cold winds exist, as even if it does not come in direct contact with the young tender foliage, it dries the inside a r too much. *T. Baines.*

FLOWER GARDEN, ETC.

While the walks are tolerably dry the wheeling of dung, loam, &c., for the flower beds and borders had better be pushed forward, and all spare ground dug and prepared for their summer occupants. Half-hardy annuals may be sown in pots or boxes, and got ready for pricking out, but some of the more tender kinds, which require to be grown on without receiving a check, succeed well if not sown until the middle or toward the end of next month. Castor-oil plants, Maize, &c., do best when thus treated. Cannas (Indian Shot) which have been wintered under a greenhouse stage, or any similar place, may now be divided and repotted, and if placed in a warm, moist atmosphere will make fine plants in a few weeks, after which they may be gradually hardened for cooler quarters. Mignonette and other hardy annuals may be sown in borders, or wherever required for blooming during summer. Roses that have not yet been pruned can now be done at any time, and the ground forked between the plants, to leave all clean and tidy. Teas and other tender kinds will be better left until all danger from frost is past, when they can be pruned, and any blanks that have occurred during winter filled up. Bullfinches, which are very destructive to flower buds, are also very partial to the flower-buds of Lilacs, Laburnums, and Scarlet Thorns, and they will require attention this sharp weather, for they do a vast amount of mischief in a very short time. Small and moderate-sized plants, when damp, may be dusted over with soot or lime; this keeps the birds from doing much harm. As bedding plants now begin to require more room than they are having, it is often necessary at this time to get temporary shelter prepared, where they may safely remain until planting out time. Turf pits can be got ready, and covered with tiffany, mats, or anything handy; and in out-of-the-way places branches may be used, which will protect plants from several degrees of frost. But all plants in cool places must only get just enough water to keep them from flagging, for the drier they are kept the more cold they will resist. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

VINES.—Complaints of late kinds of Grapes keeping badly after removal from the Vines would be less frequent if a longer period of growth could be secured. To suppose that Grapes, particularly Lady Downe's, which are not to be used until after Christmas, can be brought up to keeping condition by the aid of sun-heat alone is a mistake, and as one month in the spring will do more than two in the autumn all houses in which late kinds are grown should be encouraged by means of fire-heat and frequent syringings to break early. If the system which I recommend has been followed, the buds will now be breaking; if unevenly, as is sometimes the case with young vigorous rods, the sap may be equalised by keeping them in a horizontal position until all the buds have started, when they may be tied up to the wires. Maintain a temperature of 55° at night, with a rise of 10° to 15° by day. Ventilate at 65°, run up to 75° with sun-heat, and close early, with plenty of moisture. Attend to tying-out and stopping in succession-houses, and keep the thinning of the bunches and berries well in hand. In the performance of the latter operation the cultivator must be guided by the character and capabilities of his Vines. When a bunch is properly thinned every berry should have room to swell, and when ripe it should be sufficiently firm to retain its form when cut and laid upon the dish. Increase the circulation of warm air should be kept up where Grapes are in bloom, with a slight increase of temperature. Hamburghs and other free setters may range from 65° to 70° by night, and Muscats may have 5° to 10° more. If, as is often the case with badly ripened wood, the bunches incline to run into tendrils, increase the heat by day, and reduce the supply of atmospheric moisture until the danger is past. As days increase in length, Grapes that are swelling must have liberal supplies of moisture charged with ammonia, and when they have passed the stoning process the inside borders will be greatly benefited by a liberal supply of tepid liquid manure. The close stopping of laterals should be discontinued until every part of the trellis is covered with healthy foliage, and to avoid sudden changes of temperature, the most fertile cause of rust, air must be admitted by small quantities at a time. Close early on sunny afternoons at 80°, and allow the heat to decline to 68° at night. Pot Vines swelling off crops of fruit will require liberal supplies of liquid manure. Top-dress with good turf and rotten dung, and encourage the roots over the sides of the pots into the plunging material. *W. Coleman.*

CUCUMBERS.—Although it is possible by constant renewal of the soil to keep Cucumbers in bearing for an indefinite period of time, in a compact structure of one of the compartments, where the pit is divided into sections, will enable the cultivator to keep up a steady succession of finer fruit from vigorous young plants than can be obtained from those which have been forced and heavily cropped all through the winter; and as Cucumber plants this date will make rapid growth, a good batch should now be ready for turning out on newly formed hills, which should be kept as far as may be convenient, from the hot-water pipes. Having cleared away every particle of old soil, plunging and fermenting material, if found too much decomposed, dust the sides and bottom of the pit with quicklime, and thoroughly cleanse all glass, paint, and walls before the new material, which will consist of well-worked stable-dung and Oak-leaves, is introduced. The soil used for the hills may be somewhat lighter than that recommended for winter fruiters, and it should be thoroughly warmed through before the plants are turned out. If a compartment cannot be spared, the gradual removal of old bearing vines and leaves, combined with constant attention to earthing and replacement of old with new turf, will greatly improve the quality and increase the quantity of fruit, provided the plants have not become infested with red-spider, in which case the enemy must be made to succumb to persistent syringing, and the application of dry sulphur, before satisfactory progress can be expected. Examine all beds which have been some time undisturbed, and if worms are present let them be removed without loss of time. Where short dung is used for mulching the hills a great number of these troublesome pests may be captured by carefully turning and handpicking a few hours after the plants have been watered with tepid liquid manure or lime-water. The bright sunshine which now follows sharp morning frosts will be too strong for tender young fruits swelling off, if not well protected with leaves. The syringe-fruit of Telegraph are very soon scalded and show a brown excoriated surface, which much disfigures them when cut. To prevent this some very slight material should be drawn over the glass for a short time as soon as the sun falls on the house. No material difference need be made in the temperature. To have good Cucumbers in quantity we must have full command of heat and moisture, and it is better to fluctuate with the weather than to be ruled by any fixed line of figures. *W. Coleman.*

FIGS.—Under the influence of heat and humidity which is afforded in forcing operations these trees make rapid and rampant growth, the character of which will naturally depend on the nature of the treatment applied in this season. As no after-treatment can fully compensate for a defective growth made at this period, it is prudent to give the matter every consideration, lest by promoting it too rapidly now, it may lack that important desideratum which is at all times inseparably connected with future success. In this respect much more care is requisite to be given to those trees which are placed in confined structures than is necessary in the case where the houses are large and of loftier dimensions, which, taking all points into consideration, are undoubtedly preferable for these subjects. Let the standard points of temperature by artificial means still be 60° at night and 65° in the daytime; slightly open the top ventilators at 75°, and shut them up if the temperature in the house recedes below this point. At 85° permit a warm current of air to circulate through the house; keep all the shoots except the terminals pinched in at about the fifth eye, and remove as they appear all those which are not required to form spurs. Continue to ply the syringe freely every day about those houses which are not of a close nature, and, on the contrary, exercise discretion in its use in such as partake of this character. In later houses give constant attention to stopping-in shoots; this matter should be done before they become too much elongated. *G. T. Miles, Wyrombe Abbey.*

HARDY FRUIT GARDEN.

There are few gardens of either large or small extent but have some of the hardier fruit trees, such as the Pear and Apple, in a more or less unsatisfactory state, or, where this is not the case, it often occurs that varieties have been planted which when they come into bearing from some cause or other turn out quite unsuited to the locality. This happens more frequently with the Pear, a fruit that is exceedingly variable, as standard sorts, such as Winter Nelis, Glou Morceau, Easter Beurré, Bergamot Esperen, Joséphine de Malines, and other sterling varieties that are all that can be desired in some soils and situations are comparatively worthless in others. Aspect has perhaps more to do with this than anything else, although soil exerts a considerable influence, especially in the case of those on the Quince, the roots of which do not penetrate near so deep or ramble in search of food to anything like the distance the Pear stock is capable of doing; and once the fruits receive a check through lack of nutriment, or from whatever cause affect their regular growth and swelling, they must inevitably become gritty and be of inferior quality. Much, therefore, depends on choice of stock; and where the soil is of a light, shallow character preference should be given to the Pear, as in every way the most suitable, especially where the trees are to be trained to walls and have plenty of room to develope themselves. It sometimes happens that the branches of these through age or other causes became so cankered, or the bark so rough and excoriated, as to preclude the possibility of a vigorous healthy flow of sap, such as is required to obtain fine fruit of good quality; and where this is the case the best remedy is to head them entirely back, leaving only a few inches of all the main branches to break again to refurnish the wall. Old trees so treated often become rejuvenated, and from the strong healthy shoots they put forward make rapid growth, and quickly come into bearing, far outstripping in this respect any young ones that may be planted. In cases where it is desired to substitute other kinds on those beheaded, that may now be done without regard to the age or size of those pruned back by giving the scions a long sloping cut on one side, extending about 3 inches, so as to sit flat on the wood under the bark, the latter of which should be slit through with a sharp knife, and then gently raised by inserting under it a piece of hard smooth wood the shape and size of the scion, to be pushed in after, in the same manner, as carefully as possible, so as not to bruise or injure the same. They should then be tightly bound in their places, by using either very soft string or bass matting, and have the usual preparation of grafting clay worked well around them, so as to exclude every particle of air; and the more effectually to do this a covering of moss tied over to ward off the sun from the clay will be found of great assistance in keeping it from cracking. Apples of all kinds and sizes may likewise be treated in the same manner, but these should be no delay in carrying out the operations, as vegetation is in a more than usually forward state this season, and the sooner it is done the greater will be the chance of success. It is much better to keep strictly to a few really good kinds that are known to do well in any particular district than to burden it with a number of varieties of doubtful value, that only entail disappointment, and the grafting should be done to curtail the number of these and increase any particular favourite. Among Pears I can strongly recommend Bergamot Esperen as one of the very best late kinds, provided it has a suitable situation accorded it, such as that of a south-east or south-west wall—an aspect all late-keeping Pears require, except in the warmest and driest parts of England, where they succeed as pyramids or espaliers. Fortunately for the safety of the Apricot crop, but few of the blooms were fully expanded on the night of the 10th, when we had 14° of frost, but now prospects of a good set appear to be favourable, except on Peaches and Nectarines, which from some cause or other have cast a good many of their buds. The pruning and nailing of these and all wall fruits should now be brought to a close as quickly as possible, and a sharp watch kept for frosty nights, with the necessary protecting materials always ready to hand and available for use when wanted, as may yet be the case, so exceedingly uncertain is the weather in this variable climate of ours. *T. Sheppard, Woolverstone Park.*

THE
Gardeners' Chronicle.

SATURDAY, MARCH 24, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Mar. 26—Sale of Orchids at Stevens' Rooms.
TUESDAY, Mar. 27—Sale of Lælia elegans, &c., at Stevens' Rooms; Royal Caledonian Horticultural Society's Show.
WEDNESDAY, Mar. 28—Glasgow and West of Scotland Horticultural Society's Spring Show. Sale of Camellias, Azaleas, Roses, Fruit Trees, Bulbs, &c., at Stevens' Rooms.
THURSDAY, Mar. 29—Sale of East Indian Orchids at Stevens' Rooms.

IT is pleasant to note from time to time the steps Horticulture, or, rather, some of its devotees, take to raise their art from a mere empirical rule-of-thumb procedure, guided by routine and checked carefully by the leading-strings of prejudice, to the higher level of a rational progressive science. It is true a considerable measure of excellence has been obtained by mere individual experience, handed down from father to son, from predecessor to successor. Still it is clear that for anything like a general advance along the whole line, for anything like a successful incursion into new territory or unbroken ground, traditional experience is of little value as compared with the accumulation of carefully observed facts by many competent observers, and the guiding principles which are gradually but surely evolved from the study and comparison of those facts. It is with much satisfaction then that we have to bring under the notice of our readers a recently published volume by Mr. BURBIDGE,* in which the author has classified and brought together in a manner to render them easy of access to gardeners and to physiologists a large accumulation of facts concerning the propagation of plants and their improvement by cultivation.

Starting with the very practical details involved in the consideration of propagating-houses, seed saving, the means of transmitting to long distances seeds or plants, the modes of grafting and the like—all subjects more or less familiar to every practical gardener—the author passes on to what we consider the most valuable parts of his book. This consists first in the discussion of the process of fertilisation in plants, whether by natural or artificial means. The whole subject of hybridism and cross-breeding hence is passed under review. Under this head Mr. BURBIDGE with much labour and industry has collected from the scattered records in our columns and in those of other gardening journals an immense mass of information. It should be a matter of satisfaction to journalists to find so good a use made of the facts which they have been the means of making public, and it should be an inducement to gardeners and others who have the opportunity to record their observations, in the confident expectation that every fact, provided it be carefully observed and accurately recorded, must sooner or later be of value. The present work also will, we hope, do much towards inducing our raisers of new plants and florists' flowers to systematise their experiments, to start with a well-defined object, to pursue it steadily and carefully, and to record every step in the process, every failure, as well as every success, with strict accuracy. Much profitless labour may be saved by the careful study of Mr. DARWIN's works and of the present volume. In many cases there will no longer be any excuse for blind groping, but a sure basis or a trustworthy indication may be found in the treatises to which we have alluded.

From the discussion of generalities Mr. BURBIDGE proceeds secondly to give a review of a large number of the most popular or useful genera of plants arranged under their natural orders, and these disposed alphabetically. But little is done in the way of description, nor is this necessary, as there are plenty of works which supply that kind of information. The most usually adopted modes of propagation are, however, described, and, what is especially useful, the history of the principal garden forms is given. For this latter information we cordially thank Mr. BURBIDGE. Only those who know the labour and difficulty of searching—often in vain—through the now voluminous records of horticulture for the history and introduction of a particular form raised in gardens, can sufficiently estimate the value of this portion of Mr. BURBIDGE'S labours. It is comparatively easy to trace the history of a wild plant, from whatever country, in the records of science, but the records of horticulture are in many respects, and often unavoidably so, chaotic.

To illustrate the value of Mr. BURBIDGE'S labours in this department it will suffice to mention that under the head Begonia a pretty complete list of all the more desirable hybrid Begonias is given, together with their parentage and other details. No doubt some will look in vain for some particular favourite, but in this case it may be assumed that he who raised or sent out the plant was too careless to publish at the same time any authentic or trustworthy information on the history of the plant in question. If this be the case it is no wonder that a compiler of a book like Mr. BURBIDGE'S should pass over all such plants as waifs and strays whose papers are not in order, and which therefore he is not bound to take notice of. A well drawn-up calendar of directions for each month in the year is given, and so full of information is the book that it wells over into the index, where we find intermixed with the usual formal array of words little descriptive paragraphs, which we suppose have arrived too late for insertion in the ordinary course. Mr. BURBIDGE may fairly congratulate himself on having produced one of the most interesting and useful books with which gardening literature has of late been enriched.

THE committee appointed to inquire into the probable causes of the outbreak of SCURVY in the recent ARCTIC EXPEDITION was composed of naval officers, former arctic explorers, and medical men. The result at which they arrived was exactly what might have been expected, and is in full accord with the teachings of science and the dictates of experience. The matter is very simple. The Commander of the Expedition, disregarding the warnings of his medical subordinates, allowed the sledge parties to start on their exhausting and perilous duties without a proper supply of lime-juice. Of course great allowances must be made for a commander under such difficult circumstances, and where an additional ounce weight is a matter for consideration. Sir GEORGE NARES, too, had won the cordial esteem of his officers and men when in the command of the *Challenger*, and was no less popular and efficient when transferred to the command of the Arctic Expedition. The lamentable want of judgment on this special occasion can therefore hardly be severely visited upon so distinguished an officer, unless by those who never make mistakes either of omission or of commission.

Unless the cause of a disease be known, prevention, in the true sense of the word, is an impossibility, and the cure impracticable. In too many cases the actual cause of disease is either unknown, or, if known, it is beyond the reach either of prevention or of cure. Palliation then is the only resource left. These conditions do not apply in the case of scurvy. According to the generally received opinion of medical men, the cause of scurvy is thoroughly well known; its prevention is as much, or more, a matter of certainty as that of small-pox by vaccination, very much more than that of fever by quinine; its cure far more within the power of the doctors. Whatever regrets then we may feel at this unfortunate matter, they are tempered by the renewed assurance that in this matter we have prevention and cure both within our grasp, if we would but use them. Lime-juice, however, is by no means the only antiscorbutic, though it may be the most generally convenient. Where neither it nor fresh vegetables nor fruits can be obtained, it might be well to try the seeds of crucifers, such as those of Mustard, Cress, Turnip, &c., and, as we have pointed out, it would even be possible, on a small scale, to ensure something approaching a salad even in the Arctic regions by the use of heated cases such as those constructed for trying seeds, raising cuttings, and the like. Of course the quantity would be very limited, and, therefore, selection would have to be exercised as to those to whom such luxuries should be permitted. Potatos, preserved vegetables, dried Apples, and other fruits form part of the equipment of all expeditions, but they are bulky and not so efficacious as lime-juice, still less so than fresh vegetables.

IMPORTANT as are the Palms generally for their varied economic uses, the produce of a few only find their way into European commerce, the most valued being the Cocoa-nut, the Date Palm, and the Oil Palm. The habits of the two former are familiar to most persons having any interest in plants, from figures in scientific and popular works. The form of the OIL PALM (Elais guineensis, L.) is, on the other hand, but very little known, the tree never having been accurately reproduced in any popular book. It is usually described as growing to a height of from 20 to 30 feet, the trunk being thickly covered with the remains of the old leaf-stalks. Two species of Elais only are described—the one under notice, which is a native of West Tropical Africa, and Elais melanococca, Gaertn., a South American species; this latter, however, is of no economic or commercial value, while the oil obtained from the former is one of the most valuable products imported into this country from the great African continent. This Palm is very abundant in various districts of Western Tropical Africa; Dr. BAIKIE describes it as being most abundant in Ibo, Benin, Yoruba, and Bonu, also very abundant in Kororofa, and in countries behind Adamawa; plentiful in Bautsi, Zarya, Gbari, and Nupe, and along the road to Gonja, and along the Niger to near Yauri. He further says: "At West Bay in Prince's Island we saw either a variety of the Oil Palm, or else another species of Elais. The nuts were larger, the foliage brighter green, and the trunk more robust, but we saw neither flowers nor ripe fruit." The principal ports in the Bight of Benin from whence palm oil is exported, are Badagry, Porto Novo, Whydah, Aliquah, Lagos, and Palmas; from Liberia also large quantities are exported to Great Britain and the United States. The River Bonny supplies the largest quantity of palm oil that is brought from any river in Western Africa. The trade with the natives is carried on by barter, the oil being paid for mostly in Birmingham and Manchester manufactures, glass and agate beads of various forms, sizes, and finish, being some of the recognised articles of exchange. The fruits from which the oil is obtained are borne in dense heads or spadices, sometimes measuring 2 feet long and 2 or more feet in circumference, the fruits themselves being each about an inch or an inch and a half long, and an inch in diameter. The seeds are enclosed in a very hard bony shell, which is again covered with a softish pulpy substance, outwardly, when ripe, of a bright orange or yellow colour. It is from this outer, fleshy portion of the fruit that the best oil is obtained. On the west African coast one of the most important branches of manufacture is that of palm oil. When sufficiently ripe the fruits are gathered chiefly by men. They are boiled by women, in large earthenware pots, after which they are crushed in mortars. They are then placed in large clay vats filled with water, and women are employed to tread out the oil, which immediately comes to the surface, when it is collected and again boiled to throw off the water, after which it is placed in barrels or casks for

* *Cultivated Plants; their Propagation and Improvement.* By F. W. Burbidge. (Blackwood.)

exportation. Good palm oil is of a bright orange or deep yellow colour, about the consistence of butter, and when fresh it has an agreeable smell, somewhat resembling Violets. It is now most extensively used in the manufacture of soap and candles, and also for greasing the axles of railway carriage wheels. The two first uses, however, are what the plants are mostly prized for. In Africa the solid oil is used for culinary purposes, often in place of butter, and the hard seeds are made into various ornamental articles. The engraving (fig. 60) is from a photograph

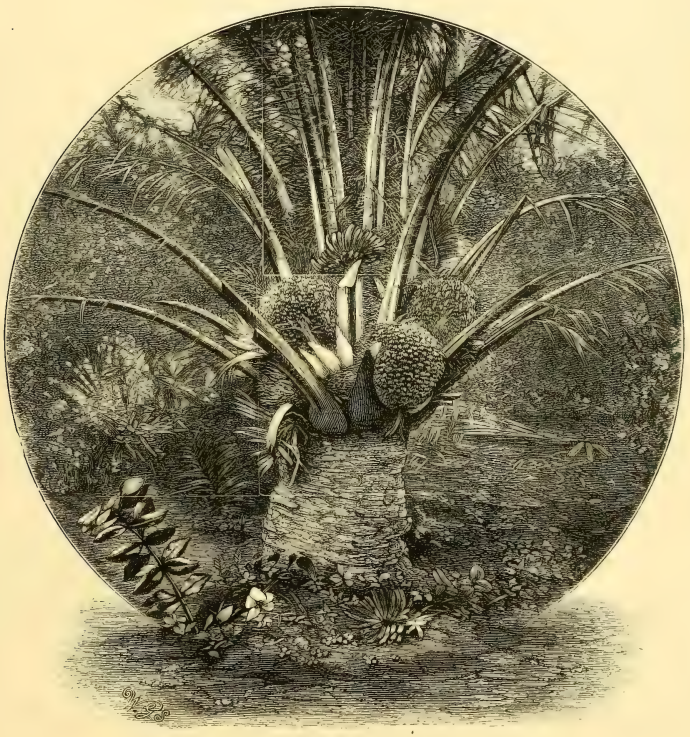


FIG. 60.—THE OIL PALM TREE, ELAIS GUINEENSIS.

recently presented to the Kew Museum, and represents a young plant growing in a dry, and not a swampy situation.

—— The great AQUATIC CONTEST of the Universities which takes place this morning will, for various reasons, be somewhat shorn of the FLORAL ACCOMPANIMENTS with which popular taste has associated it. Usually falling at a time when the dark blue Violet is in great abundance, Oxford has seldom wanted for floral favours of its favourite hue to dispense to its myriads of followers. Curiously enough this year, although the race falls earlier than usual, the Violet harvest is nearly over, as the gathering has continued almost without cessation all through the mild winter, and, therefore, the mass of bloom is almost exhausted. That Violets will be found to grace the festival with their perfume there can be little doubt, but hardly in such quantities as humble speculators may think desirable, especially with the dark blue highest in public esteem. Cambridge could hardly have found in all our hardy flora a more lovely or fitting light blue than the Myosotis dissitiflora. Sprays of this charming Forget-me-Not are in great request either for bouquets or button-holes, but the date is too early to get these in beauty from the open air, and it is possibly portentous of the result of the coming struggle that even under glass the flowers persist in remaining pale red rather than turning to the desired tint of cœrulean blue. Some useful material for both sides may be found in the pretty Grape Hyacinths where growing in sheltered nooks, but early hardy blue flowers are not abundant. The Cineraria will probably furnish no small share of the popular colours, but flowers grown under glass are not for the million. Nevertheless it is pleasant to find that even under the popular excitement consequent upon such a contest, flowers and their sweet influences are not forgotten.

—— Some two years ago, Mr. WILLS, of South Kensington, conceived the idea of covering the late Prince CONSORT'S National Memorial in Kensington Gardens with glass, and in connection with it the formation of a series of gardens in which to represent the vegetation of each quarter of the globe. Mr. WILLS has been fortunate in securing the advice and assistance of Mr. ALFRED BEDBOROUGH, the eminent architect, of Westminster, who has successfully produced a set of plans and drawings, quite unique in design, and totally different from those of any building hitherto executed in glass and iron. Mr. WILLS an Mr. BEDBOROUGH have had the honour of submitting to HER MAJESTY and His Royal Highness the Prince of WALES the plans and drawings above alluded to, and His Royal Highness was graciously pleased to signify his approval of the scheme, and expressed a wish that the undertaking might be carried out. We purpose shortly giving an engraving from this magnificent design, and shall then give further details as to its construction, &c.

—— Under the name of PERSIAN "MANNA" some samples of an olive-green, solid, waxy-looking substance were exhibited by Mr. A. Y. STEWART, of the

Apothecaries' Hall, at the last meeting of the Linnean Society. Although the information forwarded was to the effect that it had been gathered on the rocks after dense mist hung about, there is some reason to believe it may be the product of the Tamarisk. Whether it has any value as a medicinal agent, or may be valuable as an article of commerce, remains to be proved. At present its chemical constitution and properties are under examination.

—— The *Melbourne Argus* states that Mr. GOLDIE, the plant collector, who has been exploring in New Guinea around Port Moresby, has returned to Sydney on account of ill health, bringing with him a large botanical and zoological collection of a very interesting character. Fifteen cases of living plants have been sent to this country, while preserved specimens have been forwarded to Baron MUELLER, of the Melbourne University, for description and comparison. Mr. GOLDIE started from Port Moresby, but did not penetrate further inland than about 20 miles from the shore. He was enabled, however, to observe many interesting facts, as well as to study the manners and customs of several tribes of natives, whose confidence he in every instance won by kindness. A splendid grazing country, with many grasses identical with those found in Australia, well watered with numerous small rivers, and dotted with stunted Eucalypti, was found to be the general character of the coast district, beyond which a mountain range was seen to rise far inland. Here and there were seen villages, surrounded by extensive plains, on which the natives had large Cocoa-nut and Banana plantations in cultivation. A little way inland the traveller met with an insufferable torment in the shape of a minute reddish insect, which covered the body from head to foot with pimples, causing the greatest irritation. It was found extremely unhealthy on the coast, and the mission station at Port Moresby has been entirely abandoned by Europeans; a few Korotonga native teachers remain, but great sickness abounds even amongst them. It was observed as remarkable that the sea breeze was invariably unhealthy, while the wind from the interior was salubrious.

—— From REGEL'S *Gartenflora* we learn that the FOURCROYA GIGANTEA, already mentioned in these columns as having flowered at Munich, attained a height of about 21 feet, and of this it made nearly half during the month of October. The greatest elongation in twenty-four hours was 6.3 inches, in a day temperature of 92°.75 and a night temperature of 56°.75. No particulars are given respecting the period of the twenty-four hours in which the maximum intensity of growth took place. At the beginning of October it was about 10 feet high, and by the 16th it had increased nearly 8 feet, or at the rate of about 6 inches per day. After this date, with a much lower temperature both by day and night, the rate of growth was much slower.

—— The VEGETABLE POISONS USED BY THE SAMOA ISLANDERS to coat their spears and arrows formed the subject of a paper by the Rev. THOMAS POWELL, read at the Linnean Society, March 15. It is stated that human thigh-bones are used to tip the weapons. These latter are dipped into a composite material, the chief poisonous ingredient of which is a milky juice from several trees, among others Calophyllum Inophyllum? To this is added a substance got from wasps' nests, and also the fluid derived from putrescent Sea Cucumbers (Holothuria). After dipping, the arrows are smoked in a kind of kiln, and stuck into the flower-stalk of a species of Tacca. Thus preserved from damp they are laid aside ready for use as occasion may arise. The poison it is said brings on convulsions, tetanus, and death follows; though occasionally only local irritating wounds arise. BERTHOLD SEEMANN in his *Flora Vitiensis* has already described certain trees said to yield poisonous extracts, and these somewhat agree with this later account; there are others, however, that are dubious as to the virulent effects that may arise from the said poisoned weapons.

—— Although outside of the charmed circle of florists' flowers, the many beautiful species of the HARDY PRIMULAS offer to the florist material worthy both of his love and attention. Perhaps no class of plants present such excellent advantages for hybridisation, especially to the patient and industrious worker; but even if no beneficial result should flow out of labours so spent there is a fund of happiness in store at all times in the possession of a nice selection of these hardy gems. That the majority begin to flower in the early spring months is rather an advantage, as few of them boast of beauty of a gaudy kind. Their blooms are rather simple and unpretentious, that might fade into insignificance when compared with the gorgeous Rose or the brilliant Pelargonium; but when seen in spring, ere the eye has become satiated with rich hues, they are gems indeed. How beautiful just now are the forms of denticulata and purpurea, the latter especially presenting a great advance on the first-named in size of truss and colour of flower. The snowy white nivalis is bursting its trusses of bloom from out of the green bush of foliage, and intermedia with its pretty pale flowers is doing the same thing. Marginata, charming at all times in the beauty of its foliage, has expanded its purplish blue flowers, that are rather darker than those of intermedia; and minima is following with its pale red blooms. The earliest forms of the cortusoides amœna section are already coming into flower, and these will be gay for the next two months or longer. P. abyssinica has its whorl-like truss of blooms ready to open, the pale yellow tint of which will give variety to the others. Although later in bloom, the pale-powdered farinose-leaved section is not wanting in beauty, the plants looking like the albinos of a large and vari-coloured family.

—— Most of our readers, and those especially who are interested in any way in hot-water boilers, will have heard of the "ENDLESS-FLAME-IMPACT BOILER," patented and manufactured by Messrs. WILLIAM WRIGHT & Co., of Airdrie, N.B. and who, as becomes thorough enthusiasts with a new thing, have somewhat voluminously advocated the merits of the new-comer in a pamphlet, entitled *Our Boilers and Heating*, several copies of which have reached us. The Messrs. WRIGHT appear to be very anxious to have their invention taken notice of, and have no doubt an honest belief, in their own interests, in the thing, as indeed they are justly entitled to have; but in the pamphlet before us, which is well reasoned out, and gives some good and sound advice, they have rather overshot the mark, and claim more for their invention than it is, as it appears to us, entitled to. The principle of the endless-flame-impact boiler is a good one for attaining quick action, the line of draught being the natural or upright one, which causes the fire, when the damper is the least open, to rush swiftly and smoothly through the flues of the boiler into the chimney at the speed of a racehorse, giving off a fair amount of heat as it passes smoothly over each compartment of the boiler, and carrying a considerable amount of flame, and a large amount of heat, into the chimney, where, of course, it is of no use for heating the boiler. This is a defect in all upright-draughted boilers, and the more they are pushed the more heat they send into the chimney. The latter fact, of course, applies also to the horizontal boilers, but in a less degree, and, as a consequence, they are more economical. This is a fact apparent to every practical gardener who has to use boilers, and no amount of argument can alter it. Messrs. WRIGHT & Co. claim for their boiler that it is "the most economical;" but on the strength of an opinion which we have obtained from a gentleman well qualified to judge of its economy in heating, and who has seen the boiler at work on a moderately cold day when it was being briskly driven, we are of opinion that, with an equal amount of the same kind of coal, as great or greater heat can be got into the same length of 4-inch pipes by means of a well-constructed and properly-set flued saddle, or, what is as good, Stevens' Trentham Boiler. With such a boiler set in the right way, and stoked in a proper manner, more heat will pass into the water for the benefit of the houses, and less up the chimney. When they are not pushed, *i.e.*, when there is no draught, the action of the endless-flame-impact boilers, and that of the others we have mentioned, is the same, but when the damper is out, there is this difference between them—that the new one is likely to be more wasteful, the older ones fairly economical. What is still wanted in horticultural boilers is the means of effecting more economy when they are being pushed, as must be the case daily where any attempt is made at forcing—a necessity, now-a-days, in every garden of note in the kingdom. Generally speaking, it is in this particular point that all complicated boilers fail, and we have to fall back again on our old friend the saddle, or an improved modification of it. The Messrs. WRIGHT claim for their boiler that it "requires no setting," but as a matter of fact it would be much better for it, the heat given off by such an amount of highly heated surface being quite sufficient to heat an ordinary sized hothouse, and it really does make the stokehole uncomfortably hot. The boiler undoubtedly does require "setting," and would be the better for being bricked round, because in practice it is found that flues with hot air in them, outside and in contact with a hot-water boiler, are the best preservers of the heat in the boiler. This statement is against Messrs. WRIGHT'S theory, but it is a fact nevertheless, and every day's experience with horticultural boilers proves it. Many more such theories stated in the pamphlet are quite as open to criticism. This form of boiler is at work at Drumpellier, the residence of Colonel BUCHANAN, in Lanarkshire, and at Parson's Green, near Edinburgh, the residence of W. S. MITCHELL INNES, Esq., and testimonials highly in favour of the boiler have been sent to the firm from both places. As regards the one issued by the gardener at Parson's Green, it is right that we should point out that while this boiler, a "No. 4 D.," is said in Messrs. WRIGHT'S pamphlet to be equal to heating 4800 feet of 4-inch piping, it is actually heating under 2200 (not 3200 feet, as inferred by Mr. CLARK in the *Gardener*), and not a fourth of this number of feet requires to be heated above a warm greenhouse temperature at any time—that is, an average of 45° at night, and 50° to 55° during the day, so that it is ridiculous to speak of the hard work required of such a reputed powerful boiler. We will only further say of the boiler that it is a compact and useful one for a small place where room is an object, as small space contains it. It will also be found very quick in getting up heat, and may be classed with GREEN'S and CANNELL'S, being very similar in principle and effect. Like all complicated boilers, it will be liable to get out of order just at the time it is most wanted, a sharp storm bringing all such cast-iron boilers to grief sooner or later. It is, we are of opinion, no more economical than other well-known boilers already in common use, and from its complicated nature we should anticipate that it is not likely to stand hard work, nor many years of wear and tear.

—— Dr. KANITZ, of Kolozsvar, Hungary, has issued the first number of a Journal of Botany, under the title of *Magyar Növenytanilapok*. As it is written wholly in Hungarian its circulation in this country is likely to be very limited.

—— We are informed that the following gentlemen have consented to act as local hon. secretaries of the NATIONAL ROSE SOCIETY, and to promote its interest in their several localities:—Bath: R. B. Cater, Esq.; Bromsgrove: R. Cordell, Esq.; Cheshire: J. Tinsley, Esq.; Croydon: E. Mawley, Esq.; Exeter: R. G. B. Baker, Esq.; Canterbury: W. Mount, Esq.; Hereford: the Rev. C. H. Bulmer; Maidstone: Hubert Bensted, Esq.; Leek: W. Newall, Esq.; Newark: the Rev. Canon Hole; Reigate: the Rev. Alan Cheales; Windsor and vicinity: G. Hawtrey, Esq.; Warminster: J. Harton, Esq.; and Oxford: C. R. Ridley, Esq.

—— The Swiss Government has not hesitated to make any sacrifice to stop the progress of THE PHYLLOXERA, considering that if success be only temporary the arrest will save millions (francs). The stamping-out measures carried out at Pregny, near Geneva, have, according to the *Journal Officiel de la République Française*, March 8, 1877, been so far entirely successful. In consideration of these facts the French Academy of Sciences have recommended to the Government:—1. The prohibition of the export of Vines out of infested districts. 2. The prohibition of the introduction and planting of infected Vines in districts not yet affected. 3. To uproot and burn all Vines and roots of Vines, and to disinfect the soil in the neighbourhood of an infested district, so as to afford no point for fresh attack. 4. To disinfect the soil and the plants around the district in which the Vines have been thus destroyed. 5. To disinfect the Vines in the district around the last-mentioned area.

—— In consequence of the death of the late EDWARD NEWMAN some changes have been made

in the editorial staff of that useful publication, the *Entomologist*. A list of the more recently discovered insects and gall producers is given, together with a great variety of useful and interesting information, showing a healthy tendency on the part of entomologists to break away from the mere collecting and recording tendencies of former days, or rather to add to it by notes on the life history of the observed insects. Woodcuts are also given, that in the February number representing a butterfly new to this country, or, at least, not previously recorded — Melitæa didyma. A new feature is to be introduced in the shape of photographic portraits of eminent naturalists.

—— Some members of the Central Horticultural Society of France are engaged on some cultural and applicatory EXPERIMENTS WITH CYPERUS ESCULENTUS, a sedge having edible tuberous roots. Some cakes and a preparation of a kind of orgeat from the tubers were declared by the Society to be excellent, and further experiments were recommended. It had been objected that the cultivation of this plant in the climate of Paris would often prove unprofitable, because it is very susceptible to frosts, and the tubers are destroyed by comparatively slight frosts; but by the method of cultivation found most successful this is of little consequence, as the sowing or planting is done in May, and the season for lifting and using the tubers commences in August and terminates in October. The following analysis of the composition of the tubers is interesting, though it does not appear probable that the products of this plant will ever be of sufficient quantity to become of real commercial importance. In 100 parts there are 7.10 of water, 28.06 of oil, 29 of starch, 14.07 of crystallisable sugar, 0.87 of albumen, 14.01 of cellulose, and 6.89 of gum, colouring matter, salts.

—— According to a report made to the General Council of Saône and Loire, as quoted from the *Sud-Est* by the *Revue Horticole*, the experiments with the SULPHO-CARBONATE OF POTASSIUM as a remedy against the Phylloxera have been unsatisfactory. The sulpho-carbonate indeed kills the Phylloxera when it comes into contact with them, but if even only a very few insects escape contact with the poison their fertility is so great that a new population takes the place of that which has been destroyed. But a short time, therefore, has been required to show that the apparent success of the application was but temporary. In fact those Vines which on August 10 were free from Phylloxera to all appearance, on October 21 were found infested with legions of the insect, and those Vines to which the sulpho-carbonate was twice applied were fully as much affected as those to which one application only was made. The experiments were carefully carried out according to M. DUMAS' directions over a space of 2½ hectares (5 acres about) of vineyard for forty-seven days, and the result is that the sulpho-carbonate of potassium has been found powerless to destroy the Phylloxera. The cost of the experiment was calculated to be 8522 francs.

—— The grand YORKSHIRE GALA, which is the great floral exhibition of York, opens this year on June 13, and comprised in the schedule of prizes are a few features of more than ordinary interest. One of these is a class for twelve large Roses, distinct, in pots, for which a 1st prize of £25, and a 2d prize of £15 is offered, and the competition is limited to exhibitors residing south of the Trent. The York people, who always infuse great spirit into their shows, would, no doubt, be highly gratified by a visit from Mr. C. TURNER and Messrs. PAUL & SON, of Cheshunt, in competition for these fine prizes; and seeing there is a marked dearth of large shows in the South, these celebrated growers may perhaps be induced to take their productions to the metropolis of Yorkshire. Good prizes are also offered for sixteen hardy Rhododendrons in flower, which is a new feature in the schedule, and one likely to bring a spirited competition.

—— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, March 26, when the adjourned discussion on Mr. J. LUCAS' paper, entitled "Hydrogeology: one of the Developments of Modern Practical Geology," will be resumed. The chair to be taken at eight o'clock.

LAMBTON CASTLE.

(*Continued from p. 343.*)

THE VINERIES.—The glass department is very extensive, but that portion of it which is devoted to Vines, especially the principal range, wherein have been grown the Grapes that have produced such a tension amongst growers of this fruit, and have earned for Mr. Hunter such a widespread reputation as a Grape grower, will no doubt to others, as it was to me, be of more than ordinary interest. Independently of the immense bunches which Mr. Hunter has grown, which culminated in his 21 lb. 12 oz. bunch of Black Hamburgh, exhibited at the International Show at Belfast in 1874, and which, taking the variety into account, still stands unrivalled for weight, his greatest achievement, I hold, was the collection of ten varieties shown at the Manchester International Fruit Show, September, 1873; these would fully average from 7 lb. to 8 lb. each. Those who can grow good Grapes know how easy it is to give perfection of finish to small bunches as compared with large ones; yet, notwithstanding the unusual weight of Mr. Hunter's Grapes on this occasion, they were as near perfection of finish as possible.

After Mr. Hunter had grown the extraordinary bunch of Hamburgh exhibited at the Belfast International Show already alluded to, he gave to the gardening world an account of his practice, yet the details were scarcely so complete in some respects as to clearly convey the exceptional nature of the ground on which these vineries are built, as also the considerable difference in several important matters connected with the cultivation of the Vines, between his practice, and that usually followed by Grape growers. The ground here presents natural difficulties such as seldom have to be contended with. There are over 30 feet of quicksand before coming to a solid foundation, yet the surface slopes rapidly to the south by south-east, necessitating the formation of terraces, on which the ranges, which stand parallel at a considerable distance apart, are placed. The first range, a lean-to 330 feet long, in which have been grown the big bunches, is built upon piles driven through the quicksand into the solid clay underneath, upon which the walls stand on arches. The front wall is 12 inches high above the ground-level, with hinged lights about 2 feet deep above. The top ventilation consists of a hinged light 2 feet wide, and ventilating shutters near the top of the back wall between each rafter, 2½ feet long by 10 inches wide. The rafters are 6 feet apart, and are each supported by an upright iron pillar midway from top to bottom. The borders occupy all the inside of the houses, and about 15 feet outside as well, and average 4 feet in depth, the whole concreted underneath. It is a very difficult matter to insure permanency in the drainage in such ground, as if ever the sand can get into the pipes they are certain to become choked. A brick-built drain with pipes laid inside of it runs immediately in front of the border, a little below the bottom of the concrete. Into this from back to front of the border at intervals of 6 feet are placed rows of 6-inch pipes, and in the opposite direction, from end to end of the border, are rows of pipes 4 feet apart; betwixt and over these was put 12 inches of brickbats, above these broken stones and clean gravel, on the top and over all fresh turf, with the grass side downwards. As will be seen, such drainage is not only ample in quantity but necessarily quick in its action, and its construction is such as to render it scarcely possible that it should become choked.

The soil consists of the ordinary loam of the neighbourhood. To each six loads of loam was added one of lime rubbish, one of charcoal, one of cow manure, and 3 cwt. of broken bones; a portion of the loam had been stacked for a year before use, the rest was fresh cut. The first house, commencing at the eastern end, is some 90 feet by 16 feet. The Vines in this house were planted in 1869, also in the adjoining houses inside. They are seventeen in number, consisting of White Nice, Trebbiano, Royal Vineyard, Alicante, Gros Colman, Lady Downe's, both black and white varieties; Raisin de Calabre, Gros Guillaume, and Muscat Troveren. At the time of my visit an immense crop of large bunches were about ripe; the White Nice had nine bunches, from 4 lb. to 12 lb. each; Royal Vineyard, seven bunches, 3 lb. to 4 lb.; Alicante, ten bunches, 4 lb. to 7 lb.; Gros Colman, six bunches, 4 lb. to 6 lb. Another Gros Colman, grafted two years ago, and not more than half way up the rafter, was carrying four immense bunches, from 4 lb. to 7 lb. (see fig. 61, p. 376.) Black Lady Downe's had twelve bunches, the largest berries I have ever seen: some of the bunches would run 4 lb.; Raisin de Calabre, one of its rods bearing six bunches, from 5 lb. to 10 lb. each (one of these I afterwards saw weighed drew 10 lb. 3 oz.); a Gros Guillaume, with two rods each, carrying six bunches, all except one of which would draw from 6 lb. to 11 lb.; Muscat Troveren, seven bunches, 5 lb. to 7 lb. The above weights I feel confident are rather under the mark, and in some cases the number of bunches mentioned are the produce of one of the two rods of which the Vine consists. The description conveys a very imperfect idea of the fine appearance of the bunches and immense weight of the crop collectively, which in the case of two or three of the black varieties was too much to permit their quite colouring up.

The next house is 55 feet by 22, containing thirteen Vines, all Muscats, planted about the same time as the last; half the crop was cut, the remainder was fine in every way, averaging from 3 to 5 lb. per bunch. Next this, and occupying the centre of the range, is a conservatory, which will be noticed hereafter, and through which we pass to the adjoining vinery, in which is the Black Hamburgh Vine which bore the enormous bunch — 21 lb. 12 oz. The house is 55 feet by 22 feet, and in it are fourteen Vines, comprising Gros Guillaume, Trebbiano, Raisin de Calabre, Mrs. Pince's Black Muscat, Foster's Seedling, Burchardt's Prince; the remainder, Hamburghs, collectively bearing a heavy crop of big, finely-finished bunches, similar in character to the house first described. The Burchardt's Prince had eight bunches that would run from 6 lb. to 8 lb. each. The Hamburgh Vine which has grown the large bunches still shows a disposition to produce larger bunches than others in the same house.

The next and last house in this block is similar in length and width to the first vinery at the other end of the range; it is filled with Peaches and Nectarines —most of the old-established kinds, and some of the new varieties. The crop was all but over. Rivers' Victoria Nectarine was bearing some very fine highly coloured fruit.

To make the whole course of treatment, which the extraordinary Vines in this range are subject to, intelligible, it is necessary to again revert to them, and give some details as to the watering and other matters. Many with whom I have conversed, who have seen the Grapes Mr. Hunter has shown, but have not seen the Vines, are under the impression that the foliage and wood, especially the latter, must be of an unusual strength; in fact, proportionately with the fruit, larger and stronger than has been seen before, yet such is by no means the case. The main stems of the Vines collectively are thick for their age, but not extraordinarily so. The current year's shoots of most of them are also strong, yet not more so than are frequently met with, neither is the foliage anything remarkable in size, but this is made up for by the immense quantity of leaves which the Vines carry. Most of the shoots before being stopped are allowed to run twice or thrice the length most growers permit them, often taken across the adjoining cane right up to the next Vine, 6 or 7 feet in length, but not suffered to extend further afterwards, except a few laterals that are allowed to run a short distance when the crop is approaching completion.

More front air is given them in the earlier stages of the crop than many growers admit. As Mr. Hunter stated in the paper he read before the members of the Gardeners' Institute at Darlington, he gives an extraordinary quantity of manure-water both to the inside and outside borders. To provide this especial provision is made; the natural ascent of the ground behind this range favours the supply of both hot and cold water. At the back of the next range, which runs parallel with this on the higher ground, with a considerable space betwixt, there is an immense open tank, into which can be run at pleasure from land still higher an unlimited quantity of water, so as to supply the whole requirements of the houses and garden. From this an inch-and-a-half pipe is laid to a very large cistern, several yards square, at the back of the range of vineries in question. It is considerably elevated, so as to give sufficient pressure. This furnishes the cold water, and into it a bag of guano at a time is emptied, and kept stirred continually whilst the

water is being run on to the borders. To afford the warm water requisite to bring it up to the temperature it is applied at—85° to 90°—a similar pipe is brought from the hot-water pipes in the upper range of houses and connected togethcr, thus—



As will be seen, the hot and cold water pipes are joined together at the junction, where is the nozzle on which to screw the hose-pipes. It will be easily understood that the temperature of the water thus mixed together can be regulated to a nicety by the use of the taps on the hot and cold water pipes respectively. The arrangement is both simple and effectual. The border inside and out of the third vinery already noticed—and all, I understand, were similarly treated—received in a single season over 14,000 gallons of the warm manure-water, applied in this way. As Mr. Hunter truly said, if it had to be put on by the use of the watering-pot the quantity would fall very far short. A warm day is chosen for applying it, when little or no fire-heat would be needed in the range of houses from the pipes of which the warm water is brought; the fires are then put on as hard as they can go, to heat the cold water that is running into the boiler to supply the place of what is being run off.

Many have supposed there must be something in the constituents of the soil here more than usually favourable to the development of the Vine; but such evidently is not the case. From what I could see of the surrounding land I should take it to be a fair loam, but I have seen plenty I should prefer before it. The fact of the whole district resting on a bed of coal does not speak favourably for the surface soil. The capabilities of these Vines to produce such extraordinary bunches is evidently due to a combination of several conditions, any one of which being absent would render the others nugatory. The more than ordinary root-space both in depth and superficial extent of border, and the rich ingredients in the soil, favour the existence of an unusual quantity of roots, which in their turn cause the production of an immense amount of leaf surface, the retention of which is rendered possible by the ample head-room which the Vines have allowed them, all nourished and sustained by an unstinted supply of rich liquid feeding, which, from the porous nature of the border and perfect drainage, can be applied with the best results; whereas, if the soil were of an adhesive nature, or the drainage at all deficient, it would have quickly caused the destruction of the roots, which again are prevented by the concreted bottom from getting down into anything objectionable that might be in the subsoil.

To the above collective favourable conditions, conjointly with skilful and intelligent management, I consider are due the results that have given these Vines such deserved celebrity. The way they succeed with quantities of water so much above that which is usually given, bears out an opinion I have long entertained, and frequently expressed, that Vines in this country rarely get as much water as they require, and that a good deal of the shanking and deficiency of colour we see is the result of an insufficient supply of moisture to the roots during the time it is most required when the fruit is swelling, and through which the roots are partially stagnated, and not fully able to answer the demand made upon them by the fruit in its last stages of completion. There has been so much said and written about the roots of Vines being too wet, and of the ills resulting from it, that hundreds of people are deterred from giving enough water, forgetting the widely different conditions under which the roots exist when in a close, adhesive, badly-drained border, and that in which they are placed when the border is composed of the right materials properly put together, and thoroughly drained. *T. Baines.*

(To be continued.)

Home Correspondence.

Disease-Prevention in Potatos.—The two concluding sentences bearing reference to my proposed treatment of Potatos (p. 340, *ante*) will tend to produce an erroneous impression unless corrected. Will you, therefore, allow me to say that I proceed upon the basis that the germs of disease are in the ground everywhere. These disease-producers need not, therefore, be looked for, because it is certain they are present in every place and in every position. My plan is simply to destroy all spores, resting-spores, and eggs in the manurial dressings (where they most abound) and in the ground during the winter and spring months. This will give the Potatos a fair chance at starting. In the experiments I have arranged to personally superintend I shall treat the Potatos again just before the early autumnal rains set in in the following manner:—A dry, impalpable powder of such extreme lightness has been prepared that the slightest possible agitation will distribute it through the air in almost invisible clouds to considerable distances. This powder will be disseminated over all the plants included in the experiment, so that it may fall with tolerable evenness over the entire crop. The powder is of such a nature that the slightest moisture will dissolve it, and every individual grain thus dissolved will be simply fatal to all fungus life. It will be therefore seen my plan is to treat the Potatos from within and from without. Thus fortified I have little fear of stray spores from infected districts, as I hope to prevent their gaining a foothold. *W. G. Smith.*

Lobelia pumila magnifica.—Mr. Morgan has given a true history, as far as it goes, of the Lobelia pumila magnifica which Mr. Davidson calls Emperor William. I have only to add that I raised the Lobelia at the Pine-apple Nursery, and received a First-class Certificate for it, both at Kensington and Regent's Park in 1874. The *Gardeners' Year Book* has it thus:—"Lobelia (pumila) magnifica * † (J. Bester). Large, deep violet-blue flowers, very free and effective." I gave Mr. Brownsell, gardener at The Mount, Harrow, a pinch of the seed from which I raised it, and on my visiting him in the September after I had received the certificates, I found he had the correct sort. Being afraid of its getting too widely distributed, as Mr. B. told me all the gardeners in the neighbourhood were asking him for some, I offered to take the lot. He would not part with all of it, so, for obvious reasons, I did not tell him what he really had, although when he showed it me he said, "There—how is that, compared with pumila magnifica?" I should add that I sent the Pine-apple stock out in April, 1875; those Mr. Morgan speaks of I sold on my own account from Mr. Brownsell's stock. *John Bester.*



Fig. 61.—Bunch of Gros Colman Grape grown by Mr. Hunter at Lambton Castle.

The National Rose Society.—We must all regret that there is a clashing between the National Rose Society's exhibition and the Gardeners' Benevolent dinner on July 4, but I fear there is no remedy for it; the fact is, Mr. Cutler, who is always on the look out for some favourable gale to swell the sails of his vessel, thought, when our exhibition was announced for July 4, that he had caught the breeze, being ignorant that the members of the National Rose Society contemplated dining together also, and so the two ships have fouled one another; but, after all, I do not suppose it will affect half a dozen persons. As to the suggestion that the Rose dinner should be turned into a lunch, imagine a lunch at 2 or 3 o'clock (it could not be before) of somewhat excited exhibitors, managers, &c., and then to add to that a dinner at 6 [7] o'clock, with I do not know how many courses, &c.—what a gallant crop of headaches, bad stomachs, &c., and what a capital time for the family doctor! I do not think that plan could answer, and so I fear things must remain as they were. The committee meets on Wednesday, and their decision will be final. *D., Deal.*

The Alnwick Seedling Grape.—I have to beg your publishing in next week's issue the enclosed letter, which I addressed to the secretary of the Fruit Committee of the Royal Horticultural Society. I think I am in all fairness entitled to this consideration, as it will serve to remove any false impression caused by the misapprehension of my previous letter, which the committee evidently had, and which will also give a fair reason for the change in the name. *D. P. Bell, Clive House, Alnwick.*

"To the Secretary of the Fruit Committee of the Royal Horticultural Society.

"Sir,—I beg to acknowledge receipt of extract from the minutes of the Fruit Committee of the Royal Horticultural Society respecting Clive House Seedling, and

must express my astonishment that the committee should have passed such a minute without first asking from me an explanation of the apparant inconsistency referred to.

"The whole of the seedlings raised by Mr. Bailey were from the same cross—the cross as given by me in my letter to the committee. You may think it paradoxical when I say, in the *Journal of Horticulture*, that it is a foundling, &c., but I hold that the two statements are perfectly reconcileable. The first refers to the origin of my Vine, the second to its immediate relationship to the plants now at Alnwick Castle, as the rest of my letter clearly shows.

"In addition to previous evidence I have now that of Mr. Todd, head gardener at Rawcliffe, Langside, Glasgow, and formerly foreman at Alnwick Castle Gardens, who planted My Vine in question, and testifies that there were no other seedlings than those left by Mr. Bailey, and known as his.

"My explanation then on this point is that my statement about the uncertainty of the parentage and connections had nothing to do with the original production of the seedling, but referred to the immediate source, to the particular plant from which my plant was taken, and its relation to those now being declared to be the same under the absurd title of Caseley's Seedlings.

"As for the name Clive House Seedling, which you may remember I reluctantly gave on the spur of the moment, I have no wish to maintain against the wish of the Committee, if they look upon it as implying—what I have never once pretended—that it was my own raising, and I am quite willing to adopt any name they may suggest, provided it should be free from local or personal bias.

"In closing, I must strongly disclaim the charge of the Fruit Committee, that I withheld the facts as to the origin of the Grape. My readiness to answer all questions, my immediate contradiction in the *Journal of Horticulture* of a groundless claim, and my full statement of the facts of the case, ought to have precluded such a charge; and I trust that the Fruit Committee will see their way to withdraw it, and to place their withdrawal on their minutes.

"I have nothing to conceal. If required, I am prepared to show that I obtained my Vines fairly and openly, and am indebted to no man for them, and that I am not to blame if a mistake was made which put me in possession of this one and has preserved it from destruction. I am the last of unpleasant matters, but I will, if required, defend my own name and property; and I trust that my present silence on personal transactions will not be deemed a withholding of the facts of the case. If the Fruit Committee have any questions to ask, or any suggestion to make, I shall give them my careful consideration.—I am, Sir, &c.,

"D. P. Bell."

Chlidanthus fragrans.—It has often been a source of surprise to us that such difficulty has been experienced in flowering Chlidanthus fragrans, and on mentioning the fact to several well-known bulb cultivators, we were met with the reply that "they had tried all means to induce it to flower without success, and doubted if we should meet with better luck ourselves." We have tried, and, as a proof that we are not boasting, enclose herewith a flower for your inspection, and think you will be delighted with its delicious fragrance. We had a great number planted out with ours during the summer of last year, and these, on the first appearance of frost, were lifted. We selected four strong bulbs from the bulk as an experiment. These were placed in a small open box containing leaf-soil, and placed in the stove. No moisture was given; in fact, they received quite a baking. About the middle of February they were placed singly in pots of loam and sand, watering gradually as growth became apparent. The first flower-spike showed itself a week ago, and it fully opened to-day. The temperature of the house varies from 65° to 70°. It is clear from this experiment that treating the Chlidanthus as a border plant is not its proper mode of culture. We think, however, that if treated as a warm greenhouse plant, and giving it a period of growth and resting similar to the Nerine, that it will prove more easy of flowering. Mrs. Loudon, in the *Ladies' Flower Garden*, gives a plate of it, but it is represented as having an umbel of flowers, while the flower in this case is solitary. She, however, mentions a Clinanthus described by Mr. Herbert from a dried specimen, but which appears to differ from Chlidanthus, the flowers of the latter being twice as large as the former and the limb four times as long. The bulbs of the species we send you were collected by Roezl, in Peru, and it is possible that this may be the Clinanthus spoken of by Mrs. Loudon as not having yet been introduced—we shall be glad of your opinion. *The Nurse Plant and Bulb Company, Colchester.*

[Single-flowered varieties of species usually bearing a truss are not very uncommon, and when it happens the one flower is generally larger, as if by compensation. Eds]

Mice and the Peas.—I have always been troubled with the attack of mice on the earliest Peas, and have constantly made every preparation that I could think of to resist their ravages. Chopping up Gorse, and mixing it along the drills, or spreading ashes, to prevent the mice from destroying the Peas, are both failures, though the black ashes certainly have a tendency, by attracting the sun's rays, to draw the Peas through the ground much earlier and cleaner. I have trapped them in various ways, but the best way to keep mice at bay is to soak the Peas in benzoline or paraffin for a few minutes previous to sowing. Since doing this I have not had the Peas attacked in the slightest way, and even the birds have kept away, while in no respect does the oil have the least effect on the germinating power of the Peas. I should like to hear if any of your correspondents have tried this remedy, and with what results? *H. C. Ogle, The Gardens, Efford Park, Lymington, Hants.*

Desfontainea spinosa.—In answer to your correspondent's question, I have pleasure in telling him what little there is to tell about my Desfontainea. I planted it in the front of a clump of evergreens on my lawn. It is well surrounded by tall Cupressus and Hollies, and faces the south. I gave it good bog soil mixed with some sand. *H.*

Lilium giganteum.—A friend lately brought me from his garden in Norfolk a bulb of Lilium giganteum, and told me how the Lily was grown there. As the treatment is rather different from what I have tried and heard of, and seems to be thoroughly successful, I requested a note of it; this may, I think, be useful to some of your readers. The bulbs were planted at the side of a rich Vine border, which had had a heavy dressing of horse and cow manure. These have grown strongly, have flowered and seeded, while other bulbs planted near, but not in such rank stuff, do not make large bulbs and have not flowered. *George F. Wilson, Heatherbank, Weybridge Heath, March 17.*

Reports of Societies.

Royal Horticultural: *March* 21.—The Treasurer, H. Webb, Esq., in the chair. The only business transacted at the ordinary general meeting was the election of numerous new Fellows. The committee meetings were held in the conservatory, and owing to the very liberal contributions made by several nurserymen the display was an eminently satisfactory one, though we are sorry to have to add that the attendance of visitors was again small.

Scientific Committee. — Dr. Maxwell T. Masters, F.R.S., in the chair.

Secretary to the Committee.—It was announced that Mr. Andrew Murray had undertaken to act as honorary secretary to the committee, in succession to Mr. Moore, Backhouse let it out, obtained a plant of the charming Silene Hookeri imported by them from the Oregon, it struck me as a thing capable of improvement, both in its constitution (for it is not a vigorous plant) and even in the colour of its flowers. If I could effect a cross between it and the scarcely less beautiful Silene Elizabethæ, from the Tyrolese Alps, which, with large rose-coloured and more compact flowers, had a stronger constitution, the being a European species much hardier and better suited to our climate, I accordingly set to work. The cross took, and from the hybridised seeds I succeeded in raising one plant, which partook more of the habit and stature of the male parent, S. Elizabethæ. Of this hybrid I was very desirous to procure seeds, and to this fact I beg to call your attention: I found that with its own pollen it was sterile, yet while the male parent was

for Croton Earl of Derby, also shown at the Royal Botanic Society's exhibition. To Mr. Gilbert, gr., to the Marquis of Exeter, Burghley Park, Stamford, for Primula sinensis Marchioness of Exeter, a very full double variety of great beauty and robust habit, white, and faintly marked with a flesh tint. To Mr. R Dean, Ranelagh Road, Ealing, for Primula purpurea, a showy and distinct hardy species of great merit. To Mr. H. Bennet, The Manor Farm Nursery, Stapleford, for H.P. Rose Duchess of Vallambrosa, a finely-scented pink in the way of Captain Christy or La France, raised by M. Schwartz; and to H. Little, Esq. (Mr. T. Knowle, gr.), Hillingdon Place, Uxbridge, for Cyclamen persicum var. Ruby, a nicely formed flower of a brilliant ruby-red colour. Messrs. Cutbush & Sons also sent several flowering plants each of a dozen sorts of Epacrises; and Mr. J. Aldous, florist, Gloucester Road, contributed a group of decorative plants, bouquets, &c.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair. Mr. Gilbert, gr., Burghley, showed a small collection of vegetables, which included Hawkes' Champion Rhubarb, of useful size and a fine red colour; a dish of Mushrooms, gathered from outside beds; forced Seakale, Canadian Wonder Beans, &c.; and Mr. Batters, gr. to Mrs. Willis Fleming, Chilworth Manor, Romsey, sent an excellent dish of extra early Vermont Potatos, obtained from sets planted on January 1. Mr. Bannister, gr. to G. C. Allhusen, Esq., Stoke Court, Slough, sent samples of the Eclipse Cucumber, a long white-spined variety, very fine in size for the time of year.

Royal Botanic: *March* 21.—The first spring show of this Society was held as usual in the new corridor leading to the conservatory, and notwithstanding the highly unfavourable nature of the weather for bringing out delicate plants it was quite up to the average of the corresponding shows of former years, and indeed as regards the display of spring flowering bulbs was considerably above the average. HYACINTHS formed the principal feature, and we will therefore allude to them first. In the amateurs' class for twelve the competition lay between Mr. James Douglas, gr. to F. Whitbourn, Esq., Loxford Hall, Ilford, Mr. J. W. Moorman, gr. to the Misses Christy, Coombe Bank, Kingston, and Mr. James Weir, gr. to Mrs. Hodgson, The Elms, Hampstead, and the prizes were awarded in the order named, Mr. Moorman running the winner of the first prize very close. The varieties shown by Mr. Douglas were La Grandesse, De Candolle, Macaulay, Charles Dickens, Cavaignac, Grandeur à Merveille, King of the Blues, Solfaterre, Von Schiller, Gigantea, and Vuurbaak, and all were in fine order. In the corresponding class for nurserymen the prizes went in the order stated to Messrs. Barr & Sugden, King Street, Covent Garden, Messrs. Cutbush & Son, Highgate, and Messrs. Osborn & Sons, Fulham; the other competitors being Messrs. James Carter & Co., High Holborn. In some of the collections were fine spikes, so fine as a whole as in the amateurs' class, but included in Messrs. Barr & Sugden's dozen were good representatives of General Havelock, Leviathan, Grand Bleu, Haydn, Czar Peter, La Grandesse, De Candolle, and Macaulay. In the open class for twelve Mr. Douglas showed the pick of his collection, and came in a very good 1st, Messrs. Barr & Sugden being 2d, and Messrs. Cutbush & Sons 3d; and as the class was a good one, extra prizes were awarded to Mr. J. W. Moorman and Messrs. Osborn & Sons. The varieties shown by Mr. Douglas were nearly the same as in the before-mentioned class, but it may be useful as a guide to some to enumerate them; they were—La Grandesse, De Candolle, Koh-i-noor, General Havelock, Fabiola, Baron von Tuyll, Grandeur à Merveille, Ida, Mont Blanc, Von Schiller, King of the Blues, and Vuurbaak. The individual spikes of each were very fine, and indeed there was a good deal of quality in all the groups. By far the largest contribution of Hyacinths was made in the miscellaneous class, which included a splendid group of over 100 plants from Messrs. James Veitch & Sons, Chelsea. The Messrs. Veitch have always done this flower well, but this year they are better than ever, as the collection now under notice amply testified. The varieties most conspicuously represented by noble spikes were Lord Derby, Princess Mary of Cambridge, the largest in the exhibition; Gigantea, General Havelock, Fabiola, La Grandesse, Lothair, La Franchise, Noble par Mérite, a fine double pink; Czar Peter, Grand Bleu, Snowball, Von Schiller, Obelisque, a good single yellow; Grand Lilas, Garrick, Grandeur à Merveille, Gladstone, Masterpiece, the darkest coloured of all Hyacinths, Baron von Tuyll, and Lord Byron. Messrs. Barr & Sugden also came out very strong with a collection of about 150 plants, exceedingly well grown, and very even in quality. The varieties named above were all well represented here, so that we need not give their names again. Messrs. James Cutbush & Son also sent about 100 plants of good quality, and other collections were sent by Messrs. James Carter & Co., and by Messrs Osborn & Sons.

The TULIPS were hardly so good as usual, especially in the larger groups. The best flowers in the classes came from the amateurs', and here again Mr. James Douglas came in 1st, with an excellent dozen, which included such well known varieties as Van der Neer, Keizer's Kroon, Vermilion Brillant, and White Pottebakker. Mr. Moorman was again a close 2d, and Mr. James Weir, 3d. In the nurserymen's class the prize winners were Messrs. Barr & Sugden and Messrs. James Carter & Co., the flowers, as before stated, not being so fine as might have been expected. Collections were also shown by Messrs. James Veitch & Sons, and Messrs. Carter & Co.

Stove and greenhouse plants were shown only by Mr. G. Wheeler, gr. to Sir F. Goldsmid, who took the 1st prize; and the only exhibitor of six forced hardy shrubs was Mr. J. W. Moorman, who also received the highest award. The only half dozen forced Roses staged came from Mr. Turner, and these, which gained the 1st prize, included good well-flowered plants of Celine Forestier, Paul Verdier, Le Mont Blanc, Marquise de Castellane, and Souvenir d'un Ami. Mr. Turner had also a 1st prize for a good half dozen Azaleas, and in another class for amateurs the winners were Mr. Ratty, gr. to R. Thornton, Esq., The Hoo, Sydenham; Mr. James, gr. to W. F. Watson, Esq., Isleworth, and Mr. G. Wheeler. Mr. James was more successful in the six dozen Cut Deutzias, coming in 1st with a very well-flowered group and beating Mr. Douglas, who again staged his admirably grown cylindrically trained plants, which were however not flowered so well as usual. The best half dozen Primulas also came from Mr. James, and a 1st prize was awarded to Mr. R. Dean, Ealing, for an equal number of hardy varieties. With a well-grown and nicely flowered group of a dozen Cyclamens, Mr. James took another 1st prize, the next best group in this class being staged by Mr. C. Edmonds, of Hayes, with six Cyclamens, both were well done. H. Little, Esq., Hillingdon Place, Uxbridge—a well-flowered lot of plants, but wanting in the high finish usually shown in Mr. Little's specimens. Mr. James was 2d, and Mr. H. B. Smith, Ealing Dean, 3d. Capital groups of this fine flower were also staged by Mr. Edmonds and Mr. Smith. Messrs. Barr & Sugden contributed the best dozen pots of Narcissi, very strong plants of Bazelman Major, Newton, Grand Primo, and Gloriosa. Mr. Douglas was an excellent 2d. The last-named gentleman also sent the best six pots of Lily of the Valley; and for a dozen bulbs pans, distinct from any named in the schedule, a 1st prize was awarded to Mr. W. P. Roberts, gr. to W. Terry, Esq., Peterborough House, Fulham, who staged specimens of Muscari, Amaryllis, Scilla, Lachenalia, Triteleia, &c.

In addition to the subjects mentioned above as having been shown in the miscellaneous class, we must mention a group of stove and greenhouse plants from Mr. B. S. Williams; a dozen boxes of cut blooms of Camellias, fine in size, and bright and fresh in colour, from Messrs. W. Paul & Son, Waltham Cross; an attractive group of small well-flowered Clematises from Messrs. Veitch & Sons; and a group of Dielytras from Messrs. James Carter & Co.

Among new plants, florists' flowers were represented in the largest numbers, and Floral Certificates were awarded to Mr. James, gr. to W. F. Watson, Esq., for Cineraria Mary, bright magenta rose; Mrs. Turnell Hughes, bright crimson, with white ring round the disc; Thomas Winter, deep violet-purple; Thomas Stent, magenta-crimson; Purple Gem, a fine shaded purple, with a white circle; Jane, light rose flushed with magenta; and Mrs. Winter, dark velvety purple. These varieties were selected from a group of plants remarkable in all respects for their grand size and quality. Floral Certificates were also awarded to Messrs. Veitch & Sons, for the following new Hyacinths:—Orange Queen, a variety resembling Vuurbaak, but an improvement on that in its larger bells and flatter segments; Marquis of Lorne, a very showy single flower of a distinct and delicate shade of porcelain-blue; Queen of Lilacs, a distinct and very pleasing flower, pink shaded with lilac; and Globosa, a double white variety with enormous and very full bells. All had good well-formed trusses, and are most promising novelties. Similar awards were also made to Mr. Edmonds for Cyclamen roseum grandiflorum, a fine bright rose flower, large in size and of fine form; and for Cyclamen White Swan, the finest pure white we have seen alike in size, form and purity of colour.

Botanical Certificates were awarded to Messrs. Veitch & Sons, for Adiantum æmulum, Croton Earl of Derby, a large trilobed leaved variety, of a bright orange colour, edged with green, the leaf-stalk being pinkish in the centre and yellow at both ends, very distinct; Eurycles australasicus, figured at p. 276; Nephrolepsis Duffi, a most remarkable drooping plant, almost the counterpart of the Athyrium Filix-fœmina Applebyanum, that is, a multifidly divided Fern, with reduced pinnæ; Panax laciniatus, a handsome cut-leaved species from the South Sea Islands, Alsophila philippinensis and A. pycnocarpa. To Mr. B. S. Williams similar awards were made for Panax laciniatus and Dennstadtia davallioides Youngii, described more fully at p. 276 of our present issue; and to Messrs. Rollisson & Sons, Tooting, for Fuhrenea coca, a very distinct species, found on Mount William among the Grampian chain in Victoria, at an elevation of 5000 feet. It is very free-flowering, of good habit, and altogether a most welcome addition to the class of useful hard-wooded exhibition plants.

Manchester Royal Botanical and Horticultural: *March* 20.—This, the first show of the current year, though very pretty in the abundance of the flowers which in early spring deck every greenhouse, was, owing to the sharp frosts of the few preceding days, the reverse of rich in the more dainty kinds of plants; and as for hothouse Orchids, usually so grand a feature in the Manchester shows, they were so scanty as to be summed up on the fingers. Of course it is not to be expected that the owners of costly plants will expose them to the perils of a double journey through an atmosphere of 32°. There is satisfaction, however, in the certain knowledge that but for the cold the Orchids would never have been better. Though there were plenty of plants in the house the connoisseur, it was the presence of the more common subjects that conferred upon the show in question its most interesting complexion. When there are plenty of Primulas, Deutzias, and Polyanthus-Narcissi from gentlemen cultivators, who are the trustees of horticulture, there never need be any fear for the maintenance to the highest point of the first and finest of the fine arts, which is persuading Nature to unfold her most precious secrets of form and colour and flavour in vegetation. The principal exhibitor was Mr. S. Cooper, of Timperley, to whom the Society awarded their silver medal. He filled a large table with the class of plants indicated, and in the aggregate nothing could be more effective. Among these Timperley plants were Acacia grandis and A. pulchella, both most beautifully bloomed, every primula branch a cluster of golden fire, and the foliage providing a most admirable relief. How far more pleasing are plants like these, where the original designs of Nature are faithfully and rationally recognised, than those artificial things got up for effect, like Cinderella's sisters dressed for the ball, the beauty and symmetry of which are furnished by the much maltreated Azalea indica. The next great batch of common things came from the Society's own gardens at Old Trafford, consisting in the main of admirably flowered Hyacinths, with abundant bloom of Astilbe japonica and greenhouse evergreens. The spectacle presented by these was exceedingly pretty. A specialty from the gardens was a very nice Rhododendron Countess of Haddington, of which hybrid the Society possesses four fine specimens. It is one of the Sikkim set, having been originally crossing the argyrophyllum with ciliatum. This beautiful object, so different from Rhododendrons as popularly understood, attracted much attention. Very nice masses of evergreens, of the Palm, Yucca, and Japanese Conifer type, were exhibited by Mr. George Toll, Messrs. G. & W. Yates, and others. The few Orchids in the show consisted almost exclusively of Odontoglossums. How thankful we may be that there are cool Orchids as well as warm ones. Notwithstanding the terrors inspired by the frost in these lovely Odontoglots there was still a display. Exhibitors were Mr. Wm. Leech, of Failsowfield, and Mr. Agnew, of Pendleton. The sorts were Alexandræ, Pescatorei, membranaceum, triumphans, Rossii, Hallii, and one or two others. Mr. K. S. Yates had a nice plant of Cattleya Trianæ, with four splendid blooms. Dr. G. F. Ainsworth showed Dendrobium crassinode, and Professor Williamson sent his Dendrobium Cambridgeanum. The metropolis was represented by Mr. B. S. Williams, who contributed forty-eight of his best Cyclamens and a dozen of his best varieties of Primula. There was plenty, accordingly, to engage the sense of simple admiration. Rarities and novelties will probably take their turn in April. *G.*

Scottish Horticultural Association: *March* 20.—At the adjourned meeting of gardeners, amateurs, and nurserymen, held in the Bible Society's rooms, Edinburgh, on the above date, Bailie Methven in the chair, the minutes of the meeting of the 6th inst., and also of a committee meeting held on the 13th inst., were read, and after careful consideration and discussion, it was unanimously agreed that an Association should be formed for the furtherance of such objects as will tend to the advancement of horticulture in every department. The names of those desiring to join were then enrolled, and it was agreed that these members should constitute the Association; and (1.) That it be called "The Scottish Horticultural Association." (2.) That the chief objects of the Association shall be the furtherance of horticulture gene-

rally by holding meetings at least once a month for the interchange of ideas in gardening matters, and by adopting any other means for the better development of information amongst the members in connection with the objects in view. (3.) That the affairs of the Association be managed by a committee of twelve members, a chairman, vice-chairman, secretary, and treasurer, and that the committee be appointed annually. (4.) That the original member-ship shall consist of those whose names are enrolled at this meeting, and that thereafter members shall be admitted at the monthly meetings on being proposed and seconded by two members, their names having been previously given to the secretary at least eight days before said monthly meeting; and (5) that the annual subscription be *2s. 6d.*, payable in advance. The following members were unanimously appointed a Committee of Management:—Mr. Malcolm Dunn, Dalkeith Gardens, Chairman; Mr. Hugh Fraser, Leith Walk, Vice-Chairman; Mr. John Methven, Leith Walk, Secretary and Convener; Mr. David Laird, West Coates, Treasurer; Messrs. John Cowie, Lauriston Place; Lawrence Dow, Saughton, Hall Gardens; W. W. Johnstone, Bangholme; R. Lindsay, Botanic Gardens; A. McKinnon, Melville Castle Gardens; A. McLeod, Superintendent of Parks and Gardens; Bailie Methven, Edinburgh; Robertson Munro, Abercorn Nursery; David Syme, George IV. Bridge; David Thomson, Waterloo Place; W. M. Welsh, Waterloo Place; W. Young, 33, South Bridge. It was arranged that the next meeting be held in the Bible Society's rooms on the first Tuesday of April, at 8 P.M. Sixty members were enrolled.

The East London Amateur Floricultural Society held its twelfth spring show at the Bow and Bromley Institute, North London Railway Station, on the 20th to 22d inst. inclusive, and in the result the Society has every reason to be gratified, the Hyacinths and Tulips, Spiræas, Lilies, Rhododendrons, &c., having been ably forced and bloomed, and to say the least proved a set off by contrast with shows in more favoured localities. The collections of plants brought together from many singular make-shift sort of places, included some good Palms, fresh and cleanly grown. Many prizes in the more prominent classes had to be divided, so meritorious were the examples. Our wish is that the committee may continue their shows and prosper.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, MARCH 21, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading at 9 A.M. 32° Fahr.	BAROMETER. Departure from Average of 15 years.	TEMPERATURE OF THE AIR. Highest.	TEMPERATURE OF THE AIR. Lowest.	TEMPERATURE OF THE AIR. Range.	TEMPERATURE OF THE AIR. Mean for Day.	TEMPERATURE OF THE AIR. Departure from Average of 15 Years.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Dew Point at 9 A.M.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Humidity. Saturation = 100	WIND. Average Direction.	WIND. Force.	RAINFALL.
	In.	In.	°	°	°	°	°	°				In.
Mar 15	29·604	+ 0·283	52·6	30·5	22·1	41·6	+ 3·6	35·2	73	WNW.	1	0·00
16	29·35	− 0·51	51·4	36·0	15·4	42·3	+ 0·8	31·7	67	WNW.	2	0·00
17	29·43	− 0·41	47·8	29·8	20·0	38·1	− 3·5	32·3	79	SW.	1	0·00
18	29·17	− 0·36	52·0	33·4	21·6	39·6	− 2·1	44·1	81	SW.	0·00	
19	29·36	− 0·46	48·1	28·0	19·1	36·9	− 4·8	34·7	92	NNW.	0·00	
20	29·13	− 0·68	51·7	31·0	19·7	35·3	− 6·1	29·4	78	NE.	0·00	
21	29·22	− 0·58	50·9	30·0	19·0	35·2	− 6·6	32·6	90	NNW.	0·15	
Mean	29·37	− 0·46	51·2	31·0	16·2	38·8	− 2·9	33·0	80	SW.: sum N.	0·22	

March 15—A fine day, cloudy. Little thin rain in evening.
— 16—A very fine day, partially cloudy. Windy.
— 17—A very fine day, cloudy at times. Occasional sleet-drift of hail in afternoon.
— 18—A fine day, partially cloudy. Smart shower of rain at 4.30 P.M.
— 19—A fine day, very cloudy at times. Cool.
— 20—Overcast, dull, cold, and very windy throughout. Frequent sleet after 4 P.M.
— 21—Overcast, dull, and cold, with occasional slight rain till 3 P.M. Fine and bright after. Snow fell at 6 A.M.

LONDON: *Barometer.*—During the week ending Saturday, March 17, in the vicinity of the metropolis, the reading of the barometer at the level of the sea increased from 30.13 inches at the beginning of the week to 30.25 inches by noon of the 11th, decreased to 29.71 inches by the morning of the 12th, increased to 29.95 inches by the morning of the 15th, decreased to 29.52 inches by the afternoon of the 16th, and increased to 29.66 inches by the end of the week. The mean reading for the week at sea level was 29.82 inches, being 0.06 inch below that of the preceding week, and 0.25 inch below the average.

Temperature.—The highest temperatures of the air observed by day ranged from 55½° on the 14th to 42½° on the 11th; the mean value for the week was 50°. The lowest temperatures of the air observed by night ranged from 26° on the 11th to 43½° on the 14th; the mean for the week was 34½°. The mean daily range of temperature in the week was 15½°, the greatest range in the day being 20° on the 17th, and the least 10° on the 13th.

The mean daily temperatures of the air, and the departures from their respective averages, were as follows:—11th, 33°.2, − 7°.5; 12h, 38°.7, − 2°.1; 13th, 44°.5, − 3°.5; 14th, 48°.5 + 7°.3; 15th, 44°.4 + 2°.6; 16th, 42°.3, + 0°.8; 17th, 38°.1, − 3°.5. The mean temperature of the air for the week was 41°.3, being 0°.1 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 120° on the 16th, 108½° on the 11th, and 105½° on the 17th; on the 12th and 13th the reading did not rise above 55°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 23½° on the 14th, and 24½° on the 17th; the mean of the seven low readings was 29¾°.

Wind.—The direction of the wind was S.W., W., and W.N.W., and its strength brisk. The weather during the week was generally fine and seasonable, but the sky cloudy. A little snow and hail fell at times on the 17th inst.

Rain fell on three days during the week; the amount collected was 0.04 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 58½° at Plymouth, and 56½° at Cambridge. At Liverpool 48½° was the highest temperature. The mean value from all stations was 54°. The lowest temperatures of the air observed by night were 24½° at Cambridge, and 26° at Blackheath; at Plymouth 34° was the lowest temperature. The mean from all stations was 29½°. The range of temperature in the week was the greatest at Cambridge, 34½°, and the least at Liverpool and Bradford, both 17°. The mean range of temperature from all stations was 24½°.

The mean of the seven low night temperatures was the highest at Truro, 52°, and the lowest at Bradford, 44°; the general mean from all stations was 48½°. The mean of the seven low night temperatures was the lowest at Blackheath, Wolverhampton, and Cambridge, all 34½°, and the highest at Truro, 43°; the mean value from all stations was 36½°. The mean daily range of temperature was the least at Bradford, 7½°, and the greatest at Blackheath, 15½°; the mean daily range from all stations was 11½°.

The mean temperature of the air for the week from all stations was 41½°, being 3° higher than the value for the corresponding week in 1876. The highest occurred at Truro, 46½°, and the lowest at Wolverhampton, 38½°.

Rain fell on every day in the week at Manchester and Eccles, and on four or five days at most other stations. The amounts measured at the several stations varied from eight-tenths of an inch at Manchester, to four-hundredths of an inch at Blackheath, Brighton, and Leicester; the average fall over the country was three-tenths of an inch.

The weather during the week was generally fine and more seasonable. *Snow* fell generally on the 16th, and *hail* on the 17th.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 59½° at Paisley to 45° at Edinburgh; the mean from all stations was 51°. The lowest temperatures of the air ranged from 22° at Perth to 30° at Leith; the mean value from all stations was 27°. The mean range of temperature in the week from all stations was 24°.

The mean temperature of the air for the week from all stations was 40½°, being 5½° higher than the value for the corresponding week in 1876. The highest was 41°, at Perth, and the lowest, 39½, at Greenock.

Rain fell at Greenock to the amount of 1¼ inch, but at Dundee and Perth one-tenth of an inch only was measured; the average fall over the country was ½ inch nearly.

DUBLIN.—The highest temperature of the air was 58°, the lowest was 31°, the range was 27°, the mean was 44°, and the fall of rain was 0.13 inch.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—BACON.

176. SQUIRRELS.—In the last volume of your journal you had much information on the subject of squirrels. The *Daily News* of March 20 has:—"Young squirrels can be found just now in the nests, which are called 'drays.' This is important information for the proprietors of woods and Fir plantations, where the squirrels sometimes do much and serious mischief to the trees." Will you, or some of your correspondents, kindly direct my search after "drays," by informing me in what situations, on what trees, and in what position on a tree a "dray" is likely to be found? and by any further information that his experience can suggest. *Quack.*

Answers to Correspondents.

APPLE TO NAME: *C. B. & Co.* It is impossible to name the Apple so late in the season, and especially as it was bruised and decaying when it arrived, as is the case, more or less, with all Apples at this season.

ARBUTUS: *D. C., Ashfield.* The Arbutus is not dicocious. The spray sent was one of *A. Unedo.* The corolla, with the stamens, had fallen away, and the fruits only contained imperfect ovules. There is a hybrid between this and *A. Unedo* which is said rarely to perfect its fruit. Your plant may be of that variety; or is the climate too severe?

CRICKET GROUND: *S. M.* In your case the ashes would serve no useful purpose. Level the ground by all means, but it must be done soon.

FORCED LILAC: *Mr. L.* The practice of forcing the Lilac in a Mushroom-house to get white flowers is well-known to most gardeners, and to French gardeners especially.

NAMES OF PLANTS: *J. C.* A Tillandsia, of the small group called called Wallisia by Regel, to which belong Xiphioides and Lindeni. Likely an undistributed species, but cannot be sure without seeing a complete specimen, and "South America" is too vague a locality, for there are perhaps 100 species, nearly all South American.—*S. Hull.* Your plant looks like Ilex perado, but there are no flowers to enable us to make certain of it.—*Mary E. T.* Chorozema cordatum.—*J. R. M.* Probably Mentha Pulegium. Send it when in flower.—*Engineer.* Tamus cerasifera.—*A Constant Reader, Cork.* Erica carnea and Primula denticulata var. erosa.—*R. Grigor.* 1, not found; 2, Goniophlebium appendiculatum; 3, Pleopeltis pustulata; 4, Cheilanthes hirta; 5, Nyphobolus lingua; 6, immature; 7, Pleopeltis muscefolia; 8, Cyrtomium caryotideum; 9, Lomariopsis heteromorpha.—*C. Gibson.* Pulmonaria officinalis.

ONCIDIUM ALTISSIMUM: *A. G.* This is a strong-growing but common and inferior species.

PEACH BLOSSOM WITH TWO STYLES: *W. G.* Not very uncommon. The normal number should be five, but these are usually reduced to one, or, as in your case, to two.

PLANT FOR A COOL CONSERVATORY: *A. R. P.* A Palm such as Seaforthia elegans would be the most suitable; but should this be too expensive, any of the following would answer:—Araucaria excelsa, the Norfolk Island Pine, Rhopala corcovadense, Bambusa arundinacea, Dracæna indivisa, Ficus elastica, one of the Himalayan Rhododendrons, or a Camellia.

SOOLEY QUA CUCUMBER: *Ted.* Sow at once, and grow it in the same way as other Cucumbers.

SPARRMANNIA AFRICANA: *E. G.* This plant is indigenous to the Cape, so consequently a greenhouse temperature is what it requires; the soil also described will do for it. I should suppose that the reason of only a portion of the shoots blooming is because they alone are yet strong enough. I have no doubt, as the plants get older, the whole will flower. I should advise their receiving plenty of root-room, for if allowed sufficient room they will attain a height of 10 feet or 12 feet. If after a time it is found inconvenient to give them more root-room, I should recommend two or three applications yearly of Standen's manure during the growing season, giving about three tablespoonfuls each time to an 18-inch or 20-inch pot. *T. B.*

VARIATION IN PRIMROSE: *A. C. Haden.* None whatever.

VINE LEAVES: *Bob.* The leaves you sent, being too young, were quite dried up when received. We imagine your Vine is a good deal out of health, which is the cause of the want of colour in the leaves. We can only recommend you to make it grow more vigorously. The side-shoots, for permanent spurs, should be left at about 20 inches apart.

VINES: *North.* It will be better to graft your Vines than to plant young ones, or you may take up side-shoots from one of the others, and cut the offending ones out entirely. You will find Mrs. Pearson and Golden Queen two of the best white Grapes that will do to graft.

WOODLICE: *H. H.* Pour scalding hot water into their runs or haunts, or trap them in hay and then kill them with hot water. If you will persevere with this plan, your houses will soon be free from their presence.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders, payable at the post-office, King Street, Covent Garden, London, are requested to be good enough to write to the Publisher, at the office of this paper, 41, Wellington Street, Covent Garden, at the same time, to inform him of the fact.

COMMUNICATIONS RECEIVED:—J. W., Gordon Castle (many thanks).—J. G. B.—New Plant Co.—E. F.—K., K.—J. W.—A. F.—H. J. C. G. (next week).—R. M.—H. H. C.—A. D. R.—E. M.—J. A. S.—M. E. P.—J. R. M.—J. L. P.—P. H. G.—C. R.—W. R.—Thrum Eye.—J. S.—W. Scott.—J. Harris (many thanks).—T. M.—Rusticus.—H. B. M.—J. S. L.—E. W. G.—F. J. H.—W. G.—D. T. F.—C. H. J.—Sub.—P. G.—R. M.—T. K.—J. W.

Markets.

COVENT GARDEN, March 22.

Few samples of good late Grapes are now coming, consequently prices are much enhanced. Strawberries are quite equal to the demand, and are realising same prices as last week. Forced vegetables are in good request, and, with the exception of Cucumbers and new Potatos, are making higher rates. We are still well supplied with St. Michael Pines, at an advance of 3s. on previous quotations. *James Webber, Wholesale Apple Market.*

VEGETABLES.

	s. d.	s. d.
Artichokes, per bush.	4 0 ..	Horse Radish, p. bun.	4 0 ..
— Egg Globe, doz.	4 0 ..	Leeks, per bunch ..	2 0 .. 0 4
Asparagus, Fr., bun.	20 0 ..	Lettuces, Fr., p. doz.	1 0 .. 2 0
— English, p. bun.	8 0 .. 10 0	— Cos, per doz.	6 0 ..
— Fr., natural, bun.	4 0 ..	Mint, green, bunch	0 .. ..
— Sprue, per bun.	1 6 ..	Mushrooms, per pott.	0 6 .. 1 6
Beans, French (new), per 100	2 0 .. 2 6	Onions, per bush. ..	5 0 .. 8 0
— French, Long-pod, ½-bushel	8 0 ..	— Spring, per bun.	0 .. 0 0
Beet, per doz.	1 0 .. 2 0	Parsley, per bunch.	0 4 ..
Brussels Sprts. bush.	7 0 ..	Peas, green, per bush.	0 .. 0 0
Cabbages, per doz.	1 0 .. 2 0	— shelled, per qt.	3 0 ..
Carrots, per bunch..	0 6 ..	Potatos, new, per lb.	0 0 .. 2 0
— New Fr., p. bun.	2 0 ..	Radishes, per bunch	0 1 .. 0 2
Cauliflowers, per doz.	2 0 .. 4 0	Rhubarb, per bundle	1 0 ..
Celery, per bundle..	1 6 .. 2 0	Salsafy, per bundle	1 0 ..
Chilis, per 100 ..	3 0 ..	Shallots, per punnet	2 0 .. 3 6
Cucumbers each ..	0 6 .. 2 0	Spinach, per bushel	3 0 .. 5 0
Endive, per doz. ..	1 0 .. 2 0	Tomatas, per doz. ..	2 0 .. 6 0
— Batavian, p. doz.	2 0 .. 3 0	Turnips, per bunch	0 4 .. 0 6
Garlic, per lb.	0 6 ..		
Herbs, per bunch	0 2 .. 0 4		

Potatos.—Kent Regents, £5 to £6; Essex Regents, £4 10s. to £5; Kidneys, £8 per ton.

FRUIT.

	s. d.	s. d.
Apples, per ½-sieve	3 0 .. 8 0	Peaches, per doz. ..	0 0 .. 0 0
Cobs, per lb.	1 0 .. 1 6	Pears, per doz. ..	2 0 .. 12 0
Grapes, per lb. ..	8 0 .. 16 0	Pine-apples, per lb ..	2 0 .. 5 0
Lemons, per 100 ..	4 0 .. 10 0	Strawberries, p. oz.	1 6 .. 2 0
Oranges, per 100 ..	9 0 .. 10 0		

PLANTS IN POTS.

	s. d.	s. d.
Azaleas, per dozen ..	24 0 .. 60 0	Hyacinths, per doz.	8 0 .. 18 0
Begonias, per doz. ..	6 0 .. 12 0	Hydrangea, per doz.	18 0 .. 30 0
Bouvardias, do. ..	12 0 .. 24 0	Lily of Valley, each	1 0 .. 5 0
Cineraria, per doz. ..	9 0 .. 18 0	Mignonette, per doz.	6 0 .. 9 0
Coleus, per dozen ..	3 0 .. 9 0	Myrtles, do. ..	3 0 .. 9 0
Crocus, per dozen ..	3 0 .. 9 0	Palms in variety, each	3 6 .. 21 0
Cyclamen, per doz. ..	12 0 .. 30 0	Pelargoniums, scarlet, per doz. ..	6 0 .. 12 0
Cyperus, do. ..	6 0 .. 12 0	Primula sinensis, dbl.	4 0 .. 9 0
Dracæna terminalis	30 0 .. 60 0	Richardia æthiopica, per doz. ..	9 0 .. 18 0
— viridis, per doz.	18 0 .. 24 0	Solanums, per doz.	6 0 .. 9 0
Ferns, in var., p. doz.	6 0 .. 30 0	Spiræa, per doz. ..	12 0 .. 30 0
Ficus elastica ..	2 6 .. 5 0	Tulips, per dozen ..	6 0 .. 18 0
Fuchsias, per dozen..	9 0 .. 18 0	Valotta purpur., doz.	12 0 .. 18 0
Heaths, variety, doz.	9 0 .. 24 0		
Heliotrope, per doz.	6 0 .. 12 0		

CUT FLOWERS.

	s. d.	s. d.
Azaleas, 12 sprays ..	0 6 .. 2 0	Lily of the Valley, 12 sprays ..	2 0 .. 4 0
Beauvardias, per bun.	1 0 .. 4 0	Mignonette, 12 bun.	4 0 .. 9 0
Camellias, 12 blooms	2 0 .. 9 0	Narcissus, 4 sprays	0 6 .. 1 0
Carnations, per dozen	1 6 .. 4 0	Pelargoniums, 12 spr.	1 6 .. 3 0
Crocus, 12 bunches ..	2 0 .. 6 0	— zonal, 12 sprays	0 9 .. 3 0
Cyclamen, per doz..	0 3 .. 0 9	Primroses, per doz.	1 0 .. 3 0
Daffodil, dbl., 12 bun.	4 0 .. 9 0	Primula, dbl., p. bun.	1 0 .. 2 0
— single, 12 bun. ..	2 0 .. 9 0	Roses, indoor, p. doz.	2 0 .. 6 0
Epiphyllum, 12 blms.	1 0 .. 3 0	Spiræa, 12 sprays ..	1 0 .. 4 0
Euchasis, per doz. ..	6 0 .. 12 0	Stephanotis, 12 spr.	9 0 .. 15 0
Euphorbia, 12 sprays	2 0 .. 9 0	Tropæolum, 12 bun.	2 0 .. 6 0
Gardenia, per doz. ..	9 0 .. 18 0	Tulips, per dozen ..	1 0 .. 2 6
Heliotrope, 12 spr.	0 6 .. 1 0	Violets, 12 bun. ..	0 9 .. 4 0
Hyacinths, p. dozen	2 6 .. 6 0	Wallflowers, p. doz.	0 0 .. 0 0
— Roman, 12 spr.	1 0 .. 4 0		

* * *These prices will range higher during Easter week.*

SEEDS.

LONDON: *March 21.*—We have to report an improved inquiry for farm seeds, which, with a continuance of favourable weather, would develope into a brisk demand. For all the leading varieties the prices show this week no alteration. In the absence of further supplies, the moderate stocks held in London are of course being reduced by every order which comes to hand. The recent exports of American seed from London to the Continent have also tended to lighten our market. Nearly all the home-grown samples of red Clover which now find their way to Mark Lane are brown and weathered. In Trefoils a good business has been doing at the moderate currencies now ruling. Alsike and white Clover seed steady alike in value and demand. Rye-grasses have met a lively request, under the influence of which better prices are obtained. For Sanfoin there is a fair sale at last week's quotations : this article when milled experiences every year increased favour. Spring Tares find buyers at Monday's figures. Canary seed is held on former terms : the demand continues extremely meagre. For feeding Linseed the trade is also very dull. Lacerne meets with cheap attracts notice. Other articles, in the present quiet state of the seed trade, call for no remark. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

POTATOS.

The Borough and Spitalfields markets reports state that there has been a quiet sale for Potatos, and prices have scarcely varied, the arrivals continuing on a moderately extensive scale. Kent Regents, 85s. to 110s. per ton ; Essex do., 80s. to 100s. ; Scotch do., 95s. to 105s. ; rocks, 65s. to 90s. ; flukes, 120s. to 160s. ; Victorias, 100s. to 150s.—The imports into London last week comprised 21,322 bags from Hamburg, 16,395 Antwerp, 1797 Bremen, 1503 Brussels, 580 Rouen, 403 Rotterdam, 1098 Harlingen, 130 casks 98 barrels Malta, 240 sacks Boulogne, 159 bags Dantzic' and 115 Ghent.

Special Offer.

SEED POTATOS, warranted True and Free from Disease. In cwt. bags.
RED-SKINNED FLOURBALL, 8s. per cwt.
JERSEY BLUE, 8s. per cwt.
REGENTS. Improved, 8s. per cwt.
DUTCH RED, 8s. per cwt.
EARLY ROSE, 12s. per cwt.
SNOWFLAKE, 24s. per cwt.
EARLY ONONDAGA, 10s. per cwt.
Fifty other sorts in stock.

Nett prices for cash with order. No charge for bags, and delivered free on Rail, Norwich.

DANIELS BROS., Norwich.

Presented (by post) on application,
NEW CATALOGUE for 1877.

MESSRS. CLIBRAN AND SON will have great pleasure in sending their PRICED DESCRIPTIVE LIST for this Spring, free by post on application. Their stock of Florist Flowers, Bedding and Soft-wooded Plants generally, are surpassed by few, if any, either in extent or quality, all the finest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to Purchasers is that none of the plants offered are taken directly from a warm propagating house and sent off, but are all carefully hardened and inured to the potted off singly, and are thereby fitted to travel either by rail or post without the slightest injury. A great proportion are autumn-struck plants, and are thus rendered independent of heat by post :—

Abutilons, in variety, 3s. 6d. per dozen.
Achimenes, in variety, 3s. per dozen.
Ageratums, in variety, 8s. per 100, 2s. per dozen.
Begonias, tuberous, 6s. and 9s. per dozen.
— herbaceous, 4s. per doz.
Caladiums, 12s. per dozen.
Calceolarias, Golden Gem, &c., 6s. per dozen.
Camellias, 30s. and 42s. per dozen.
Carnations and Picotees, 12 plants, 6s. ; 12 pairs, 10s. 6d.
Carnations, tree, in variety, 9s. per dozen.
Centaurea ragusina, 3s. per dozen.
Chrysanthemums, near 10,000 now ready, 20s. per 100, 3s. per dozen.
Cineranas, 4s. per 100, 6s. per dozen.
Coleus, in variety, 20s. per 100, 3s. per dozen.
Clematis, in variety, 6s. 6oz. per 100, 9s. per dozen.
Cyclamens, in variety, 6s. and 9s. per dozen.
Dactylis glomerata, 5s. per 100, 1s. per dozen.
Dahlias, 25s. per 100, 4s. per dozen.
Delphiniums, splendid sorts, 9s. to 12s. per dozen.
Epiphyllum, 9s. to 18s. per dozen.
Ferns, stove and greenhouse, 9s. to 18s. per dozen.
Fuchsias, 20s. per 100, 3s. per dozen.
Gardenia florida, 6s. to 12s. per dozen.
Geraniums, Plants, 9s. to 18s. per dozen.
Geranium, Tricolor, 3s. 6d. per dozen.
Ferns, stove and greenhouse, 9s. to 18s. per dozen.
Fuchsias, 20s. per 100, 3s. per dozen.
Gardenia florida, 6s. to 12s. per dozen.
Geraniums, Plants, 9s. to 18s. per dozen.
Geranium, Tricolor, 3s. 6d. per dozen.
Gnaphalium, 12s. per 100.
Epiphyllum, 9s. to 18s. per dozen.
Ferns, stove and greenhouse, 9s. to 18s. per dozen.
Fuchsias, 20s. per 100, 3s. per dozen.
Gardenia florida, 6s. to 12s. per dozen.
Geraniums, Plants, 9s. to 18s. per dozen.
Geranium, Tricolor, 3s. 6d. per dozen.
Gnaphalium, 12s. per 100.
Heliotrope, 12s. per 100, 2s. per dozen.
Helianthemums, 2s. 6d. per dozen.
Helichrysum, 12s. per 100.
Heliotropes, in variety, 2s. 6d. per dozen.
Herbaceous Plants, 20s. per 100, 3s. per dozen.
Heliotropes, in variety, 2s. 6d. per dozen.
Herbaceous Plants, 20s. per 100, 3s. per dozen.
Hepaticas, 4s. per dozen.

The Oldfield Nurseries, Altrincham.

SURPLUS NURSERY STOCK.

TAMARIX, two sorts, 2 to 3 feet, 12s. 6d. per 100
PRIREA FORTUNEI, 12s. per 100
FUCHSIA GRACILIS, 20s. per 100
VINCA ELEGANTISSIMA, 15s to 25s. per 100
PINUS INSIGNIS, 6 to 12 inches, 20s. per 100
BERBERIS DARWINII, 1½ to 2 feet, 16s. per 100 ; 2 to 3 feet, 30s. per 100
COTONEASTER MICROPHYLLA, 2 to 3 feet, 16s. per 100
BUDDLEA GLOBOSA, 2½ to 4 feet, 16s. per 100
GRACILARIA INDICA, about 1½ foot, 12s. per 100, 2s. per dozen ; stronger, 30s. per dozen
CISTUS, strong, many sorts, 4s. per dozen
CLIANTHUS PUNICEUS, strong, 9s. to 12s. per dozen
CEANOTHUS, many sorts, 6s. to 12s. per dozen
MUHLENBECKIA COMPLEXA, 6s. to 12s. per dozen
POPLAR, Lombardy, 3 to 4 feet, 35s. per 1000
" Canadian, 4 to 5 feet, 35s. per 1000 ; 5 to 6 feet, 50s. p. 1000
" macrophylla, 3 to 6 feet, 50s. per 1000 ; 6 to 10 feet, 10s per 100
PRIVET, Evergreen, 3 to 4 feet, 30s. per 1000
SYCAMORE, 3 to 4 feet, 30s. per 1000
RODGER MCCLELLAND AND CO. 64, Hill Street, Newry.

RHODODENDRON PONTICUM, 500,000, all twice or thrice transplanted, bushy plants :—
4 to 6 inches, 10s. per 100, £4 per 1000.
6 to 9 inches, 12s. per 100, £5 per 1000.
9 to 12 inches, 15s. per 100, £7 per 1000.
12 to 15 inches, 18s. per 100, £9 per 1000.
15 to 18 inches, 20s. per 100, £10 per 1000.
RHODODENDRON HYBRIDUM, 300,000, bushy plants:—
4 to 6 inches, 15s. per 100, £7 per 1000.
6 to 9 inches, 18s. per 100, £9 per 1000.
9 to 12 inches, 25s. per 100, £11 per 1000.
12 to 15 inches, 27s. 6d. per 100, £12 per 1000.
15 to 18 inches 30s. per 100, £14 per 1000.
18 to 24 inches, 35s. per 100, £16 per 1000.
See CATALOGUE.
JAMES SMITH, Darley Dale Nurseries, near Matlock.

From Paris.—Roses, Fruits, Camellias.

LÉVÊQUE AND SON, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand ROSE TREES, Standards, Half-standards, Dwarfs, and on own root—New and Old sorts.

LEVÊQUE AND SON respectfully solicit Gentlemen and Nurserymen visiting Paris to inspect their Stock, the largest in Paris.

SPLENDID PYRAMID CAMELLIAS, price 12s. to 50s. each ; small, 2s. 6d. to 10s.

CATALOGUES and LISTS on application.

From Paris.—Large Bulbs of Gladioli, Seedlings AND NAMED SORTS.

LÉVÊQUE AND SON, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand strong, healthy Flowering BULBS of GLADIOLI. The Seedling Bulbs are particularly recommended—their flowers equal to the named sorts (seeds have been taken from the best sorts of the collection). GLADIOLI, Seedlings, 8s. per 100, £3 per 1000, £26 per 10,000 ; mixed white, red, pink. Separate colours, 12s. to 20s. per 100 ; yellow, 24s. per 100. Named sorts per 100, 10 sorts, 10s. ; 25 sorts, 20s. ; 50 sorts (50 sorts best), from 30s. to £6, less or more, according to the novelty. All good flowering bulbs. English Cheques on London, or Post-office Orders on Paris, accepted in payment.

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18s. to 30s. per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or £5 per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded, £5 to £7 10s. per 100, or 18s. per dozen.

ANTHONY WATERER,
KNAP HILL NURSERY, WOKING, SURREY.

NEW PLANTS
FOR MAY 1877.

FRINGED PELARGONIUM, ROYALTY.
10s. 6d. each.

PICOTEE, PRINCESS OF WALES,
5s. each.

Orders are now being booked, and will be sent out on and after May 1.

FREDERICK PERKINS,
NURSERYMAN,
REGENT STREET, LEAMINGTON.

Pelargonium " Wonderful " (George Smith's).

GEORGE SMITH has again much pleasure in offering this most popular and successful flower. Having received most pleasing accounts from all parts of the country, G. S. can confidently recommend it as the finest Geranium ever offered, it having no equal for bedding or pot culture, being a very free bloomer, colour a brilliant orange-scarlet, and the petals not falling makes it a grand acquisition ; the flowers fine in shape, and will be used in the choicest bouquet where no other variety can find a place. It has taken six First-class Certificates, and highly recommended by the floral Press. Prices : 12s. per dozen ; selected, 18s. per dozen ; stronger, 24s. per dozen. Special prices for larger quantities on application.

" EVENING STAR " (George Smith's).—This new and beautiful flower is most attractive and unique, having a white ground with large pink eye, giving it a very striking appearance ; the flower is of great substance, smooth, and a fine truss ; the foliage a light zone, and plant of good habit. This is in every way a first-class flower, and no collection will be complete without it. It has taken 2 First-class Certificate. 21s. 6d.

" DREADNOUGHT " (George Smith's).—A most distinct and beautiful variety, colour rich peach-blossom, with white eyes ; the colour is particularly rich and fine, the pips are huge, with fine truss : a very free bloomer, and good habit. It is in every way first-class, and will prove a great acquisition. 21s. 6d.

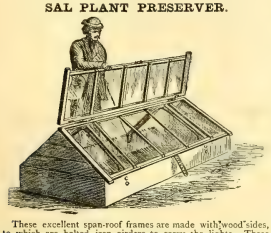
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Tollington Nursery, Hornsey Road, Islington, N.

BOULTON & PAUL, NORWICH,

HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MAKERS.

No. 60.—PATENT PORTABLE UNIVERSAL PLANT PRESERVER.

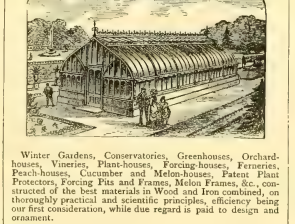


These excellent span-roof frames are made with wood sides, to which are bolted iron girders to carry the lights. These lights will turn completely over and lie on the other side while attending to the plants inside. They are very portable; a man can easily remove the small size, two men can carry any size up to 12 feet by 4 feet. The use to which they may be applied is unlimited, as almost any class of plants can be grown in them.

CASH PRICES—Carriage Paid on Orders of 40*s.* and upwards.

Painted 4 times, and glazed with 21-oz. glass.

Length.	Width.	Height to sides.	Height to ridge.	£	s.	d.	Ends per pair.
6 feet	2 feet	9 inches	1 ft. 3 in.	1	5	0	5/- extra
12 ,,	,,	,,	2 10	0	5	0	,,
6 ,,	3 feet	,,	1 ft. 9 in.	1	15	0	7/- ,,
12 ,,	,,	,,	,,	3	5	0	7/- ,,
6 ,,	4 feet	,,	2 ft. 0 in.	2	0	0	8/6 ,,
12 ,,	,,	,,	,,	4	4	0	8/6 ,,
12 ,,	5 feet	11 inches	2 ft. 6 in.	5	10	0	10/6 ,,
12 ,,	6 ,,	,,	3 ft. 0 in.	7	0	0	12/0 ,,



Winter Gardens, Conservatories, Greenhouses, Orchard-houses, Vineries, Plant-houses, Forcing-houses, Ferneries, Peach-houses, Cucumber and Melon-houses, Patent Plant Protectors, Forcing Pits and Frames, Melon Frames, &c., constructed of the best materials in Wood and Iron combined, on thoroughly practical and scientific principles, efficiency being our first consideration, while due regard is paid to design and ornament.

Gentlemen waited upon and advised as to the best method of arranging Horticultural Buildings of every description.

Designs prepared, Plans and Estimates furnished, **Architects' Designs** carried out, **Hot-water Apparatus** of all descriptions on the best system erected and guaranteed to work in the most satisfactory manner. Estimates on application.

Boilers.—A great variety of the best Hot-water Boilers and Stop-valves kept in stock. Illustrated Price Lists free on application.

A new **Catalogue** of Horticultural Buildings post-free for 24 penny stamps, the cost of which will be deducted from the amount of first order. Ready March 1, 1877.

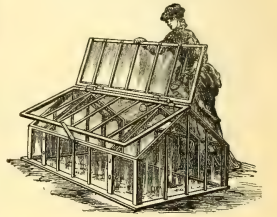
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Melon Frames and **Forcing Frames.**—The largest stock in the kingdom. Price Lists free on application.

No. 62.—PLANT CASES.

These neat and ornamental frames will be found useful to place on a Lawn or Terrace, or may be used for a Fern Case indoors. The larger sizes make excellent Vineries: in No. 6 size 12 to 18 lb. of Grapes may be grown. Made of the best material, painted four coats, glazed with best 21-oz. sheet glass. Any size can be put together in a few minutes, and is then ready for use. All sizes are 2 feet high at the sides.

For LARGER SIZES see SPECIAL LIST.

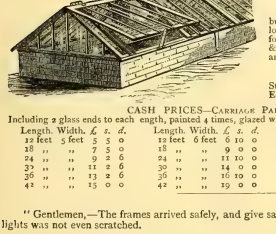


CASH PRICES—Carriage Paid.

	Length.	Width.	£	s.	d.
No. 1	.. 5 feet	.. 2 feet 6 inches	.. 3	5	0
No. 2	.. 5 feet	.. 3 feet	.. 3	10	0
No. 3	.. 6 feet	.. 3 feet	.. 3	17	6
No. 4	.. 6 feet	.. 4 feet	.. 4	5	0
No. 5	.. 9 feet	.. 4 feet	.. 6	5	0
No. 6	.. 9 feet	.. 5 feet	.. 7	0	0

Nos. 1 and 2 made with bottoms and zinc trays for planting Ferns; extra for No. 1 size, 12*s.* 6*d.*, No. 2 size, 15*s.*

No. 64.—PATENT PLANT PRESERVERS, ARRANGED TO BUILD ON BRICK WALLS.



This is the Practical Gardener's and Nurseryman's favourite frame, now largely used for storing the great quantities of bedding plants in winter, and in summer for growing Melons, &c. This is made for building on brickwork, as shown by section of No. 64.

Section No. 64 shows the frame built on brickwork, with a pit sunk low enough for making a dung bed for growing Cucumbers, Melons, &c. This form can be made up to any length required.

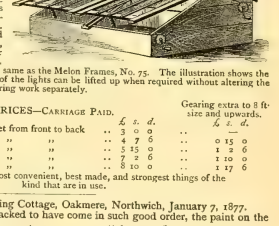
Carriage paid to any Railway Station in England, also to Dublin, Edinburgh, and Glasgow.

CASH PRICES—Carriage Paid.

Including 2 glass ends to each length, painted 4 times, glazed with 21-oz. glass. Carriage paid.

Length.	Width.	£	s.	d.	Length.	Width.	£	s.	d.	Length.	Width.	£	s.	d.
12 feet	5 feet	5	5	0	12 feet	6 feet	6	10	0	12 feet	7 feet	8	0	0
18 ,,	,,	7	5	0	18 ,,	,,	9	0	0	18 ,,	,,	11	0	0
24 ,,	,,	9	2	6	24 ,,	,,	11	12	0	24 ,,	,,	14	0	0
30 ,,	,,	11	2	6	30 ,,	,,	14	0	0	30 ,,	,,	17	0	0
36 ,,	,,	13	2	6	36 ,,	,,	16	10	0	36 ,,	,,	20	0	0
42 ,,	,,	15	0	0	42 ,,	,,	19	0	0	42 ,,	,,	23	0	0

No. 74.—NEW THREE-QUARTER SPAN-ROOF GARDEN FRAME.



Our illustration shows a New Frame for growing Cucumbers, Melons, &c., and for storing plants. It is made to give greater height and more convenience than the Melon frame, No. 75. The front is 12 in. high, without the light, 32 in. high at the ridge, and 22 in. high at the back. The front lights can be turned back on the lights behind, and back lights turned on to the front lights, giving access to all the plants inside. They are made of the best red deal, sides and ends 1⅛ in. thick, 9 in. lights; all are painted four times, and glazed with 21-oz. sheet glass, nailed and putted in, same as the Melon Frames, No. 75. The illustration shows the lights to open with gearing; any of the lights can be lifted up when required without altering the other lights. Back and front gearing work separately.

CASH PRICES—Carriage Paid.

Gearing extra to 8 ft. size and upwards.

	£	s.	d.		£	s.	d.
No. 1 size, 4 feet long, 6 feet from front to back	.. 3	0	0	..	—		
No. 2 ,, 8 ,, 6 ,, ,,	.. 4	7	6	..	0	15	0
No. 3 ,, 12 ,, 6 ,, ,,	.. 5	15	0	..	1	2	6
No. 4 ,, 16 ,, 6 ,, ,,	.. 7	2	6	..	1	10	0
No. 5 ,, 20 ,, 6 ,, ,,	.. 8	10	0	..	1	17	6

These frames are the most convenient, best made, and strongest things of the kind that are in use.

"Gentlemen,—The frames arrived safely, and give satisfaction. I would not have thought they could have been packed to have come in such good order, the paint on the lights was not even scratched. "I remain, gentlemen, your humble servant, "Albert Laing, Gardener.

"Hunting Cottage, Oakmere, Northwich, January 7, 1877.

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Packing Cases are charged, and half of the cost allowed if they are returned in good order, carriage paid, to our Works, within a month of delivery of the frame.

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BEECH, 4 to 5 feet, 10s. per 100, £4 per 1000 ; 5 to 6 feet, 20s. per 100 ; 6 to 8 feet, 30s. per 100 ; 8 to 10 feet, 50s. per 100.
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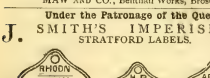
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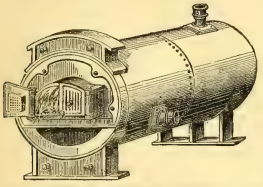
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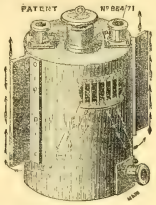
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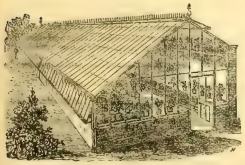
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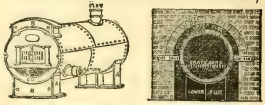
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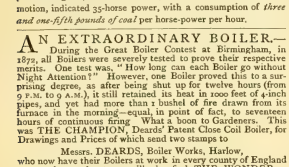
AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of *three and one-fifth pounds of coal* per horse-power per hour.

AN EXTRAORDINARY BOILER.—During the Great Boiler Contest at Birmingham, in 1877, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 1000 feet of 4-inch pipes, and yet had more than 1 bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners. This was THE CHAMPION, Deards' Patent Close Coil Boiler, for Drawings and Prices of which send two stamps to

Messrs. DEARDS, Boiler Works, Harlow,

who now have their Boilers at work in every country of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz. that the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	11	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

Larger sizes if required.

From MR. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May 29, 1873.*

"Having given your Patent 'Double L' Boilers a fair trial a my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

When ordering Boilers please refer to the above advertisement.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.

TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3d. per yard, or 100 yards, 20s.; 4 yards wide, 6d. per yard, or 50 yards, 20s.

NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 12. per yard; 1¾-inch mesh, 4 yards wide, 12. 6d. per yard.

TIFFANY, 6d. 6d. and 7s. 6d. per piece of 20 yards.

EATON AND DELLER, 6 & 7, Crooked Lane, London Bridge.

RALPH WALLER AND CO., 45, Dale Street, Manchester, Manufacturers of all kinds of GARDEN NETTING, &c., for protecting Fruit Trees from Frost; also

FRIGI DOMO, 2 yards, 4 yards, and 3 yards wide.

HOTHOUSE SHADINGS of various thicknesses, superior to any other yet discovered for lightness, strength, and durability, standing, as they do, all weathers.

TIFFANY of various kinds always on hand. Netting and Shading in pieces 30 yards long by 1½ yard wide. Tiffany in pieces 20 yards long, 38 inches wide. Also Tiffany in mineralised state.

For prices, &c., apply to the above address—

45, Dale Street, Manchester,

Established over a Quarter of a Century.

FRANCIS MORTON & Co's (LIMITED) LIVERPOOL NAYLOR STREET CABLE FENCING

Is in use over many thousand miles,

And has been awarded the Medals and highest Commendation of all the leading Agricultural Societies.

It is constructed with

FOWERFUL WINDING STRAINING PILLARS, RIGID INTERMEDIATE IRON POSTS, STRONG and DURABLE WIRE CABLE STRANDS, Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

Continuous Bar Iron Fencing,



With bars secured by F. M. & Co.'s Patent Self-locking Joints, which effectually prevent the uprights being pushed aside, and are independent of loose pins, wedges, or staples.

IRON ENTRANCE and FIELD GATES, IN WROUGHT AND CAST IRON,

Designed for the Mansion, Villa, or Farm,

WICKET AND GARDEN GATES,
In Great Variety of Patterns.

Iron Hurdles, Railing, Tree Guards,
FRUIT ESPALIERS, WALL FRUIT TRAINERS, &c.

☞ *Illustrated and Described in F. M. & Co.'s New Catalogue, forwarded on application.*

LONDON BRANCH:

1, DELAHAY ST., WESTMINSTER, S.W.

R. H. HAMPSON, Egerton Mills, Stockport, Manufacturer of HORTICULTURAL SHADINGS for protecting Wall Trees from Frost and Insects, &c. 54 and 60 inches wide, any length up to 100 yds. Prices on application.

E. T. ARCHER'S "FRIGI DOMO."—Patronised by Her Majesty the Queen, for Windsor Castle and Frogmore Gardens, the late Sir J. Paxton, and the late Professor Lindley, &c.

MADE of PREPARED HAIR and WOOL.

A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for Pits and Forcing Frames.

PROTECTION from COLD WINDS and MORNING FROSTS.

"FRIGI DOMO" CANVAS.

2 yards wide .. .. 1*s.* 10*d.* per yard run.
3 yards wide .. .. 3*s.* per yard.
4 yards wide .. .. 3*s.* 10*d.* per yard.

ELISHA T. ARCHER, only Maker of "Frigi Domo," Brockley Road, Forest Hill, London, S.E.; and of all Florists and Seedsmen. All goods carriage paid to London.

NOTICE—REMOVED from 3, CANNON STREET, CITY.

SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW and CO., 29, Oxford Street, Manchester.

HORTICULTURAL IRON and WIRE WORKS.



For CONSERVATORIES.
Wirework Baskets.
Wirework Trellis.
Wirework Flower Stands.
Ironwork Flower Stands.
Balloon and other Trainers.

GARDEN.
Wirework Arches.
Wirework Reseries.
Wirework Summer-houses.
Wirework Screens.
Wirework Hurdle Fencing.
Iron and Wire Espaliers.
Iron Gates.

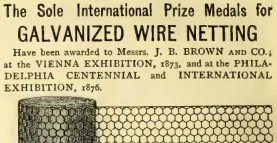
Water-piping laid on in Gardens.

Illustrated CATALOGUE of Designs.

R. HOLLIDAY, Iron and Wire Works, 2A, Portobello Terrace, Notting Hill Gate, London, W.

The Sole International Prize Medals for GALVANIZED WIRE NETTING

Have been awarded to Messrs. J. B. BROWN AND CO.; at the VIENNA EXHIBITION, 1873, and at the PHILADELPHIA CENTENNIAL and INTERNATIONAL EXHIBITION, 1876.



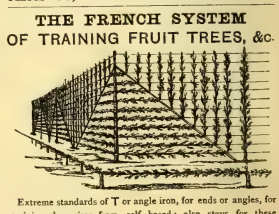
Prices per Lineal Yard, 24 inches high:—

Size of Mesh.	Mostly used for	Gauge, or Light.		Gauge, or Medium.		Gauge, or Strong.	
2 in.	Dogs or Poultry .	19	3½*d.*	18	4½*d.*	17	5½*d.*
1⅞ in.	SmallRabbits, &c.	19	4½*d.*	18	5½*d.*	17	6½*d.*
1½ in.	Smallest Rabbits.	19	5½*d.*	18	6½*d.*	17	8*d.*

** Price Lists, with further particulars of WIRE NETTING, IRON FENCING, POULTRY FENCES, DIAMOND and other TRELLIS WORK, on application.

J. B. BROWN & CO.,
Offices—90, CANNON STREET, LONDON.

THE FRENCH SYSTEM OF TRAINING FRUIT TREES, &c.



Extreme standards of T or angle iron, for ends or angles, for straining the wires from, self based; also stays for these standards, at prices as under:—

Intermediate Standards, 10 ft. apart, at half these prices.

	Painted.	Galvd.		Painted.	Galvd.
4½ ft. high..	4*s.* 6*d.* ..	6*s.* 6*d.*	7 ft. high	7*s.* 0*d.* ..	10*s.* 0*d.*
5 ft. high....	5 0 ..	7 6	8 ft. high	8 0 ..	11 0
6 ft. high....	5 9 ..	8 6	9 ft. high	9 0 ..	12 0

STRAINING SCREWS and NUTS, one to end of each wire, 3*s.* per dozen.

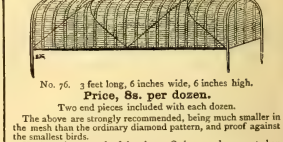
No. 13 WIRE, 10 inches apart, 2*s.* 3*d.* per 100 yards.

** Prices of Material for WIRING GARDEN WALLS on the FRENCH SYSTEM on application.

J. B. BROWN & CO.,
90, CANNON STREET, LONDON, E.C.

THOMAS'S PEA AND SEED GUARDS.

REDUCED PRICES. SEASON 1877.
Superior Quality. Galvanised after made.
NEW PATTERN WITH DIAGONAL STAYS.



No. 76. 3 feet long, 6 inches wide, 6 inches high.

Price, 8s. per dozen.

Two end pieces included with each dozen.

The above are strongly recommended, being much smaller in the mesh than the ordinary diamond pattern, and proof against the smallest birds.

Having a large stock of the above, Orders can be executed on receipt.

Illustrated and Priced Catalogues of Horticultural Wirework on application.

Five per cent. discount allowed for prompt cash on orders amounting to 20*s.* and upwards.

Special quotations for large quantities.

J. J. THOMAS & CO.,
PADDINGTON WIREWORKS,
285 and 362, EDGWARE ROAD, LONDON, W.
Post-office Orders to be made payable at 310, *Edgware Road.*

BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and qualities, of

BETHAM & SON,
9, LOWER THAMES STREET, LONDON, E.C.

B. & S. have always a large Stock in London of 20-in. by 12-in., 20-in. by 14 in., 20 in. by 16 in., in 16-oz. and 21-oz.

W. H. LASCELLES, HORTICULTURAL BUILDER, Finsbury Steam Joinery Works, 121, Bunhill Row, London, E.C.



Estimates given on application for GREENHOUSES and CONSERVATORIES of all kinds, and to any design.

GARDEN BOXES and LIGHTS.

	Each.
Portable Box with One Light, 6 feet by 4 feet, glazed good 16-oz. sheet glass, painted four coats, and packed ready for use	£ s. d. 35 0
Portable Box with Two Lights, as above, each light 6 feet by 4 feet	65 0

LIGHTS ONLY.

	£ s. d.
3 feet by 4 feet Light, not painted nor glazed	3 6
Ditto glazed, good 16-oz. sheet glass, and painted 4 coats	10 0
6 feet by 4 feet, not painted nor glazed	6 0
Ditto glazed and painted four coats	10 6

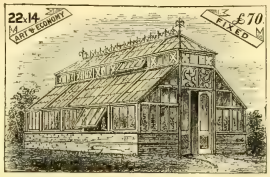
Metallic Hothouse Builder to Her Majesty.

HENRY HOPE (late Clark & Hope, formerly Clark), HOTHOUSE BUILDER and HOT-WATER APPARATUS ENGINEER.

55, Lionel Street, Birmingham. Established A.D. 1818.

BOOKS of DESIGNS, 5s. each.

☞ The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.



BECKETT BROS.,

HORTICULTURAL BUILDERS AND HOT-WATER ENGINEERS, Patentees & Manufacturers of the Self-adjusting Throttle Valve.

See Illustrated CATALOGUE, Two Stamps.

Designs and Estimates free of cost.

WORKS: ANCHOR STREET, CHELMSFORD.

SIR J. PAXTON'S HOTHOUSES for the MILLION.—Price List free. Conservatories, &c., built to Architects' Plants, or Designs prepared and Estimates given to Rough Sketches, with sizes required. Heating apparatus fixed complete. Pamphlet, with Illustrations, post-free, 3d.

HEKEMAN AND MORTON, 2, Gloucester Street, Regent's Park, London, N.W.

Greenhouses.

HFREEMAN AND SONS, HORTICULTURAL BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, Cambridge Heath Bridge, Hackney, E.—Good substantial-made GREENHOUSE, glazed ready for fixing, 40 feet long, 13 feet wide, £90: 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15. GARDEN FRAMES in stock.

For Sale, a

STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to

HILL AND SMITH, Brierley Hill Ironworks, Dudley.

WILLIAM S. BURTON, 39, OXFORD STREET, W.

TABLE CUTLERY. The Blades are all of the finest Steel.	Table.	Dessert.	Carvers, per pair.
	£ s. d.	£ s. d.	£ s. d.
3¼-inch ivory handles ....per doz.	14 0	11 0	6 0
3⅝ ,, ,, ,, ,,	18 0	14 0	7 0
3⅞ ,, ,, to balance ,,	20 0	15 0	7 0
4¼ ,, ,, ,, ,,	26 0	20 0	8 0
4 ,, ,, ,, ,,	30 0	22 0	8 0
4 ,, fine ,, ,,	33 0	24 0	9 6
4 ,, ,, extra large ,,	39 0	28 0	10 6
4 ,, ,, African .. ,,	42 0	33 0	13 6
4 ,, ,, silver ferrules ,,	42 0	33 0	15 0
4 ,, ,, silvered blades ,,	48 0	35 0	—
Do. electro-silvered handles ,,	23 0	19 0	7 6

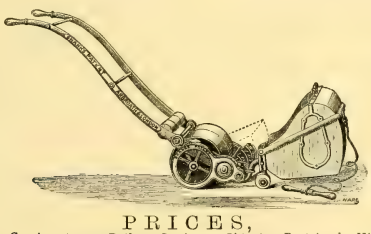
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SHANKS' NEW PATENT

LAWN MOWERS,

Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The *Sole-Plate* or *Bottom Blade* is made with *Two Edges*, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the Grass escaping the Box when the Machine is in use during the prevalence of wind.



PRICES,

Including Carriage to any Railway Station or Shipping Port in the Kingdom:—

NEW HAND MACHINE.

	£ s. d.
10-inch Machine	3 10 0
12-inch Machine	4 15 0
14-inch Machine	5 15 0
16-inch Machine	6 15 0
19-inch Machine	8 5 0
22-inch Machine	9 0 0
24-inch Machine	9 10 0

The Hand Machines are all fitted with Silent Movement, and can be used either with or without the usual Front Rollers.

NEW PONY and DONKEY MACHINE.

	£ s. d.
25-inch Machine	13 10 0
28-inch Machine	13 15 0
30-inch Machine	17 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

Price, for the 28-inch and 30-inch Machines, 30s. extra; 25-inch Machine, 25s. extra. Silent Movement, 12s. 6d. extra. Boots for Pony, 24s.; Donkey, 20s. per set.

NEW HORSE MACHINE.

	£ s. d.		£ s. d.
30-inch Machine	20 12 0	42-inch Machine	28 0 0
36-inch Machine	24 0 0	48-inch Machine	32 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

Price, for the 48-inch, 42-inch, and 36-inch Machines, 40s. extra; for the 30-inch, 30s. extra. Silent Movement, 20s. extra. Boots for Horse's feet, 25s. per set.

A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

SHANKS' PATENT LAWN MOWERS

Are warranted to give ample satisfaction, and if not approved of can be at once returned.

ALEXANDER SHANKS & SON,

Dens Ironworks, Arbroath; and 27, Leadenhall Street, London, E.C.

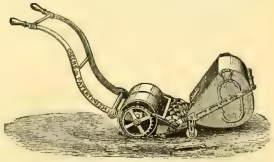
27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.

Small Lawn Mowers—6-inch, 25s.; 7-inch, 35s.; 8-inch, 50s.

GREEN'S PATENT "SILENS MESSOR,"

Or Noiseless Lawn-mowing, Rolling, and Collecting Machines for 1877.

The Winner of every Prize in all cases of competition.



The superiority of these Machines over those of all other makers is universally acknowledged. They will Cut either long or short Grass, Bents, &c., wet or dry.

These advantages no other Lawn Mowers possess.

They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant.

Every Lawn Mower sent out is guaranteed to give entire satisfaction, otherwise it may be returned at once free of cost to the Purchaser.

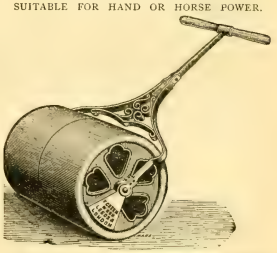
N.B.—Those who have Lawn Mowers to repair will do wel to send them either to our Leeds or London Establishment, where they will have prompt attention, as an Efficient Staff of Workmen is kept at both places.

Descriptive Illustrated Price List free on application.

GREEN'S PATENT ROLLERS

For Lawns, Drives, Bowling Greens, Cricket Fields, and Gravel Paths.

SUITABLE FOR HAND OR HORSE POWER.



They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom; or direct from the Manufacturers,

THOMAS GREEN & SON,

SMITHFIELD IRONWORKS, LEEDS:

And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

THE PATENT "EXCELSIOR" LAWN MOWER,

The simplest and best ever introduced.

Waite, Burnell, Huggins & Co.,

223, UPPER THAMES STREET, LONDON, E.C.,

Sole Consignees for Great Britain, Ireland and France.



The "Excelsior" has never been beaten in Competitive Trials.
For Agencies, Catalogues, and Trade Terms, apply as above.

Oil Paint No Longer Necessary.



HILL AND SMITH'S BLACK VARNISH for Preserving Ironwork, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom.

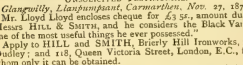
UNSOLICITED TESTIMONIAL.

Glanywilly, Llanpumpsaint, Carmarthen, Nov. 27, 1873.—"Mr. Lloyd Lloyd encloses cheque for £3 5*s.*, amount due to Messrs HILL & SMITH, and he considers the Black Varnish one of the most useful things he ever possessed."

Apply to HILL and SMITH, Briesly Hill Ironworks, near Dudley; and 128, Queen Victoria Street, London, E.C., from whom only it can be obtained.

CAUTION.—It having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, they would especially draw attention to the fact that every cask of their Varnish is legibly marked with their name and address, without which none is genuine.

Rosher's Garden Edging Tiles.



THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENERS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.



GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 32 per square yard upwards. Pattern Sheets, of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.

F. ROSHER AND CO., Brick and Tile Merchants.

See addresses above.

SILVER SAND, fine or coarse grain as desired. Prices by Post per ton or truck-load, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries.

KENT PEATS or LOAM supplied at lowest rates in any quantities.

F. ROSHER AND CO.—Addresses see above.

N.B.—Orders promptly executed by Rail or to Wharves. A liberal Discount to the Trade.

In 1 vol. 8vo, with above 12,000 Woodcuts, price 42*s.*,

LOUDON'S ENCYCLOPÆDIA of PLANTS: comprising the specific character, description, culture, history, application in the arts, and every other desirable particular respecting all the plants dangerous to, cultivated in, or introduced into Britain. Corrected by Mrs. Loudon: assisted by George Don, F.L.S. and David Wooster.

"This celebrated work is of the greatest utility to gardeners, and, indeed, to all who have not access to great libraries. The great recommendation of the work has always been as woodcuts, which, although only miniatures, were nevertheless drawn by Mr. Sowerby with such happy art, and so skilfully engraved by Branston, that the plants could always be recognised, even by those little acquainted with the vegetable kingdom." *Gardeners' Chronicle.* London, LONGMANS AND CO.

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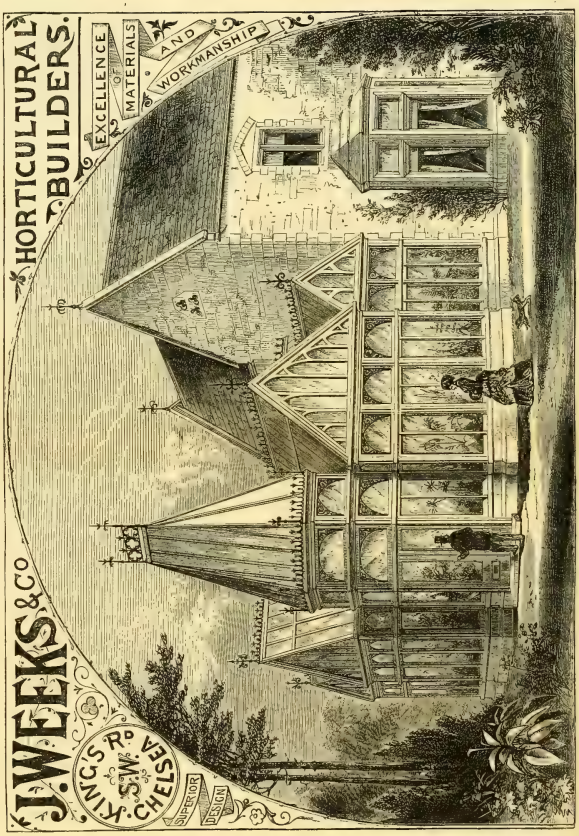
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THE

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Established 1841.

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W. Richards, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—SCIENTIFIC, FRUIT, and FLORAL COMMITTEE MEETINGS on WEDNESDAY next, April 4, at 11 o'Clock. GENERAL MEETING for ELECTION of FELLOWS, &c., at 3 o'Clock. Admission 12. Band of the Royal Horse Guards Blue, 3.30 P.M.

N.B.—On this occasion the Fruit and Floral Committees will meet in the CONSERVATORY, where Exhibits will also be shown.

CRYSTAL PALACE.—AURICULA SHOW, April 24; GREAT FLOWER SHOW, May 2; ROSE SHOW, June 23. Schedules for the two latter can be had on application to

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REQUIRING

GARDEN POTS of best quality, are requested to send their orders to

J. MATTHEWS, Royal Pottery, Weston-super-Mere.
Price List on application.

Horticultural Potteries, Bristol.—Established 1850.

WILLIAM MAULE and SONS are manufacturing a very useful GARDEN POT for Bedding and other Plants. "Long Toms" as illustrated in *Gardeners' Chronicle*, February 3 and 10.

Price LISTS forwarded on application. The Trade supplied.

Grape Vines.

B. S. WILLIAMS has still on hand a large stock of MUSCAT of ALEXANDRIA and SCOTT'S MUSCAT, strong Planting or Fruiting Canes, 5s. each. Early orders respectfully solicited.

Victoria and Paradise Nurseries, Upper Holloway, N.

Vines, Vines, Vines.—The Planting Season.

THE COWAN PATENTS' COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Canes of all the leading varieties from their well known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

VINES.—Splendid Planting Canes of leading varieties, perfectly ripened without bottom-heat, and a few extra strong Canes for immediate Fruiting.

JAMES DICKSON and SONS, "Newton" Nurseries, Chester.

LADY HENNIKER APPLE GRAFTS.—Post-free, 6 for 1s. 6d., 12 for 2s. 6d., 50 for 8s., 100 for 15s. A splendid Kitchen or Dessert Apple, weighs 18 oz., bears freely on one-year's wood. Pyramids 3s. 6d., Standards 5s. each.

EWING and COMPANY, Eaton, Norwich.

ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

To the Trade.

ASPARAGUS, Giant, 1-yr., 2-yr., 3-yr., and 4-yr., fine.

JAMES BIRD, Nurseryman, Downham.

ASPARAGUS, Giant, 3-yr. and 4-yr., fine, price 3s. per 100.

R. BATH, Crayford, Kent.

CUCUMBERS.—Cooling's King and Fearnought, the two best in cultivation, 2s. 6d., per packet each, post-free.

E. COOLING, Seed Merchant, Derby.

CUCUMBER PLANTS, Telegraph.—Strong plants now ready.

A. WATKINS, Nursery, Bishop Stortford, Herts.

HOLLYHOCKS.—For choice named varieties (the finest in the Trade) see Priced LISTS, free on application to

JOHN THOMPSON, Nurseryman, Seedsman, and Florist, 21, Pilgrim Street, Newcastle-on-Tyne.

HOLLYHOCKS.—Lists of Varieties, with their colours and price, on application; also TEA ROSES, in pots.

I. WOODTHORPE, Glazenwood Nursery, Braintree, Essex.

EUONYMUS EUROPÆUS.—Strong 2-yr. seedling plants, £1 per 1000, £9 per 10,000. Offers for Cash.

A. RATHKE and SON, The Nurseries, Praust, near Danzig, Germany.

CUPRESSUS LAWSONIANA, 2 to 3 feet, good plants, 15s. per 100. RETINOSPORA PISIFERA, 2 to 3 feet, 20s. per 100.

E. COOLING, Mils Ash Nurseries, Derby.

BIRCH, 5 to 8 feet, 50s. per 1000. PEARS, Hessle, Standards, 75s. per 100. APRICOTS, Maiden, 50s. per 100.

WILLIAM FLETCHER, Ottershaw Nursery, Chertsey, Surrey.

SPRUCE FIRS, well rooted, from 4 to 8 feet, are offered at a low price in any quantity from a dozen to 1000.

W. H. ROGERS, Red Lodge Nursery, Southampton.

HAWS, or THORN QUICK SEED.—Sound Haws, fit for sowing at present, or spring coming, guaranteed free from soil or other mixture, and thoroughly well preserved. About 30 tons on hand. For lowest prices apply to

GRANT and CO., Park Nursery, Portadown, Ireland.

RHODODENDRONS.—All the finest named varieties, nice bushy plants, full of blooming buds, are offered at a low price per dozen or 100. CATALOGUES sent on application.

W. H. ROGERS, Red Lodge Nursery, Southampton.

BOX EDGING.—A large quantity to be Sold, on reasonable terms.

Mr. J. BUXTON, Nurseryman, Onehouse, Stowmarket.

WANTED, Seven Standard PORTUGAL LAURELS, with clean stems, from 5 to 6 feet high. State size of heads and price.

G. T. MILES, Wycombe Abbey Gardens, Bucks.

Rhubarb Roots.

WANTED, 2000 VICTORIA and ALBERT; must be true to name, and good Roots. Price to

EDWARD SANG and SONS, Nurserymen, Kirkcaldy, N.B.

Finest Lawn Mixture.

JAMES DICKSON and SONS' Mixture, composed only of the finest dwarf Evergreen Grasses and Clovers, is much superior to all others. Price 12. 3d. per lb., 128. per cwt., carriage free.

108, Eastgate Street, Chester.

New Spring Catalogue.

CHARLES TURNER'S CATALOGUE of PLANTS is now ready, and may be had free on application. The Royal Nurseries, Slough.

NURSERYMEN COMING to HOLLAND during the International Horticultural Show at Amsterdam, in April, 1877, are kindly requested to Visit my Nursery.

A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

To the Trade.

PRIMROSES, double lilac, 12s. 6d. per 100, 100s. per 1000. Good plants.

RODGER McCLELLAND and CO., 64, Hill Street, Newry.

CARNATIONS and PICOTEES.—A fine selection of strong healthy plants, 12s. per dozen pairs. Trade price on application.

SAMUEL HARTLEY, Headingley Nursery, near Leeds.

Clematis Roots for Grafting, 30s. per 1000.

CLEMATIS.—Finest named kinds, spring and autumn flowering, any number at very reduced prices. 100s. per 1000. Good plants.

CHARLES NOBLE, Bagshot.

Carnations, Picotees, and Cloves.

CHARLES TURNER can supply the above in great variety. Now is the time for planting them out. The Royal Nurseries, Slough.

Tea Roses on Seedling Briar.

EDWIN HILLIER offers the above, in splendid plants and best varieties, by the dozen or 100; also New H.P. ROSES of 1876. Price LISTS on application.

Nurseries, Winchester.

To the Trade.

GERMAN LILIES of the VALLEY, extra strong for Forcing, in single crowns, can be supplied on very advantageous terms by ordering at once. For price and samples apply to

C. PUTTFARKEN, 63, Horton Lane, Bradford, Yorkshire.

THE LILY NURSERY offer to the Trade, in perfect condition, SPIGELIA MARYLANDICA, at 10s. per dozen, or 60s. per 100; also ASCLEPIA TUBEROSA, at 20s. per 100.

J. VANDER SWAELMEN, Gendbrugge, Ghent, Belgium.

Gentiana acaulis.

OSBORN and SONS can supply fine Clumps of the above at 6s. per dozen, 30s. per 100. Trade price on application.

The Nurseries, Fulham, London, S.W.

CENTAUREA CANDIDISSIMA.—Nice plants, in single pots, 20s. per 100, package included. Terms Cash.

JOHN HOUSE, Eastgate Nurseries, Peterborough.

SPIRÆA PALMATA.—Fine Crowns for Forcing, 75s.; smaller, 25s. to 50s. per 100.

CHARLES NOBLE, Bagshot.

Special Offer.

CALCEOLARIAS.—Golden Gem, extra fine, well-rooted plants, 5s. per 100, 30s. per 1000; Prince of Orange, 5s. per 100. For cash with order.

J. LEIGH, Sandy Lane Nursery, Lowton, near Newton-le-Willows.

Verbenas, Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other mixed sorts, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, package included. Cash to accompany all orders.

Islington Nursery, Park Street, Islington, N.

Pelargoniums.

CHARLES TURNER can supply strong healthy plants of all the Zonales; they will have a good head of bloom this season.

The Royal Nurseries, Slough.

NEW REGAL PELARGONIUMS (Two of the Gems of the Season), "PRINCE OF WALES" and "PRINCESS OF WALES." Price 1 guinea each.

To be sent out the first week in May by

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

CHAMPION of ENGLAND PEAS.—Selected Stock. Sample and Price on application to

MINIER, NASH and NASH, 60, Strand, London, W.C.

SEED POTATOS.—Extra Early Vermont, a fine sample, true to name, 5s. per bushel.

W. BARNARD, High Street, Epsom.

Excellent Seed of

MYATT'S PROLIFIC POTATO, at 12s. per cwt. Forwarded on receipt of order, accompanied with Post-office Order to

JOHN FARWELL, Seedsman, Wimborne.

SALES BY AUCTION.

Plants and Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, April 7, at half-past 12 o'Clock precisely, first-class Standard, Half-Standard, Dwarf, and Climbing ROSES from a well-known English Nursery; SHRUBS, FRUIT TREES, HERBACEOUS PLANTS, CARNATIONS, PICOTEES, and PINKS, GLADIOLI, LILIUMS, RUSTIC GARDEN-WORK, &c.

On view the morning of Sale, and Catalogues had.

Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 12, at half-past 12 o'Clock precisely, a quantity of established ORCHIDS, part from a Gentleman's Collection, comprising many fine plants of rare and valuable sorts; also some fine established plants of Cattleya Schilleriana, Laelia purpurata, Oncidium Marshallianum, concolor, Odontoglossum Rossii, and many other choice sorts, 250 fine plants of Musa Ensete, and a few Seeds from Madagascar.

On view the morning of Sale, and Catalogues had.

Specimen Plants —Tree Ferns.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 12, at half-past 12 o'Clock precisely, a Collection of fine young Specimen PALMS, FERNS, CROTONS, DRACÆNAS, &c., all in good healthy condition; also some TREE FERNS from the New Plant and Bulb Company, comprising the entire stock of a New Cyathea, Dicksonia squarrosa, Cyathea Smithii, Cyathea dealbata, &c.

On view the morning of Sale, and Catalogues had.

Tree Ferns.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 19, a splendid lot of TREE FERNS, including the whole stock of a new species.

N.B.—These Ferns were imported some few months ago, and are now in a fine growing state.

Further particulars next week.

Cheltenham.

UNRESERVED SALE of Mr. James Cypher's unrivalled Collection of Exhibition STOVE and GREENHOUSE PLANTS.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL the above noted COLLECTION of PLANTS, by AUCTION, on the Premises, the Queen's Road Nurseries, Cheltenham, on WEDNESDAY and THURSDAY, April 11 and 12, at half-past 12 o'Clock precisely.

May now be viewed. Catalogues are now ready and may be obtained (6*d* each, returnable to purchasers) on the Premises, and of the Auctioneers and Valuers, 50, Gracechurch Street, E.C.

For full particulars see *Gardeners' Chronicle* of March 17.

Auction Mart, Tokenhouse Yard, London, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, as above, on MONDAY April 16, at 12 o'Clock precisely, about 1000 LILIUM KRAMERII, and other choice species, just arrived from Japan in splendid condition; a quantity of CHOICE ORCHIDS and HARDY BULBS; also a few large Double White and other CAMELLIAS, &c.

Further particulars will appear next week.

Auction and Estate Offices, 38, Gracechurch Street, E.C.

To Nurserymen, Seedsmen, and Florists.

FOR DISPOSAL, a BUSINESS, fine large HOUSE and SHED, small outside garden, very close to, three Greenhouses well heated with hot water, and sixteen Frames, fully stocked with saleable Bedding Plants. Good Jobbing connection, and every chance of greatly increasing the Shop in first-class position. Long Lease and moderate rent. Apply for further particulars on the premises,

2, Swiss Terrace (adjoining Swiss Cottage Station, Metropolitan Railway), Belsize Road, St. John's Wood, N.W.

Verbenas, Verbenas, Verbenas.

WILLIAM BADMAN offers Purple King, White, Scarlet, Carmine, and Rose VERBENAS, in single pots, at 12*s.* per 100; or turned out of pots, 20*s.* per 100. Good rooted Cuttings, 6*s.* per 100, 50*s.* per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S.E.

Green Ivies of sorts in four kinds.

ROBERT PARKER, having a surplus stock of Small-leaved IVIES in pots, suitable for edgings, pattern beds, covering banks, &c., will be glad to dispose of them in quantities, at very low prices. Names, sizes, and prices per dozen, 100, or 1000, will be given on application.

Exotic Nursery, Tooting, Surrey, S.W.

To the Trade.—Mangel Wurzel Seed.

BOLTON AND CO. offer a fine stock of BERKSHIRE PRIZE YELLOW GLOBE MANGEL, a variety well known for its large producing qualities; also an improved LONG YELLOW, a very desirable kind. They can also offer a limited quantity of the celebrated GATE POST MANGEL. Prices on application.

BOLTON AND CO., Seed Merchants, Wood Green, London, N.

Centaurea candidissima or ragusina,

PACKAGE FREE.

WOOD AND INGRAM offer fine plants of the above, thoroughly established in single pots, at 20*s.* per 100, 3*s.* per 1000. Not less than 50 will be sold at the 100 price, or 500 at the 1000 price

The Nurseries, Huntingdon.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. List on application.

Mr. WEBB, Calcot, Reading.

Centenary Celebration.

BATH and WEST of ENGLAND SOCIETY

(Established 1777), and

SOUTHERN COUNTIES ASSOCIATION.

BATH MEETING, JUNE 4, 5, and 6.

ENTRIES of LIVE STOCK, CHEESE, IMPLEMENTS, WORKS of ART, &c., CLOSE APRIL 18, after which date no Fees or Entries can be received.

POULTRY ENTRIES CLOSE MAY 5.

FORMS and all information supplied on application to

JOSIAH GOODWIN, Sec.

4, Terrace Walk, Bath.

Transfer of Business.

MESSRS. J. CROUCHER and H. BOLLER beg to inform the Public that they have TAKEN THE BUSINESS lately carried on by C. PFERSDORFF, at 75, South Row, Kensal New Town, and hope to receive the confidence of those who patronized the late C. Pfersdorff; also the Public generally.

All orders for any Succulent Plants, both nursitute and others, will receive prompt attention.

Messrs. C. & B., having had great experience in this class of plants, can guarantee correct names. Trade supplied.

Pelargoniums, Pelargoniums.

JAMES HOLDER AND SON have a fine healthy Stock of the above to offer, at the following low prices for Cash, viz., 35*s.* per 100, distinct sorts, hamper and package included; also extra strong plants, in 32-pots, 18*s.* per dozen, in 48-pots, 9*s.* per dozen, 60*s.* per 100, basket and packing extra. Crown Nursery, Reading.

Important Notice.

JAMES HOLDER AND SON beg to inform their numerous customers, and the public generally, that the PELARGONIUMS advertised by them are not the Zonal Class, but consist of Show, Fancy, Bronze, and Fancy varieties. The Stock and Collection is First-class, as certified by numerous testimonials received from various parts of the country.

Crown Nursery, Reading.

W. F. BOFF offers easy growing, free-blooming ORCHIDS, 12*s.* and 24*s.* per dozen. TUBEROSES, 2*s.* per dozen, 12*s.* per 100,

LILY of the VALLEY, imported clumps, 9*d.* per dozen.

CALCEOLARIAS, yellow, rooted cuttings, 5*s.* per 100.

203, Upper Street, Islington, N.

To the Trade—Mangel Wurzel Seeds, 1876 Growth.

H. AND F. SHARPE invite the attention of the Trade to their fine selected stocks of home-grown MANGEL SEEDS, raised from fine picked bulbs. Special offers and samples on application. Seed Growing Establishment, Wisbech.

ALTERNANTHERAS, good stuff, shaken out and forwarded free.

ALTERNANTHERA AMŒNA, 12*s.* per 100.

ALTERNANTHERA MAGNIFICA, 8*s.* per 100.

ALTERNANTHERA PARONYCHIOIDES, 8*s.* per 100.

CLOVES, old English, true, 20*z.* per 100 pairs.

WILLIAM HOLMES, Frampton Park Nurseries, Hackney, London, N.E.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2*s.* 6*d.* per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See CHURCHARD SMITH'S Seed List for 1877.

Extra long SEAKALE, 2*s.* per dozen.

RICHARD SMITH, Nurseryman, Worcester.

ASPARAGUS PLANTS.—Giant, 2-yr. old, 2*s.* 6*d.* per 100, 22*s.* 6*d.* per 1000: 3-yr. old, 3*s.* 6*d.* per 100, 32*s.* per 1000. Connover's Colossal, 2-yr. old, 3*s.* 6*d.* per 100, 30*s.* per 1000; 3-yr. old, 4*s.* 6*d.* per 100, 42*s.* per 1000. Price to the Trade on application.

JAMES BACKHOUSE AND SON, York.

STATICE PROFUSA.—Clean, healthy, and vigorous, in single pots, at 12*s.* 6*d.* each, 12*s.* per dozen, 25*s.* per 100. Competitive prices will be named for MARKET, STOVE, GREENHOUSE, and BEDDING PLANTS of all sorts. Special Trade Prices on application.

JOHN FORBES, Dove Mount Nurseries, Hawick, N.B.

H. AND F. SHARPE'S Wholesale Spring CATALOGUE of HOME-GROWN AGRICULTURAL and GARDEN SEEDS is now ready, and may be had on application. The prices will be found very moderate.

Seed Growing Establishment, Wisbech.

To the Trade.—Grass Seeds.

BOLTON AND CO. have to offer their New SEEDS, mixed for Permanent Pasture and Meadow Lands. So far as possible it is desirous to state the nature of the soil for which the Seeds are required. Prices on application. Purchasers of large quantities will find liberal terms.

BOLTON AND CO., Seed Merchants, Wood Green, London, N.

SYMPHYTUM ASPERRIMUM, or CAUCASIAN PRICKLY COMFREY. — Whole Roots and Crowns PURCHASED after Examination. Send full particulars to

THOMAS CHRISTY AND CO., 155, Fenchurch Street, London, E.C.

CATALOGUES.—His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (by post) to

S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

Delphinium cardinale.

W. THOMPSON, SEEDSMAN, Tavern Street, Ipswich, begs to offer SEEDS of the above-named handsome hardy perennial, SCARLET LARKSPUR, distinct from *D. nudicaule*, in packets post-free for thirteen stamps. His Descriptive CATALOGUE for 1877 is now ready, and should be seen by all Amateurs of Hardy Plants. Post-free to any address.

GLADIOLI for EXHIBITION, carriage free. —50, in 25 superb varieties, 7*s.*; 25, in 25 superb varieties, 3*s.* 6*d.*; 24, in 12 choice varieties, 3*s.*; 12, in 12 extra fine sorts, 2*s.*

DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

GLADIOLI for GENERAL DECORATION.—100, in 50 choice sorts, 10*s.*; 50, in 50 fine varieties, 5*s.*; 50, in 25 fine sorts, 3*s.*; 25, in 25 choice varieties, 3*s.*; 24, in 12 fine varieties, 2*s.*; 12, in 12 fine sorts, 1*s.*; 12, in 12 good varieties, 9*d.*; 12, in 12 popular sorts, 6*d.*

DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

GLADIOLI in MIXTURE.—White ground varieties, splendid, 4*s.* per dozen; brilliant scarlet and dark red varieties, 4*s.* per dozen; yellow ground varieties, 5*s.* per dozen, choicest mixed, all colours, 3*s.* per dozen.

DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

GLADIOLUS BRENCHLEYENSIS. — Extra fine flowering roots of this splendid scarlet, 1*s.* per dozen, or 6*s.* per 100.

DANIELS BROS., The Royal Norfolk Seed Establishment, Norwich.

VINES, VINES, VINES.

Strong planting Canes of the following sorts :—

Black Alicante.	Muscat Hamburgh.
Bowood Muscat.	Mrs. Pince.
Golden Champion.	West's St. Peter's.

Price 35*s.* each.

W. G. CALDWELL AND SONS, The Nurseries, Knutsford, Cheshire.

VERBENAS, VERBENAS, VERBENAS. —Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6*s.* per 100, 50*s.* per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, for 8*s.* Terms cash.

H. BLANDFORD, The Dorset Nurseries, Blandford.

IVY, Irish (Hedera canariensis). — Good plants, 5*s.* per dozen, 30*s.* per 100, 20*s.* per 1000. Eighteen other kinds. See CATALOGUE.

LAURUSTINUS (Viburnum tinus).—Nice plants, with fine roots, 9 to 12 inches, 3*s.* per dozen, 15*s.* per 100, 4*s.* 10*s.* per 1000: 15 to 18 inches, 4*s.* per dozen, 20*s.* per 100, 4*s.* per 1000.

JAMES SMITH, Darley Dale Nurseries, near Matlock.

To the Trade.—Turnip Seeds.

H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.

Seed Growing Establishment, Wisbech.

To the Trade.

STANDARD and DWARF ROSES of the leading sorts—established plants, no better in the Trade, well-ripened wood—about 15,000 Standards and 5000 Dwarfs, guaranteed true to name. For lowest prices apply to

GRANT AND CO., Park Nursery, Portadown, Ireland.

SEEDS—SEEDS—ALL KINDS.—Before ordering your Seeds, send for Illustrated CATALOGUE, which contains full Directions,

How, When and What to Sow.

PENGILLEY AND POOL (successors to the Heatherside Nurseries Company), 59, Queen Victoria Street, London, E.C.

Special Offer—150,000 Vesuvius.

WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, roz. per 100; or from stools, 1*s.* per 100, 7*s.* 6*d.* per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S.E.

Special Culture of Fruit Trees and Roses.

THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS (by THOMAS RIVERS) is now ready; also CATALOGUE of Select ROSES. Post-free on application.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

THE NEW PLANT and BULB COMPANY beg to call special attention to their NEW LIST (No 31), just published. Contents :—New Hardy Bulbs, New and Rare Plants, New Hardy Climbers, New Ferns, Seeds of New Hardy Flowering Plants, &c. All of sterling merit, and at low prices. Post-free on application.

Lion Walk, Colchester.

Good Verbenas, Cheap.

S. BIDE has now a splendid stock of good, strong, healthy VERBENAS, free from any disease, consisting of White, Purple, Scarlet, Pink, and various other colours, at 6*s.* per 100, 50*s.* per 1000, for cash. Send orders early to

S. BIDE, Alma Nursery, Farnham.

Genuine Garden Seeds.

WM. CUTBUSH AND SON have for many years held some of the finest Stocks of SEEDS in the Trade, and they believe that no house can possibly supply better quality. CATALOGUES free on application.

HIGHGATE, LONDON, N.; and BARNET, HERTS.

Presented (by post) on application,

NEW CATALOGUE for 1877. For remarks and List of Plants offered, with prices, see last week's large Advertisement. Plants sent to name, well hardened off, low in price. See New Catalogue.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

Cherry Plum

PRUNUS MYROBALANA—Best Stuff for Mending Old Fences, or Making New ones.

It will grow vigorously in the poorest soil, and bears clipping like Whitethorn. Its stiff hard branches and dangerous thorns effectually prevent cattle or evil-disposed persons getting through fences made of it.

Plant four to six in a yard.

Price 3*s.*, 4*s.* 6*d.*, and 6*s.* per 100; 25*s.*, and 50*s.* per 1000.

EWING AND CO., The Royal Norfolk Nurseries, Eaton, near Norwich.

HARDY HEATHS, 100,000 :—
12 plants in 12 varieties, 6s.
24 plants in 24 varieties, 12s.
50 plants in 25 varieties, 21s.
100 plants in 40 varieties, 42s.
For varieties see CATALOGUE.
ANDROMEDAS, various.
LEDUMS, various.
JAMES SMITH, Darley Dale Nurseries, Matlock.

FUCHSIAS, CHRYSANTHEMUMS, COLEUS, LANTANAS.—12 fine plants of the above, in 12 distinct varieties, post-free for 3s., or 12 of each, say 50 plants, for 10s. 6d.
PHLOXES, PENTSTEMONS, PANSIES, PINKS.—12 beautiful distinct sorts of any of these fine Border and Exhibition Plants, post-free, 3s. 6d., or 12 of each, say 50 plants, for 12s. 6d.
HELIOTROPES and SALVIAS, 2s. 6d. per dozen; IRESINE LINDENI, AGERATUM, LOBELIAS from Cuttings, CALCEOLARIA, Golden Gem; MESEMBRYANTHEMUMS, DACTYLIS ELEGANTISSIMA, SEDUMS for Carpet Bedding, in variety, 1s. per dozen, 6s. per 100. PYRETHRUMS, POTENTILLAS, DELPHINIUMS, and PÆONIES, 6s. and 9s. per dozen, in twelve fine sorts, or 12 of each, a most beautiful collection of 50 plants, for 25s.
WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

New Bedding Tropæolum, "Hunteri."

DOWNIE AND LAIRD have much pleasure in offering for Spring delivery the above Tropæolum, which has been raised by Mr. Andrew Hunter, gardener to Lord Shand, New Hailes House, near Edinburgh. This is an excellent Bedding Tropæolum, surpassing its parent Cooperi, being of a similar habit, but we can with perfect confidence recommend it. The Editors of the *Gardeners' Chronicle* say, "It grows about 6 inches high, is very neat and compact in habit, and a mass of bright bloom, the flowers being of medium size, nice form, and of a bright scarlet colour." Price, per dozen plants, 12s.; each, 1s. 6d. Usual discount to the Trade.
West Coates Nursery, Edinburgh.

AZALEA INDICA, Splendid New.
EMPEREUR DU BRESIL (I. Verschaffelt).—Good plants, 12s. 6d. per dozen; extra strong plants, 20s. each.
TRIOMPHE DES DOUBLES BLANCH (J. Verschaffelt).—Good Plants, 12s. each; larger size, no more to hand.
Case for three of the finest varieties, 21s.
For full description *vide* CATALOGUE No. 19, sent free on application.
N.B.—A few fine plants, well set with buds, of the beautiful AZALEA, IMPERATRICE CHARLOTTE, are still disposable, at 5s. each, or six plants for 25s.
JEAN VERCHAFFELT'S Nurseries, Ledeberg, Ghent, Belgium.

RICHARD WALKER has to offer Enfield and Wheeler's Imperial CABBAGE PLANTS, 2s. 6d. per 1000; Red Dutch Pickling Plants, 3s. per 1000. LEMON THYME, 3s. per 100: Black Thyme, 3s. per 100; PENNYROYAL, 8s. per 100: POLYANTHUS, very best show, 8s. per 100; White DAISIES, Crown Daisies, Pearl Daisies, Scarlet King Daisies, all 5s. per 100; dark WALLFLOWERS, 3s. per 100; double White ROCKETS, 2s. per dozen; PHLOX, in 12 fine sorts; DELPHINIUMS, splendid mixed colours, 1s. per dozen; best Sovereign RHUBARB in cultivation, 6s. per dozen.—Cos plants, 1s. per dozen. Connover's Colossal ASPARAGUS PLANTS, good, 2s. 6d. per 100: SEAKALE, for planting out, 2s. 9d. per 100.
Terms cash.
Market Gardens, Biggleswade, Beds.

Cheap Bedding Geraniums.

ALFRED FRYER offers the following good Bedders at per dozen for cash:—Golden Tricolors; Peter Grieve, 12s.; Prince of Wales, 6s.; Lady Cullum, 3s. 6d.; Sir Roland Napier, 3s. 6d.; Mrs. Pollock, 3s.; Sophia Dumaresque, 3s.; Silver Tricolors: Lass o' Gowrie, 4s. 6d.; Queen of Scots, 3s.; Miss Burdett Coutts, 3s. 6d.; Mrs. John Clutton, 3s. 6d.; Prince Silverwings, 3s. Double flowered: Marie Lemoine, 3s.; or one of each for 5s. No charge for boxes, and empties are returned at once; also postfree for 6d. per dozen extra. For Priced LISTS apply to
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANNII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Extra strong plants, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application
RICHARD SMITH, Nurseryman, Worcester.

Shallot Seed.

DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild; with ordinary treatment bulbs have been grown 10 and even 12 inches in circumference—by far the best method of growing the Shallot. Far superior to Onions. Price 2s. per packet. May be had of all Seedsmen in sealed packets, and Wholesale of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C., or
B. R. DAVIS, Nursery and Seed Warehouse, Yeovil.

ROBERT AND GEORGE NEAL, Wandsworth Common, Upper Tooting, and Garrett Lane Nurseries.
These Nurseries comprise about 50 Acres of well-grown and a most useful assortment of STANDARD, ORNAMENTAL, FOREST, FRUIT, and ROSES, and SHRUBS, all of which are in a most healthy and fit condition for removal. A personal inspection invited. CATALOGUES free on application.
The Nurseries are within a few minutes' walk of the Clapham Junction and Wandsworth Common Railway Stations.

EYE'S FAVOURITE.—The handsomest and best Potato ever offered. Indispensable for Exhibition. This variety will be the greatest Prize Winner of the season. We have purchased the entire Stock of Mr. James Lye, Clyffe Hall, Market Lavington, and parties wishing to grow this remarkably handsome and beautiful variety should order at once, as the stock is getting very limited. It can only be obtained direct from us. Price 5s. per lb. Orders of 20s. and upwards carriage free.
DANIELS BROS., The Royal Seedsmen, Norwich.

NEW PLANTS, 1877.

CHARLES LEE & SON,

SUCCESSORS TO
MESSRS. JOHN AND CHARLES LEE,
OF THE
Royal Vineyard Nursery,
HAMMERSMITH, near LONDON,

Have the pleasure to offer the following very beautiful and interesting

NOVELTIES,

now offered by them for the first time :—

BEGONIA COLTONI.

This distinct and beautiful Begonia was raised at the Royal Vineyard Nursery. The colour of the flowers is quite new in Begonias, being of an orange-crimson. It is a most abundant bloomer, and the flowers are of the largest size. It received a First-class Certificate from the Floral Committee of the Royal Horticultural Society in 1875. Good plants, price 10s. 6d. each.

BEGONIA RODWELLII.

This lovely Begonia was also raised at the Royal Vineyard Nursery. The flowers are of a bright vermilion-scarlet, and of the largest size; and the plant is a most abundant bloomer. It received a First-class Certificate from the Committee of the Royal Horticultural Society. Good plants, price 10s. 6d. each.

CORNUS MASCULA AUREA ELEGANTISSIMA (J. & C. Lee).

This elegant and lovely hardy shrub was raised from seed in our Isleworth Nursery, and has been proved to be perfectly constant in its beautiful variegation. A fresh source of pure gold surrounding a bright green centre is of itself a sufficient attraction, but when in July the tips of the leaves become suffused with the brightest crimson, it is impossible to give an idea of the beauty and elegance of the plant, which will bear a favourable comparison with the best variegated stove or greenhouse exotics. Suffice it to say, that it has been seen and admired by many amateurs and nurserymen, and has been awarded a Firstclass Certificate at South Kensington. The habit of the plant is semi-pendulous, and very graceful. Price of maiden plants, 15s. each; larger specimens, 21s. each. A Coloured Plate may be had on application for 1s.

JUNIPERUS VIRGINIANA ELEGANS (J. & C. Lee).

This very elegant variety of the Red Cedar was raised from seed in our own grounds in 1869. It is scarcely necessary to remark upon the hardiness of this plant, but it is due to its character to state that the elegant cream-coloured variegation with which the whole plant is suffused is perfectly constant, and has never been injured by frost or burned in the least degree by the hottest sunshine, although fully exposed in the open air. The plant is of neat and free growth, and received the honour of a First-class Certificate from the Floral Committee at South Kensington, in July, 1875. Price 15s. each; larger specimens, 21s. each. A Photograph of the plant may be had on application for 1s.

POPULUS CANADENSIS AUREA VAN GEERTI (1876).

The golden variety of this noble Poplar sent out in February last by Mr. Charles Van Geert, of Antwerp, has fully borne out in our Nurseries the description he gave of it, and has retained its golden colour much better than either the Golden Catalpa or the Golden Oak during the late tropical summer.

EXTRACT FROM MR. VAN GEERT'S DESCRIPTION.

"We have the pleasure of offering an extremely remarkable variety of the Canadian Poplar, with a foliage which presents during the whole summer the finest hue of golden-yellow. It is in our opinion the most valuable sport which has been pronounced so by every connoisseur who has admired it in our nursery, for the delicate foliage now so frequently met with among low shrubs fails almost entirely among the larger trees. The Catalpa aurea and the Quercus Robur concordia are the only trees having a persisting golden foliage; but the former is only a second-sized tree, and the latter has not the vigour of the common Oak. Our golden Poplar, on the contrary, is a first-sized tree, of rapid and vigorous growth. Its eaves are quite as large as those of the common Canadian Poplar, and the yellow hue, instead of looking sickly, has a warm and vigorous tint. The better nourished the tree is, and the more it is exposed to the sun, the more vivid is the golden hue."

Having received in February last a large consignment of this magnificent novelty from Mr. Van Geert, we are enabled to offer nice plants at 7s. 6d. each.

ABIES EXCELSA AUREA (J. & C. Lee, 1875).

This is decidedly the finest golden Conifer of large growth yet introduced. It is of free growth, and requires to be planted in the full sunshine. In such a position the whole tree is suffused with the richest gold. A First-class Certificate has been awarded to this valuable tree at South Kensington. Price of nice plants, 15s. each; larger specimens, 21s. each.

LAURUS CAMELLIÆFOLIA (Wood, 1875).

We can still supply a few hundreds of this extraordinary and elegant Laurel. Price 2s. 6d. each; per dozen, 25s.

CHARLES LEE & SON,
HAMMERSMITH, W.

Cheap Plants.—Special Offer.

WILLIAM BADMAN offers, as under, all healthy strong stuff :—
VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 10s. per 100; well-rooted cuttings, 6d. per 100, 5s. per 1000; 12 choice named sorts, 2s. per 100.
CALCEOLARIA, Golden Gem, 5s. per 100, 40s. per 1000.
LOBELIA, speciosa (true), 3s. per 100, 20s. per 1000; Blue stone and purple, grandiflora, all from cuttings, 5s. per 100, 40s. per 1000.
PELARGONIUMS, Vesuvius, from stores, 8s. per 100, 75s. per 1000; Prince Silverwings, 10s. per 100; Madame Vaucher, 10s. per 100, 75s. per 1000; Master Christine, 12s. per 100: all from single pots.
,, Tricolor, Mrs. Pollock, 20s. per 100: Crystal Palace Gem, 12s. per 100: Flower of Spring, 12s. per 100: May Queen (Turner), 15s. per 100.
HELIOTROPE, finest dark, good bushy plants, 12s. per 100; rooted cuttings, 6d. per 100.
Packing included. Terms, cash.
Cemetery Nursery, Gravesend, S.E.

PICEA NOBILIS, 10,000, fine, healthy, well furnished plants, will carry balls of earth :—
7½ to 9 feet, 8s. per dozen, 60s. per 100.
2 to 2½ feet, 2s. per dozen, £0 15s. per 100.
2½ to 3 feet, 3s. per dozen, £1 4s. per 100.
3 to 3½ feet, 6s. per dozen.
PICEA NORDMANNIANA, 5000, fine. For sizes and prices see Catalogue.
PINUS CEMBRA, 10,000, very fine, well-rooted :—
2 to 3 feet, 5s. per dozen, 20s. per 100.
3½ to 4½ feet, 6s. per dozen, 25s. per 100.
4 to 5 feet, 9s. per dozen, 30s. per 100.
PINUS STROBUS WEYMOUTH PINE, various sizes.
PICEA BALSAMEA (Balm of Gilead), fine healthy plants, various sizes.
RETINOSPORAS, fine.
CRYPTOMERIA ELEGANS and others, in perfect health.
LIBOCEDRUS DECURRENS (Thuia gigantea), very good, 3 feet, 12s. per dozen.
JAMES SMITH, Darley Dale Nurseries, Matlock.

ALTERNANTHERAS, and other CARPET BEDDING PLANTS.—At 1s. 6d. per dozen, 8s. per 100, 70s. per 1000:—Alternantheras of all the varieties; Antennaria tomentosa, Echeveria lanata, Iresine Lindeni, Lysimum aurea var. Lobelia pumila magnifica (true), from cuttings, the best bedding Lobelia in cultivation; Mentha pulegium gibraltarium, Sedum glaucum, S. lineare, S. acre, per dozen, 10d. per 100, 80s. per 1000:—Achillea umbellata, C. denSverschaffaiki, Kleinia repens, Leucophyton Brownii, Santolina incana. At 1s. per dozen, 5s. per 100, 40s. per 1000:—Cerastium arvensis (green), tomentosum (white), Lobelia pumila grandiflora (true), from cuttings; Sedums of all varieties: Each suited for Carpet Bedding.
For cash with order, packing included.
WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

CHARLES LEE AND SON (Successors to Messrs. John & Charles Lee), of the Royal Vineyard Nursery, Hammersmith, W., beg to announce that, in consequence of the Retirement of Mr. John Lee from the business, they have TAKEN OVER the UNITED NURSERY and SEED TRADE formerly carried on for many years by the late Firm, and they trust the same liberal patronage so long given to Messrs. John & Charles Lee will be continued to the New Firm.
Charles Lee & Son pledge themselves to devote all their energy to raising Plants stock in every department, which the large resources at their command will enable them to supply with considerable advantage to the Public both as regards quality and price. With a view to a more extensive production of Stove and Greenhouse Plants of the best quality they intend to almost entirely rebuild their extensive ranges of Glass on a new site, a portion of the Old Nursery being taken up for building purposes. All orders to be addressed to
CHARLES LEE & SON, Royal Vineyard Nursery, Hammersmith, W., where the general business of the Nursery and Seed Trade will be carried on ; or to
Mr. DAVID CANNON, Ealing, and Mr. CANNON, Ealing Nursery; Mr. WEBB, Arboretum, and Mr. MARSLEN, Wood Lane, Isleworth.

CHARLES NOBLE, Bagshot, can offer the following :—
ROSES, Dwarf, 4s. per dozen, 25s. per 100, 210s. per 1000.
PEACHES and NECTARINES, dwarf-trained, 21s. per dozen, 150s. per 100.
RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1½ to 2 feet, 21s. per dozen, 150s. per 100.
,, ,, ,, for immediate effect, 2½ to 4 feet, and same through, 42s. per dozen, 300s. per 100.
,, PONTICUM, 1½ to 2 feet, bushy, 6s. per dozen, 35s. per 100.
,, PONTICUM, 1½ to 2 feet, bushy, 6s. per dozen, 35s. per 100.
KALMIA LATIFOLIA, 1 to 1½ feet, buds, for potting, 75s. and 100s. per 100.
ANDROMEDA FLORIBUNDA, buds, for potting, 75s. and 100s. per 100.
ERICA CARNEA, very fine, 21s. per 100.

New Azalea.—Azalea amœna Caldwellii.

NOW SENT OUT BY
W. G. CALDWELL AND SONS, The Nurseries, Knutsford, Cheshire. This is a striking improvement of the old and well-known Azalea amœna, obtained by crossing that variety with Azalea Magnifica. The flower is four times the size of the original, of a bright rosy purple colour, very free blooming; especially adapted for forcing (coming in early as Daboecii), and very suitable for bottomhole bouquets.
W. G. CALDWELL AND SONS are now sending out the above (which was originally distributed in August last). Strong Plants, 3s. 6d. each, 36s. per dozen.

To the Trade—Seed Potatos.

HAND F. SHARPE can still supply the following varieties of SEED POTATOS, raised from choice selected Stocks, viz. :—

Rivers' Royal Ashleaf,	Early Foxe's Seedling,
Myatt's Prolific Ashleaf,	Robson's Challenge,
Alma Kidney,	Walker's Improved Regent,
Model,	Paterson's Victoria,
Handrefold Fluke,	Red-skin Flourball,
King of the Flukes,	Paterson's Alpha,
Fluke Kidney,	Early American Rose,
Early Dalmahoy,	Extra Early Vermont,
Early Oxford,	Eureka,
Bresee's King of the Earlies,	American Wonder,
Bresee's Dwarf Prolific,	Climax.

Seed Growing Establishment Wisbech.



WM. PAUL & SON,

(Successors to the late A. Paul & Son, Established 1806.)

ROSE GROWERS,

TREE, PLANT, BULB, AND SEED MERCHANTS,

WALTHAM CROSS, HERTS,

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Inspection of Stock invited.

Priced Descriptive Catalogues free by post.

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New Continental Roses for 1877.

H. BENNETT'S own selection, in the best possible Plants, ready in March.

Descriptive LISTS may now be had post-free on application.

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VINES, VINES, VINES.

F. & A. SMITH,

THE NURSERIES, WEST DULWICH, S.E., Offer from a large Stock strong well-grown fruiting and planting Canes, at low prices.

List on application.

AVENUE TREES.

PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 8 inches at 4 feet from the ground.

LIMES, 12 to 20 feet high, and girthing 6 to 10 inches at 4 feet from the ground.

POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 6 inches at 4 feet from the ground.

ANTHONY WATERER

Has to offer many thousands of the above. They may be seen growing at Knap Hill. They are straight, handsome, and well rooted, and altogether the finest Trees of the kind to be found in any nursery in Europe.

KNAP HILL NURSERY, WOKING, SURREY.

SURPLUS NURSERY STOCK.

TAMARIX, two sorts, 2 to 3 feet, 12*s.* 6*d.* per 100
SPIRÆA FORTUNEI, 14*s.* per 100
FUCHSIA GRACILIS, 20*s.* per 100
YEW, English (fine), 1½ to 2½ feet, 25*s.* per 100
PINUS INSIGNIS, 6 to 12 inches, 20*s.* per 100
BERBERIS DARWINII, 1½ to 2 feet, 16*s.* per 100; 2 to 3 feet, 25*s.* per 100
COTONEASTER MICROPHYLLA, 2 to 3 feet, 16*s.* per 100
BUDDLEA GLOBOSA, 2½ to 4 feet, 16*s.* per 100
DRACÆNA INDIVISA, about 2½ feet, 12*s.* per dozen, 75*s.* per 100; stronger, 30*s.* per dozen
CISTUS, strong, many sorts, 4*s.* per dozen
CLIANTHUS PUNICEUS, strong, 9*s.* to 12*s.* per dozen
CEANOTHUS, many sorts, 6*s.* to 12*s.* per dozen
MUHLENBECKIA COMPLEXA, 6*s.* to 12*s.* per dozen
POPLAR, Lombardy, 3 to 4 feet, 35*s.* per 1000
,, Canadian, 4 to 5 feet, 35*s.* per 1000; 5 to 6 feet, 50*s.* p. 1000
,, macrophylla, 5 to 6 feet, 50*s.* per 1000; 6 to 10 feet, 10*s.* per 100
PRIVET, Evergreen, 3 to 4 feet, 30*s.* per 1000
SYCAMORE, 3 to 4 feet, 50*s.* per 1000
RODGER McCLELLAND AND CO. 64, Hill Street, Newry.

Splendid New Melon, 1877.

CHARLES LEE AND SON (Successors to Messrs J. & C. Lee) have the pleasure to announce that they have purchased the entire Stock of MANN'S HYBRID GREEN-FLESH MELON, which they now offer for the first time. It has already earned a high reputation in London and the provinces for its many excellent qualities, among which may be mentioned a remarkably high and exquisite flavour at all seasons of the year—perfection of shape and size for dessert—a thin rind and melting flesh, with an overflow of perfumed juice. It is also a heavy cropper, and forces well.

Dr. HOGG has spoken of this excellent Melon in the highest terms, and after tasting it pronounced it a fruit of the highest merit.

Mr. CULVERWELL, of Thorpe Perrow, fellow judge with Mr. FOWLER, of Harewood House, at the Leeds Horticultural Show, where they awarded a First-class Certificate to "Mann's Hybrid Green-flesh Melon," speaks of it as "an exceedingly fine Melon, especially at that early season—the early part of June."

Mr. INGRAM, of Belvoir Castle, writes, in the third week of October, "that in spite of the disadvantage of a long term of gloomy weather, at that season of the year, Mann's Hybrid Green-flesh Melon' was sweet, tender in flesh, very juicy, and distinct in character."

Messrs. Charles Lee & Son are now prepared to offer this very useful and delicious new Melon in sealed packets, at 3*s.* 6*d.* per packet.

CHARLES LEE AND SON, Hammersmith, W.

From Paris.—Roses, Pæonies, Camellias.

LÉVÊQUE AND SON, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand ROSE TREES, Standards, Half-standards, Dwarfs, and Climbers—New and Old sorts.

LÉVÊQUE AND SON respectfully solicit Gentlemen and Nurserymen visiting Paris to inspect their Stock, the largest in Paris.

SPLENDID PYRAMID CAMELLIAS, price 12*s.* to 50*s.* each; small, 6*s.* each.

CATALOGUES and LISTS on application.

From Paris.—Large Bulbs of Gladioli, Seedlings AND NAMED SORTS.

LÉVÊQUE AND SON, NURSERYMEN, 26, Rue du Liégat, Ivry-sur-Seine, near Paris, have many thousand strong, healthy Flowering BULBS of GLADIOLI. The Seedling Bulbs are particularly recommended—their flowers equal to the named sorts (seeds have been saved from the best sorts of the collection). GLADIOLI, Seedlings, 8*s.* per 100, £3 per 1000, £26 per 10,000; mixed white, red, pink. Separate colours, 10*s.* to 20*s.* per 100; yellow, 24*s.* per 100. Named sorts per 100, 10 sorts, 10*s.*; 25 sorts, 20*s.*; 50 or 100 sorts (the best), from 25*s.* to £6, less or more according to the novelty. All good flowering bulbs. English Cheques on London, or Post-office Orders on Paris, accepted in payment.

Special Offer.

SEED POTATOS, warranted True and Free from Disease. In cwt. bags.
RED-SKINNED FLOURBALL, 8*s.* per cwt.
JERSEY BLUE, 8*s.* per cwt.
REGENTS, Improved, 8*s.* per cwt.
DUTCH RED, 8*s.* per cwt.
EARLY ROSES, 12*s.* 6*d.* per cwt.
SNOWFLAKE, 24*s.* per cwt.
EARLY OXFORD, 10*s.* per cwt.
Many other sorts in stock.

Nett prices for cash with order. No charge for bags, and delivered free on Rail, Norwich.

JARMAN & DANIELS BROS., Norwich.

RHODODENDRON PONTICUM, 500,000, all twice or thrice transplanted, bushy plants:—
4 to 6 inches, 20*s.* per 100, £4 per 1000.
6 to 9 inches, 25*s.* per 100, £5 per 1000.
9 to 12 inches, 15*s.* per 100, £7 per 1000.
12 to 15 inches, 18*s.* per 100, £9 per 1000.
15 to 18 inches, 30*s.* per 100, £12 per 1000.
RHODODENDRON HYBRIDUM, 300,000, bushy plants:—
4 to 6 inches, 15*s.* per 100, £7 per 1000.
6 to 9 inches, 18*s.* per 100, £9 per 1000.
9 to 12 inches, 25*s.* per 100, £11 per 1000.
12 to 15 inches, 27*s.* 6*d.* per 100, £13 per 1000.
15 to 18 inches, 30*s.* per 100, £14 per 1000.
18 to 24 inches, 35*s.* per 100, £16 per 1000.
See CATALOGUE.

JAMES SMITH, Darley Dale Nurseries, near Matlock.

SPRING FLOWERING PLANTS:—
PRIMROSE, double yellow, 3*s.* per dozen, 20*s.* per 100.
,, double lilac, 2*s.* 6*d.* per dozen, 15*s.* per 100.
,, double purple-crimson, 6*s.* per dozen, 45*s.* per 100.
,, double crimson, true, 18*s.* per dozen.
,, double yellow, flowers in scapes, 9*s.* per dozen.
CARDAMINE FRATENSIS fl.-pl., 3*s.* per doz., 20*s.* per 100.
SISYRINCHIUM GRANDIFLORUM, in pots, 3*s.* 6*d.* per dozen.
PANSY, Blue King, strong, 2*s.* per dozen, 20*s.* per 100.
VIOLA, Blue Bell, strong, 2*s.* per dozen, 10*s.* per 100.
,, lutea Grinvei, strong, 2*s.* per dozen, 10*s.* per 100.
POLYANTHUS, sorts, strong, 2*s.* per dozen, 10*s.* per 100.
DAISIES, white and red, 3*s.* 6*d.* per 100.
WALLFLOWERS, double German, 6*s.* per 100.
,, single dwarf yellow, 6*s.* per 100.
RODGER McCLELLAND AND CO., 64, Hill Street, Newry.

GODETIA, LADY ALBEMARLE.

First-class Certificate Royal Horticultural Society, August 2, 1876.



A magnificent new variety, growing 1 foot high. Flowers 3½ to 4 inches across, and of the most intense glowing carmine-crimson colour, which being produced in wonderful profusion give the plants the most charming appearance. This is the finest annual ever sent out, and being extremely hardy and easy of cultivation, should be in every garden.

Seed, with full cultural directions, per packet, 12. 6*d.*, post-free.

"We have scarcely any plant of such a lovely shade of colour."—*The Villa Gardener, September*, 1876.

"An extremely beautiful variety bearing flowers quite 4 inches in diameter, of a glowing crimson colour."—*Gardeners' Magazine, August* 5, 1876.

"A remarkable and splendid variety, far superior to any other of the family."—*Journal of Horticulture, Aug.* 3, 1876.

May be had of all Seedsmen, and Wholesale and Retail of

DANIELS BROS.,
THE ROYAL NORFOLK SEED ESTABLISHMENT, Norwich.



E. G. HENDERSON & SON

Offer the following in Seed, of quality the best that can be had, at per packet:—

CALCEOLARIA—the variety of colours, size, and shape of the flowers is the result of many years' continual improvement; 2*s.* 6*d.* and 5*s.*
CINERARIA—the shape and brilliancy of colour in these flowers is of great importance; 2*s.* 6*d.* and 5*s.*
,, double-flowered, 5*s.* and 10*s.* 6*d.*
PRIMULA SINENSIS, crimson, scarlet, and white (better cannot be had), separate or mixed, 2*s.* 6*d.* and 5*s.*
,, double-flowered, true from seed, 2*s.* 6*d.* and 5*s.*
CYCLAMEN PERSICUM GRANDIFLORUM—brilliant colours, with large petals and perfumed flowers, is the quality here offered: 1*s.* and 2*s.* 6*d.*
BEGONIA, tuberous-rooted (our collection is unequalled), 1*s.* and 2*s.* 6*d.*
,, tuberous-rooted, double-flowered, mixed colours, 2*s.* 6*d.*
BALSAM—we trust to none but our own saving—mixed, 1*s.*; nine colours, 2*s.* 6*d.*
PINK, from named collection, 1*s.* and 2*s.* 6*d.*
CARNATION, mixed, 2*s.* 6*d.* See Catalogue for separate sections.
MIMULUS, superb strain, same as exhibited every year at the Royal Horticultural Society, 1*s.* 6*d.*
LOBELIA, Brilliant Improved, White Brilliant, Mazarine Gem, speciosa—from pot plants, pumila grandiflora, Emperor Improved, Declacue—the best red, Bluestone, and Magnifica, 2*s.* each.
PANSY, English, show flowers, 1*s.* 6*d.*
,, French, high-bred, 1*s.* 6*d.*
PETUNIAS, very beautiful, saved in pots, in separate sections at their Wellington Road Nursery, 1*s.*
,, double-flowered, 1*s.* and 2*s.* 6*d.*
SWEET WILLIAM, extra fine, 1*s.*
,, from named flowers, 2*s.* and 2*s.* 6*d.* (each.
STOCK, East Lothian, scarlet, white, and purple, 6*d.* and 1*s.*
,, Intermediate, Brilliantissima, and others. See Catalogue.
AURICULA, extra choice alpine varieties, 2*s.* 6*d.*
SOLANUM, Improved Hybrid, as grown for the London Market, 1*s.*
,, HENDERSONI, conical-shaped berries, 1*s.*
GLOXINIA, drooping and erect, 1*s.* 6*d.* each; mixed, 2*s.* 6*d.*
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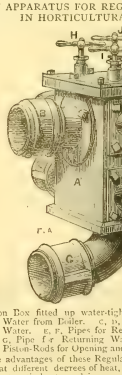
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SATURDAY, MARCH 31, 1877.

SPRING.

LIKE Conn, the Shaughraun, who snatches a draught of whiskey when stretched upon his bier, vegetable nature does not die completely even during the winter months. She assists, like the above-mentioned Irishman, in her own wake, especially when the winter is as mild as the past has been. Yet, in spite of Winter Roses, patches of green beneath the snow, and other occasional proofs of Nature not being quite dead, the winter season—and more particularly November, when the leaves are still rotting before our eyes—is the most melancholy period of the year. Sad indeed is the spectacle of falling leaves, browned evergreens, and all other evidences of the annual descent of vegetation into an apparent tomb. Then the litter of Asparagus and Bean stalks, the disorder of Potato haulm, and the uninviting look of Scarlet Runners blackened in a night, and of old, uneaten Cabbages frozen to the ground! These first forbidding symptoms of decay mark that melancholy period of the year when winter's grip, in a sudden frost, spoils the gardens, and snatches the leaves from twig and branch to mingle with earth. This occurred last year after the heavy rains, when the frost-bite smote all deciduous vegetation and brought down the leaves shivering to the ground. It is a most distressing period for those who pride themselves upon their lawns. In a case of that kind last year twelve men were employed walking in a row, with brooms and aprons, to catch and sweep off the falling leaves. This period of decay is unquestionably the least joyous period of the year. A little later and all signs of what has happened—death without immediate burial—will be covered up a spit deep, and the calm of resignation, or even the anticipation of a merry Christmas, will succeed to the dark hour of autumn's first hard frost.

Then how rapidly the season marches on! Early in November last year a winding-sheet of snow was spread over the Scotch mountains from Thurso to the Tweed. The Fir plantations of Strathspey were muffled early in the white familiar mantle, and in travelling homewards the same covering was on the trees at Perth, and southward to the English border, where the snow lay a mere film upon the hills. In the south of England the land last winter escaped the usual ice-lock. There were outdoor flowers at Christmas, and a hedgerow near Eastbourne sheltered a Primrose on January 15. As a rule, Nature lies conventionally dead five months. Then comes the annual summons, and before the earth is quite awake, and previous to the commencement of the general bird-chorus, you see that Nature's sleep in field and forest is over. Presently the leaves burst their wrappers, prepared to flutter till October; but first of all the pastures exchange their brown coats for the brightest liveries of green, and amidst the many touching incidents of the general revival there is nothing more affecting than this resurrection of the myriad lowly herbs which are individually too obscure for the general eye, though they form collectively the pastoral covering of more than one-half of England.

And while the earth is being re-decorated the gardener beckons his bedding plants, and

commences the work of grouping them and arranging their various hues in due harmony and contrast. What a magician he is in spring-time. "Man cannot live by bread alone," might be his motto. It is because of that constant yearning of the soul for beauty that all men must have flowers, gardens, and gardeners, if attainable. For what is beauty but perfection? and where can that be found if not in a flower? True, it must be evanescent, but so are most things, and we have preached throughout this sermon its renewal. Flowers, and indeed all plants, resemble, in that respect, our lives, and the bounding of the heart and joy in the annual spectacle and miracle of spring are premonitions of immortality.

We have here laid down a principle which covers all the reasons why the heart is touched by the phenomena of spring. Young grass is, in one aspect, only prospective beef and mutton, and a promise of butter yet to come. A cornfield is equally a promise of new bread; and the routes by which the hearts of some men may be reached being circuitous, the source of their pleasure in spring is simply appetite. But happily most persons are more spiritual than they imagine, and hence the general love of gardening. An increasing number of gardeners is continually being trained for the cultivation, to a large extent, of unnecessary crops, because the world is growing less utilitarian and more disposed to grow those crops which fancy alone can feed on. In that noble structure of Nathaniel Hawthorne's, "the Hall of Phantasy," he enumerated among the crowds upon its marble floors, poets and other men of fancy—the greatest benefactors of their race. And we would add gardeners to the number, as the greatest annual creators of beauty in an important department of decorative art.

NOVELTIES.

THE BANDED RUSH.—At present we do not know the botanical position of this singular novelty. What we do know is that it is a very striking hardy variegated plant, and variegated as few plants are, viz., in the form of rings, of yellow colour, alternating with similar rings in which the green colouring matter is present, as usual, thus presenting a near resemblance to a porcupine quill (fig. 62). To what cause are we to attribute the absence of colour in this particular manner? To this question we can at present give no answer. It is an interesting illustration of the independent action and separate life of individual cells or groups of cells, but the reason of it in this case we do not know. The plant, from what we have seen of it, is likely to be a favourite, as the variegation is distinct, the plant hardy, and the culture of the simplest. It was introduced from Japan by way of America, we believe, at any rate the stock is now in the hands of Mr. W. Bull, by whom it will be sent out. The similarly banded Eulalia we shall figure on a future occasion.

EXPERIMENTS IN VINE CULTURE.*

AS a rule horticulturists welcome and hail with pleasure any substantial aid to their profession brought under their notice. Hence a few experiments made after nine years' experience, painstaking and careful observation in the county of Durham, will, I trust, be thought worthy of notice. Having been invited to read a paper, I agreed, I confess somewhat reluctantly, fearing I might fail to make your evening as instructive and enjoyable as it might be by some one more used and better adapted to public speaking.

It will be remembered that some two years ago, when here, I partially promised to give some account of an experiment made with a house of Vines planted (if the term may be considered correct) without natural soil. Some three or four years ago the influence of soil on Grape growing attracted a fair share of attention, and was criticised freely in the horticultural papers by practical men. It occurred to me that Grapes could be grown without soil, and I resolved to give such a method a trial, and soon after an opportunity was presented, and the experiment was made in a small house, 30 feet by 12 feet. In the month of August, 1873, immediately after gathering a crop of Hamburghs, the Vines, which for several years had been severely forced, were taken out. Immediately inside of the front wall I had the old soil removed down to the drainage for a width of 4 feet; this was refilled with the freshest of last year's leaves, and green cow-manure pressed as firmly together as possible. The Vines were then planted, and a little soil was used to surround the balls; in November I added to the border 4 feet outside and 4 feet inside, made as before, when I found the roots quite encouraging. The material used was always in a green state, and this process was continued until last year, when the border was finished. I may add that top-dressing was oftener required than with beds made with soil, as the bed subsided more rapidly; the whole was covered with charcoal only for appearance, no soil being used.

After years of experience under the tuition of men famous in the Grape-growing world, I confess the compost described appears to be a most unreasonable mixture in which to plant young Vines. The first part of the border made has become a light black soil without any adhesive texture, and is soft and spongy when trod on. No doubt to some this experiment will appear very startling, more especially to those who condemn the practice of using manure in a raw state in the formation of a Vine border. But we are told clear-sighted men of science sometimes get into mental fogs, and make comical displays. We are also told that one fact is worth a thousand arguments. Now the fact is, this border so prepared has produced fruit equal in every respect to what the house before produced, and to what houses of the same size are now producing where the borders have been prepared in the old way. The varieties planted were varied for experiment, and consisted of Dr. Hogg, Canon Hall Muscat, Barbarossa, Foster's Seedling, Black Hamburgh, Duke of Buccleuch, Waltham Cross, and a seedling. There was nothing in the Vines or fruit that would lead one to suppose that they were growing in any other than the usually prepared border. The Hamburghs were fine in colour and flavour, Canon Hall set like Hamburghs, and Waltham Cross had none of the small berries it often produces from imperfect setting. This Grape was good, and well liked at the table, in February, at Lambton.

In the latter end of August, 1875, I planted another house of the same dimensions as the one already described, and with a view of retaining the turf as long as possible in a fresh condition it was not broken up, as is generally done when making a Vine border, but put in the full size, 12 inches by 9 inches, commencing at the bottom and working upwards, placing the turves as a mason would bricks in building, and using cow manure as mortar. To quote the words of Mr. Westcott, of Raby, when looking over the gardens at Lambton, after an explanation, he said, "Well, you have just gained a year on my young Vines," when only the year before I had congratulated him on their vigorous growth. I don't wish it to be understood that I prefer manure to grow Vines in, or that I consider it better than other mixtures, but I believe it to be good along with them, and that in my estimation no newly made border is perfect without it. In the many gardening periodicals now published we have writers who may differ in their management of the Vine, but whose articles are hailed with interest and read with pleasure by those in pursuit of knowledge. If every one were as fond of writing on the Vine as I am of reading about it, we should have a periodical devoted to the Vine alone. I read all the conflicting evidence on its cultivation, and hope that we may ultimately arrive at the perfection of Grape growing. Many ills are charged against an over-rich border, such as mildew, gross growth, watery shoots, badly ripened wood, an abnormal amount of pith, shanking, bad coloured Grapes, and so forth; but when one ventures an experiment and finds it puts all these aside, what then?

I cannot help thinking there is much to be learned, but when we are able to put our hand with more certainty on the causes which produce the ills the Vine is heir to, we shall become more able to remedy them. I am prepared myself (the more so after another year's experience) to say, that the build of a Vine depends more upon the internal atmosphere, the amount of moisture it is charged with, and the light under which it is grown, than upon the richness of the border; it seems to me one of those plants which cannot be grown too fast or too strong. Some tell us it is not from the strongest wood we get our finest fruit; granted in some cases, there being so many ways of growing and ripening the canes. While some house has every attention paid to it—properly drained, and as a rule looked through in the evening, and a temperature of 65°, 70°, or 75° rigidly adhered to, a close growing atmosphere kept up, and the Vines encouraged to make their growth in darkness, instead of daylight—hence come the watery shoots if you like, and an abnormal amount of pith. And from such management the strength of the Vine is reduced until tendrils instead of bunches are the reward.

From the time Vines commence to grow a little air should be considered of the greatest importance, and the quantity should be increased as the foliage becomes stouter and able to endure it. A given temperature sufficiently high for the well-being of the Vine can easily be maintained with a requisite quantity of air to prevent what we call watery shoots, if encouraged and grown in sufficient light by day. I hope some day to find glasses used as extensively to indicate the strength of light as they now are to register so correctly the temperature. Before finishing my paper I may add I trust my experiments may lead to some further researches in this or some other way that will be advantageous to Grape growers, and denote and secure future progress. *J. Hunter, The Gardens, Lambton Castle.*

* Read at the Darlington Gardeners' Institute, on March 15.

ON HOLLANDO-BELGIAN BORDER-LAND.

RAILWAY travelling will not be perfect until you can traverse large towns—small capitals, or cities which think themselves as important as capitals—without a break; especially as the distance between some of them is inconsiderable from a railway point of view. If you want to see them, or to halt for rest, the rupture of continuity is of little consequence; but if you have seen them, and don't want refreshment but do want to get on, it is a waste of time and patience—as travelling time is calculated now—which is borne because inevitable. On arriving at Brussels from Calais, for instance, you cannot go on straight to the Rhine without stopping and driving from one station to another, although many tourists might like to do so. And on proceeding from Ghent to Holland *viâ* Antwerp, you take your departure from the latter city at the Station Hollandaise, the Hollando-Belgian Station.

The line carries you over a plain in no wise remarkable and in some respects disagreeable, irrespective of its monotony, which is broken by a field or two of yellow-flowered Lupine, streaking the landscape's dull tints in due season with patches of gamboge. Then you have plantations of Firs, sown and left to grow much too thick, so that a struggle for life ensues in which all seem likely to succumb and not one to survive victorious. Their only use appears to be to furnish sticks and firewood, perhaps also to prevent the light soil from being carried off by the winds to improve and manure the heavier lands of some distant region. The possibility of this contingency is demonstrated when you come to wide-spread naked heaths, in crossing which the train raises clouds of fine dust, whose penetrating powers are manifested by every fold of your garments when you would tidy yourself up a little at your hotel before dinner.

After their first passage through this pulverised plague of heated silver-sand and desiccated heath-mould, many people make a stern resolve. "Most unpleasant," they say; "disgusting, unbearable! Next time we come, we'll avoid this nuisance by taking the steamer from Antwerp to Rotterdam. On that, we shall not be stifled and choked. Plenty of fresh air—must be a delightful passage." Yes, but inquiry acquaints them with the fact that the steamer, whose movements are regulated by the tide, sometimes starts at inconveniently small hours of the morning, that it is from seven to nine hours in going from port to port. "And," suggests a descendant of one of Job's comforters, "it probably carries a good deal of merchandise, to make it pay. How do you know that your travelling companions won't be a flock of sheep or a drove of pigs? Moreover, my guide-book says that, when the weather is rough, seasickness is no rarity." So the firm resolution to

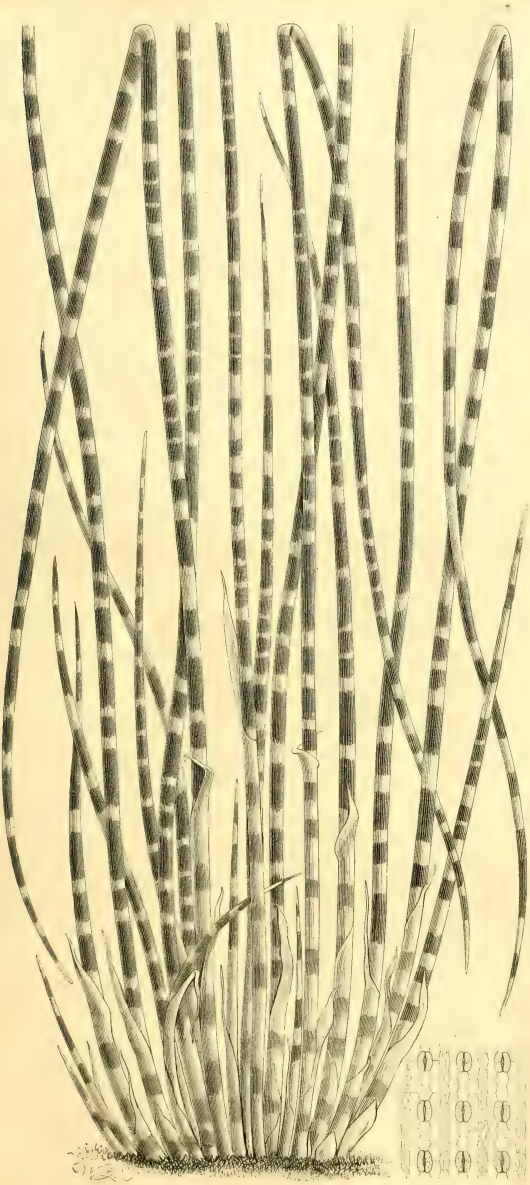


Fig. 62.—The banded rush, with epidermal cells and stomates.

steam it gives way, and the traveller, choosing the least of two evils, elects to enter Holland by land.

Crossing an untried frontier is always an interesting step. Who would hesitate here, when the very name invites you—Rozendaal, the Dale of Roses? The Dutch have not a few localities very idyllic in their significance. Haarlem possesses Vogelenzang, Bird's-Song, a village of bulbous celebrity; also Bloemendaal, the Vale of Blooms; also Zomerzorg, the Summer Delight. As in passing from France into Belgium, so in crossing the frontier between Belgium and Holland, no natural limit indicates a change. The fact is revealed by the request, that is the order, to submit your baggage to the inspection of the Dutch gentlemen of the customs, whom my own experience cannot accuse of unpoliteness. They have a formality which they are compelled to fulfil; and if you don't even know what is contraband, through having nothing with you but travelling necessaries, certainly, in that case, ignorance is bliss.

After starting from Rozendaal, you soon perceive a difference. When a train halts at a station, waiters or women offer on trays tall glasses of nice looking beer, which you may drink and pay for without stirring from your seat. Dutchmen get out, offering you and (when declined with a shake of the head) leaving behind them the Dutch newspaper which they have bought and skimmed, much as some Frenchmen think it fine to leave half a glass or the quarter of a bottle of wine on the table where they have been dining. The stations are paper-hung and ornamented with printed bills, advertisements, and notices in Dutch, one of which, recommending Hardenberg's Bible Hotel at Amsterdam, is a strange novelty to English eyes. More serious than all, the moneys have changed. The coins so cheerfully received in Belgium, France, Italy, and Switzerland, are no longer current here. One single reason is sufficient to stop them; they are of less value than the corresponding pieces (when there are any) of the Dutch coinage. English and French gold is taken, by exchange, at the hotels, but "put money in thy purse" of the Dutch stamp only, for use in the streets and at railway stations.

The Dutch coinage is less easily compared with English money than with French, by which latter I will therefore measure it. Accounts are kept in florins or gulden and cents, the cent is the hundredth part of the florin, so that it is a decimal system of moneys; as in France, the florin is worth a little more than two francs. When your bill is brought in, or the price of an article stated in florins and cents, double it, mentally add a trifle more, and you have the very approximate amount in francs and centimes. The half florin corresponds to the franc, the quarter florin (silver) or twenty-five cents to the half franc or fifty centimes piece. Coppers are the weak point of the Dutch coinage, they have only their trumpery little copper cents, worth rather more than two French centimes, or the fifth of a penny each, but nothing corresponding to our halfpenny or penny, or to the French five and ten centimes (one and two sou) pieces. Moreover, small copper coins of other countries, as of Belgium, pass for cents; whence it comes to pass that you often receive as change a handful of rubbish, which tempts you to fling it into the first canal rather than put it into your pocket. The Dutch cent is open to the further objection that it has no relation whatever to the American cent except in being the hundredth part of something. The stuiver (four cents) is non-existent in the metal, although some small dealears may count by stuivers, twenty of which would go to the florin—just as country people in France still reckon by écus (three francs) and pistoles (ten francs), all trace of which in the currency has long since disappeared. For the gold twenty-franc piece you get at hotels, perhaps varying a trifle with the rate of exchange, nine florins forty cents. But in such exchange you can only expect to receive par. If the exchange were in your favour, the exchanger might hardly feel bound to give it you, as he saves you the trouble of going to the bank; if against you, he would probably deduct the difference. Of the gold currency, to which Holland is returning, after having demonetised gold, I have seen nothing; not one of the new gold ten-florin pieces, about 16*s.* 8*d.*, which are now made legal tender. There are ten-florin notes, which are so far convenient on account of their small bulk and their lightness.

No passport is needed for entrance into and circulation in Holland, but prudence will urge every traveller to be provided with one, nevertheless. At

the first opportunity he will buy the latest issue of the *Officiele Reisgids voor Nederland*, with the map, if he can get it with the map. This, being printed in Dutch, raises the important question of language. Nobody is supposed to know Dutch, but the tourist will find it most useful to learn the numerals, the days of the week, and a few other indispensable words. This is not difficult for an Englishman, especially if he have some knowledge of German. With this, a good will, and a little hard study, Dutch does not look as if it would prove an insurmountable tongue. The inscriptions in the streets invite you to learn it. No prophet is needed to help you to interpret "Tabak Snuif en Sigaren," or "Koffij en Thee," or even "Boekbinderij," over a shop-front. "Zadelmakerij" is equally obvious to any one who ever bestrode a horse; as are "Goud en Zilver Werken" to lovers of finery, and "Broodbakker" and "Boter en Kaas" to hungry boys and girls. Need I explain that "Aardappelen" are earth-apples, Potatos; "Boterhuis" a butterhouse; "Haarschnijder en Scheerder" a haircutter and barber, represented perhaps by a father "en zoon"?

French will not carry you so far as you may fancy, it is of little use in the streets, of almost none in the country. The gentlemen at the head of the best hôtels are mostly accomplished linguists, some (not all) of the waiters also speak English or French more or less fluently. At any rate, a foreigner who speaks no language but his own is not worse off in Holland (if so badly) than he would be in France. Taken as a nation, the French are perhaps the least accomplished linguists in Europe, unless the Spaniards beat them in that negative quality. Their language is admitted as the language of Courts, and consequently of diplomacy, often too of business affairs. The Frenchman is no great traveller, when he can help it. In country districts, in the days when military service was not compulsory and universal, he was content to pass his life in mowing in an irregular orbit round his village steeple, beyond whose sphere of attraction he never went, rarely losing sight of it for more than a few hours. He therefore deems it a work of supererogation to acquire any other tongue than his own. If strangers come to him, he expects them not only to speak his language, but to speak it well, in which he is unreasonably exacting, for, at least amongst the middle classes, however correct may be the speech, the spelling is often amusingly at fault.

In Holland, on the other hand, the educated classes are often admirable linguists, wealthy not only in worldly goods, but in an acquired stock of foreign tongues. Their high position as a maritime power, their colonies and their wide-spread commerce, have brought them into contact with many and various peoples, and as few strangers think it worth their while to learn Dutch, the Dutch, out of sheer necessity, learn the languages of other peoples. Dutch ladies even are to be found possessing the accomplishment of passing from one language to another with an ease and fluency which would astonish not a few young women whose schooling is supposed to be "finished," although education in this world is never finished, unless by those who are contentedly resolved never to pass some given milestone of practical routine or of ignorance.

Probably, with most men, the first motive for learning a language is its social or commercial utility. Otherwise, we are told great things of Dutch literature and its attractions. The Dutch language is not, as many people fancy, a corruption of the German language. On the contrary, it has its independent existence, its special forms, its own peculiar character, together with great copiousness of expression. Although Dutch is called Neder Duitsch and German Hoog Duitsch, that is, low and high Duitsch, the distinction refers to the topographical position of the nations who speak those languages. For, taking into consideration their respective areas and populations, Dutch literature has produced during the last four centuries more *chef-d'œuvres*, some of which are poems, than the much vaunted German language. And yet nobody takes to learning Dutch, whence the Dutchman takes to learning everybody's language. †

THE ORIGIN OF THE POTATO DISEASE.

By reference to the books and papers of the date of the first outbreak of the Potato murrain in Europe, it will be seen that at that particular period there was a strong and wide-spread belief amongst agriculturists that the Potato disease had been introduced into Europe with the Peruvian guano, which was then being imported by thousands of tons annually from the Chinca Islands, on the west coast of South America, close to Peru. As far as I can learn, this belief has received little or no support from the men who have worked hardest in investigating the exact nature of the Potato murrain. The men who associated the disease and guano together could give no solid and convincing reason for such association. Latterly the "guano theory" has had a strong fascination for me, and I am inclined to think the rustics of 1845 and 1846 had good reason for associating the Potato pest and the guano together: for instance—

1. From 1841 to 1851 more than a million tons of guano were imported into this country from the Chinca Islands. This guano came direct from the very home of the Potato plant.

2. The exotic origin of the fungus which destroys our Potatos has never been doubted, and all known facts point to the neighbourhood of Peru as its home.

3. The Potato fungus attacks other Peruvian and Chilian plants, as the Tomato, the Petunia, Schizanthus Grahami, &c.

4. The Potato fungus not only germinates readily in water and in dung, but the last two years' experiments clearly prove that it will live through one or more years in a resting condition in dry manure or its expressed juices.

5. Thick fogs at some seasons are described as being of nightly occurrence on the Peruvian guano islands, and in the old times of guano collection these fogs converted the whole surface of the guano into a "greasy paste." This "greasy paste" would be the very material the Potato fungus would most luxuriate in.

6. Known facts prove that the neighbourhood of Peru is the home of the Potato and the Potato-fungus. That the fungus there perfects its resting-spores as it does here, viz., upon excrement and refuse, there can be no reason to doubt. That the ordinary spores will grow in and upon guano, and in this material produce resting-spores, seems highly probable, and that resting-spores and guano were at one and the same time brought to Europe would also appear quite within the bounds of probability and reason. The Potato-fungus clearly stops with us because it luxuriates far better on the cultivated plants of Europe than the wild and rank Solanaceæ and Scrophulariaceæ of Peru and Chili.

With these views in mind, I propose carrying out some experiments during the forthcoming autumn. In the meantime I shall be glad to make a microscopical examination of any samples of guano sent on to me, with a view towards the detection of any fungoid bodies that may possibly be present. *Worthington G. Smith.*

LAMBTON CASTLE.

(*Concluded from p. 376.*)

THE FRUIT-HOUSES.

THE range on higher ground behind, and which has been already alluded to, consists of a number of houses, the ends standing north and south, at right angles with the others that connect them. Commencing at the westward end, the first we enter is a span-roofed Peach-house, 40 feet by 22 feet; the trees are planted on both sides, trained up near the roof, the roots occupying both outside and inside borders: they are mostly old favourite varieties. The adjoining house is a span-roofed vinery, the same in size and similar in every way, principally Lady Downe's and Black Alicante: they were planted before Mr. Hunter came here; although bearing a nice crop they are not quite right at the roots—a new border is to be made and replanted. The next is a hip-roofed Fig-house, 48 feet long, the trees planted in a raised border in front, and are in very good order.

We then come to a Cucumber and Melon house, each 30 feet in length. A number of varieties are grown. In continuance is a lean-to Peach-house, 33 feet by 12 feet, it is filled with one very fine tree, a Royal George, forced early every year. The back wall is covered with Figs.

Next comes a lean-to vinery, 33 feet by 14 feet, two years planted with Black Hamburgh, Duke of Buccleuch, Dr. Hogg, and Waltham Seedling; these are the Vines mentioned in the paper Mr. Hunter read, and described as planted without a particle of natural soil, except a small quantity used round them at the time of planting; and as no further details were given many were puzzled not a little to conjecture what they could be planted in. The border occupies the whole of the inside of the house, and 12 feet outside; it was made in August, and consisted altogether of leaves gathered the preceding year, and cow-dung in equal proportions. It was done for an experiment, and is so far a success; as Mr. Hunter says, it remains to be seen how long they will last in such material. They have made splendid growth, and for their age carried a very heavy crop of large-berried highly coloured fruit; some of the bunches of Hamburghs were not far short of 5 lb. each. I tasted some of these and the flavour was as good as their appearance, which goes to show that rich feeding does not always injure flavour.

From this we enter another vinery similar in size to the last, all Black Hamburghs, and planted before Mr. Hunter's time; they were carrying a good crop of even sized, finely coloured bunches. Next is a similar vinery; this house has been planted one year with Black Hamburgh and some Golden Queen; the border is made of two parts loam to one of cow manure, without rubble, lime rubbish, or any material of a like nature added: they have made very fine growth.

This leads to another vinery, the same size, filled with Black Hamburgh and Madresfield Court, three years planted; these were forced early, and had all the appearance of having borne a good crop.

The next are two succession Pine-houses, each 28 feet long, filled with strong promising plants. Adjoining are two more hip-roofed Fig-houses, similar to that already described at the opposite end of this very long range.

The last two houses are span-roofed fruiting Pine-houses, the same size and standing in the same position—at right angles with the centre of the range—as does that occupied by Peaches at the opposite end. A large proportion of the plants in the first house are seedlings raised by Mr. Hunter; they are all raised from Montserrat, but differ very much in appearance from each other, and still more from the parent, being double the size with much smaller crowns than Montserrat. Many of the seedlings were in fruit, and would run from 8 lb. to 10 lb. each, one in particular Mr. Hunter has grown up to 11½ lb. In the adjoining house, which is connected with this by a narrow lean-to, in which are grown Bananas planted out in a narrow raised bed and a quantity of Eucharis amazonica, also planted out, the Pines were similar in condition to the last, comprising Charlotte Rothschild, Smooth Cayenne, Black Prince, Thoresby Queen, and Providence. These fruiting Pine-houses were the only structures I saw at Lambton that did not appear well adapted to the purpose for which they were employed, being somewhat heavy and much too lofty; for although the beds in which the plants are grown are raised much higher than usual, the tops of the Pines were almost as many feet from the glass as they should be inches. In this house I noticed a number of seedlings of the fine and scarce Palm, Stevensonia grandifolia.

THE CONSERVATORY.

The conservatory, as already stated, stands in the centre of the front range and at right angles to it. It is 40 feet wide by 60 in length, and, therefore, runs back some 40 feet behind the back of the fruit-houses in the range. The roof is a treble span, the floor is not all on the same level the entire length, the quickly rising nature of the ground behind rendering this not possible, consequently the northern portion has to be reached by a considerable flight of steps from the southern end, and which, so far as the plants being seen from different points of view, rather enhances their appearance than otherwise. In the southern end are two noble specimens of Dicksonia antarctica, with clean straight stems 10 feet high, and fine spreading heads. Ascending to the higher end the paths at intervals are spanned by stout ornamental iron arches covered with twiners, and the centre of each surmounted by a low-spreading specimen plant, such as Cibotium Schiedei, which, with its drooping fronds, in this position is very effective. Palms, Agaves, Yuccas, Phormium tenax variegatum, and other subjects of a kindred character, along with whatever flowering things are in season, make up the display. This leads to a warm span-roofed fernery, 40 feet by 40, in which, amongst a nice assortment of these elegant plants, were some beautiful examples of Adiantum farleyense and Todea superba.

In the frame ground is a long span-roofed house, 130 feet by 18 feet, divided for stove and greenhouse plants for conservatory decoration; in the greenhouse division were Azaleas, Epacrises, Epiphyllums, Vallotas, Pelargoniums, &c.; on the surrounding stage next the wall in the warm portion is a nice selection of Orchids, consisting of Cattleyas, Odontoglossum Alexandræ, O. Roezlii, Cœlogynes, Oncidiums, Cypripediums, and Calanthes, for cutting; the centre pit

was filled with Ixoras, Crotons, Palms, Dracænas, Marantas, Alocasias, and similar stock. The pits in which are wintered and propagated the bedding plants, 100,000 of which are grown, occupy a considerable space. During the summer season a great quantity of Melons are grown in these.

One thing I particularly noticed—that the sheds, offices, backs of the lean-to houses, as also the brickwork of those that are span-roofed, are all covered, or in course of being covered, with Cotoneaster, Pyracantha, Ivy, or similar plants, so as to show as little of the bricks as may be. The result is, that even such places as are necessary for carrying out the garden work, and which are often anything but inviting in appearance, are here fair to look upon.

The ground which is occupied by the fruit and kitchen garden, including the space on which the fruit and plant houses stand, is about 11 acres. The fruit garden is fronting the principal range of vineries, and separated from it by the broad terrace flower garden already mentioned. It is about 3 acres in extent, and enclosed by 14-feet walls, well stocked with Peaches, Apricots, Nectarines, Pears, Plums, and Cherries. The Peaches were carrying a nice crop, which residents in the South would scarcely have looked for so far north last season. This garden is divided into four quarters by broad walks, which intersect each other in the centre, at which point is a fountain and basin. The walks are edged with Box, nicely kept, within which on each side is a broad ribbon border. These were very effective, particularly when seen from the centre of the terrace above. The arrangement consisted of a front row of scarlet Pelargoniums, then a 5-feet centre of Verbena venosa, backed by another row of scarlet Pelargonium and Crystal Palace Gem, yellow-leaved; at the back of this border is a light iron trellis covered with Pears, the back of the corresponding cross borders being composed of pyramidal Pears and Apples—young healthy trees in good bearing condition, but this season, like most others, not over-done with fruit. Precedence is given to the hardier kinds of Pears, such as Marie Louise, Louise Bonne, Jargonelle, Beurré Rance, Hessle, and Swan's Egg.

The kitchen garden adjoins this on the eastern side, and is also in excellent order; the greater portion of this was a deep hollow, and has been filled up several feet; here the sides of the walks are planted with pyramidal Pears and Apples, well-managed young trees, just coming into bearing condition. Culinary vegetables are thoroughly well done—Peas in bearing and full bloom without a trace of mildew, showing the advantage of the unlimited supply of water at command, especially in such summers as the past, when it was next to an impossibility to keep Peas in a bearing condition where water had to be given in dribblets by hand. Cauliflowers and Veitch's Autumn Broccoli were as strong, and producing heads as large as if we had experienced a wet season.

There is one thing in particular that contributes very much to the appearance of the place—the beautiful gravel that is used in the walks both of the kitchen and fruit garden, and also of the pleasure grounds; it is of a bright yellowish brown colour, about the size of large Peas. I understand it is brought in the Earl's vessels in ballast from France, and is unequalled by any I have ever met with elsewhere. The body of the walks is made of a material got in the neighbourhood, something like a mixture of clay, loam, and lime, which binds quite close and solid, so as to carry any reasonable weight. On this the gravel is laid about an inch and a half thick, left loose, and the surface raked as required. It is always perfectly clean, bright looking, and pleasant to walk upon. It gives the last touch of a complete finish to this well-kept, well-managed garden, that so favourably reflects the interest taken by the noble Earl in horticulture, and affords equal evidence of the abilities of his gardener, Mr. Hunter.

There is yet another matter that deserves mentioning. The garden is not alone thought of, but the health and comfort of the men receive great consideration. There is a large, commodious house just about completion, to accommodate some half-dozen of the young men, wherein each has a spacious lofty bedroom, with dining-room, reading-room, and bathroom. The most effectual way to induce young men to exert themselves, and take that interest in their work alike essential to a successful fulfilment of their duties and their own well-being, is to show them that they are cared for. *T. Baines.* [The actual weight of the bunch of Gros Colman Grapes illustrated in our last issue was not stated, and we take this opportunity of supplying the omission. It was 8lb. 2 oz. —an enormous weight for the variety. EDS.]

BRITISH GARDENERS.

JOHN WIGHTON.

Mr. WIGHTON, who has long occupied the post of gardener to the Earl of Stafford, Cossey Park, Norwich, sends us the following reminiscences of his gardening career:—



"My father began life as a gardener in the famed gardens of Dunkeld. I was born on May 25, 1803, when my father was gardener at Craiglochart to Dr. Munro, Professor of Anatomy in Edinburgh College. At the time I refer to I was only about four years of age, yet I remember seeing my father with a rake catching toads, frogs, and lizards from a pond, which he said were for my uncle to dissect for Dr. Munro. I likewise remember seeing him shooting Fir seeds from a short gun among the crags, so that they might fall into the fissures of the rocks. I mention these little incidents merely to show how long early impressions last, and that they mould or shape the character or disposition of a man for good or evil through life. I have named my uncle because he was a gardener, but by dint of perseverance became dissector to Dr. Munro, which enabled him to publish his *Fife's Anatomy*, yet he never lost his love for gardening.

"After Dr. Munro's death my father became gardener to the Earl of Leven, Melville House, Fifeshire. I was sent to an old woman's school, and learned some short words, but stopped at the long ones, some of which the good woman did not know herself, and she used to say 'hip (miss) them;' but 'hippin' or 'skipping' words would not do afterwards at Letham parish school under a sharp master. There I had every opportunity of learning, but I regret to say I did not profit by it. I never could spell nor read correctly, perhaps owing to a 'dull ear' and slight impediment of speech, consequently I was always nearer 'booby' than 'dux' of my class; in fact I never liked school, and used to 'cower' at the sight of slates and pens. But this I deeply lamented in after-life, because I lost the chance of the means of acquiring knowledge which I never could recover. However, I took an interest in flowers, and was pleased with the common Chinese Rose, which was then a novelty, so much so that Lord Leven used to invite friends to see his 'monthly Rose' in bloom trained to a warm wall.

"I now advert to my father being gardener to Ramsay Williamson, Lizmount, near Edinburgh, which was a sweet little place, kept in excellent order. For this he had the 2d prize offered by the Horticultural Society for the best-kept garden near Edinburgh. I began now to do a little gardening work, against my father's wishes, however, and was placed on trial to a grocer and spirit dealer of Edinburgh: but being in the heart of "Auld Reekie" weighing sugar and handing drams of whiskey over the counter to blear-eyed women went sore against the grain with me, therefore I gave up all thoughts of shopkeeping, and told my parents I would be a gardener if I earned only 'salt to my porridge.' This led to my being apprenticed to Mr. Wright, gardener to the Earl of Roseberry, Dalmeny Park. Being now in my proper element, I soon acquired the knowledge of practical gardening, and was foreman during the latter part of my time there, where I passed the last five years of my 'teens.' But as my master had no taste for rare plants I left him, and went to Sir Robert Liston's, Milburn Tower. Lady Liston was a sincere lover of rare plants, and had the best private collection of them near Edinburgh. I now studied hard, and used to think a day was lost if I had not learned the names of a few plants, and also added a few specimens of them to my *hortus siccus*. When young men are thus employed they should write the names of plants correctly from a catalogue, because the act of doing so fixes them the better on the memory.

"I advert again to my own bad spelling while at school, in order to record a little anecdote of Sir Robert Liston, who came and held up a label on which was the name of a plant, and inquired who wrote it. I said it was an old one, and that I had been only a short time in his service. Then he turned to my neighbour, and put the same question, and he said 'I dinna ken.' 'Eh, eh!' replied Sir Robert, 'I find no one will own it, but I advise young men to learn to spell correctly;' and further observed that if he had not done so when at school he could not have been able to keep either plants or gardeners. I may mention that he began life as a ploughman, but by great perseverance and good patronage he became an Ambassador. While in his service I first saw the Chinese Primrose, which cost a guinea; now a better one may be had for a penny. I went from Milburn Tower to be foreman to Mr. Gibson, gardener to — Balfour, Esq, Whittinghame, East Lothiar. The gardens were new, and my master's time was chiefly occupied in the general improvement of the pleasure-grounds, which was his great *forte*, consequently the management of the hothouses and kitchen garden were chiefly left to my care. But though my master was kind to me still I never liked the place, because there were so many 'drinking bouts,' encouraged by some old 'drouthy neebors.'

"The flower-gardens were formed by Gilpin in the 'natural style'—just the reverse of the geometrical, now in vogue. By the first the flower beds are irregular, while those of the latter are regular, and often within the range of the eye, hence their beauty is seen at once. Formerly our best landscape gardeners considered this bad taste, and perhaps they were right. In general pleasure arises more from looking for or expecting a thing, than the possession of it. However, there is no accounting for taste, whether of the palate or the eye. This is exemplified by the conversation of two gentlemen respecting the Serpentine, when it was first formed. One admired its graceful windings, the other said a little more expense would have made it straight. Now, on these opposite views hinges the whole art of landscape gardening.

"The natural style is the best for undulated or shaggy places like that of Whittinghame. When there I took my turn at watching the churchyard against

'resurrection men,' and so strict was the watch in Scotland that the high prices offered for subjects for dissection led brutal ruffians to strangle the living for the purpose. In these days this may seem incredible, but it is nevertheless true. Witness Burk and his associate, Hare, who were accused of strangling sixteen persons in Edinburgh, and among them was poor Daft Jemmy, a well-known character there. The most brutal conduct of the whole band of Burkers, to which they both belonged, seemed to be of deeper dye than that of the Thugs, because these strangled for the sake of some religious rite, or human offering to their satanic deity.

"I used to visit the principal gardens in the neighbourhood to see the different ways of doing gardening work. I first saw dwarf Apple and Pear trees in pots at Dunbar House, and observed the Earl of Lauderdale watering them himself. The gardens at Tynninghame were in excellent order, but the grandest feature of the place was the fine Holly hedge, the top of which was broad enough to drive a carriage upon it. At Beail—Mr. Nesbit's—the flower gardens were in the mixed style, and kept in excellent trim; so much so, indeed, that the workmen were forbidden to have large-headed nails in their shoes, because they marked the walks. At Luffness, where I had roamed to, there was a fruit wall of southern aspect on the wavy or curved plan, by which the trees have the whole benefit of the sun, besides which, the curves fence off the cutting winds. The borders were covered with smooth turf to prevent the roots of the trees being injured by the spade. Newbyth, the seat of — Baird, Esq., was where I first saw Mushrooms grown to perfection; the gardener seemed to follow the good old maxim of doing a thing himself when he wished it to be extra well done.

"I now mention being in Messrs. Peacock's nursery, which was famed for Roses. These were raised from layers of the current season, and being on their own roots were not so apt to die as in the days when they were budded on Briars. From the nursery I was sent to Dalhousie Castle to put the wall trees in order, these having been neglected while Lord Dalhousie was in Canada; yet the tender plants were cared for. That, however, was mistaken economy, because it takes several years to redeem trees, while money can soon restore plants. However, I leaped from Dalhousie to Cowley Park, the seat of Lord Stafford, when I was twenty-four years of age; and in this family I have been upwards of forty years, and have been always kindly treated. I have brought up a large family, three of my sons being gardeners; and I give them and others the following advice:—Pay always due respect to your employers. Be honest and kind to the men under you, and when reproof is required do it gently but firmly. Mind your own business only, never mix up with the petty quarrels of your fellow servants. In leisure time improve your minds in reading and writing, but be careful what books you read, for 'though some give light, some blindly lead the blind.' If this advice was necessary in Ramsey's time it seems doubly so now when so much trash is published.

"As regards writing, I have myself more or less been engaged in it since the latter part of Loudon's time. I have published a book on Bees, and wrote the article on bees in *Morton's Cyclopædia of Agriculture*. Besides I have written in the gardening papers on various subjects, ranging from the formation of an artificial van Siderlivian bogs, to the formation of ice at the bottom of water instead of at the top. This phenomenon, which is called 'stock frost,' and is known to the Germans as *grundice*, was discussed in *Notes and Queries*, and a 'Fen-man' said I had 'hit the right nail on the head.' I have corresponded with leading writers on natural history, among them the late Mr. Waterton, whom I have reason to remember, because he threatened me with a birch rod for having backed up what a correspondent stated in *Loudon's Magazine* concerning squirrels being carnivorous: at least they sometimes harry birds' nests of their young.

"As gardeners by their calling are often exposed to extreme heat and cold, and thus break the organic laws, which the Almighty has wisely ordained for their benefit, I regret to say that my headiness against those laws has been my greatest fault in connection with gardening, because they cannot be broken, especially in after-life, with impunity."

Early in January last Mr. Wighton was presented with a valuable purse of money by his employer, Lord Stafford, as a testimonial of respect for long service in his lordship's family. It is always pleasing to hear of such kindness, which exemplifies the good feeling that should exist between masters and [illegible]

FLORISTS' FLOWERS.

THE AURICULA AND POLYANTHUS.—I have no doubt the differences of opinion that may be assumed to exist between the Rev. Mr. Horner, as the representative of the rigid school of florists, and myself, are more fancied than real, because I have the highest possible respect for the determined way in which he strives to maintain the rules recognised as law by which Alpine Auriculas and the Polyanthus are judged, that is, as far as they relate to the shaded flowers in one class and to the gold-laced forms in the other. Not being an Auricula fancier in the accepted sense, I prefer not to argue in relation to that flower, as no doubt those who may feel that the Northern rules are not in common with the ideas reigning in the South can take care of their own interests in the matter, but it nevertheless does appear obvious that unless some common ground of agreement is arrived at beween Northern and Southern growers in relation to this question of shaded and self flowers, it will be extremely difficult to carry out a truly national Auricula exhibition either in the North or at the Crystal Palace.

In my former note it was rather my contention that, inasmuch as in the schedule of prizes offered for competition at the Crystal Palace on the 24th of next month, fancy and gold-laced Polyanthuses were placed on equal terms, that the danger of partiality towards the latter lay in the fact that a majority of the judges were of the old Northern or rigid school, and that these would possibly refuse to look at fancy or self Polyanthuses altogether. If it were a case of merit viewed as things of beauty I should have no fear of the result, but if the judgment is to resolve itself into one of "lacing," that will settle the point even before the plants are staged. The committee, with liberal intent, does not restrict the competition to gold-laced varieties, but if the judges are not influenced by the same cosmopolitan ideas, the liberal intentions of the committee are at once frustrated. It is only too evident that the establishment of classes specially for sections, the florists' merits of which are in dispute, is the only possible solution of the difficulty. At the same time, I trust it is not asking too much of the Northern florists to invite toleration, if nothing more, towards a beautiful class of hardy flowers that if not at present offering the highest conception of their ideal, may eventually lead up to it. The Auricula and the gold-laced Polyanthus once had a beginning, and probably out of much inferior material to that from which a possible florists' race of self and fancy Polyanthus are being evolved. It scarcely laid in my imagination to suppose that the Polyanthus could ever "pale" the fires of the beautiful Auricula in the eyes of the genuine and enthusiastic fancier. What I desired to suggest was rather that in the beautiful and robust fancy section a powerful counter attraction to the Auricula was growing up as respects that large class of amateur cultivators who, being neither fanciers nor enthusiasts, and, indeed, hardly florists, are nevertheless deeply imbued with a love for early spring flowers. To a large number the Auricula is too costly and too difficult to cultivate, thus leading to frequent loss and disappointment. To amateur growers of this class the fancy Polyanthus offers attractions that are thus far formidable to the future of the Auricula. *Thrum Eye.*

—— The recent frosty and snowy weather has put TULIP CULTIVATORS on the alert. It is now a critical time with this flower, for generally there is the promise of a generous growth, but a sharp frost following on a heavy rain or snowstorm may do much harm to the occupants of an unprotected bed. The Tulip is a hardy plant, but it is wise to take all possible care of choice varieties. A mulching of short dung and leaf-mould may be given with advantage, to protect the plants from injury from frost near the surface of the soil. The covering should now be on the bed; putting it down at night when frost and snow threaten, and drawing it up by day to give the plants the benefit of sun, balmy weather, and genial soft rains. It is again very mild, but it is also a time of uncertainty, and there is no knowing how soon a change may occur, bringing with it the wintry weather experienced last week. A little care and watchfulness at the right time will be abundantly rewarded at the blooming season.

Natural History.

SQUIRRELS AND DRAYS.—In answer to the inquiry (p. 379) with regard to squirrels' nests, or "drays," it is of some interest to note the presence of young squirrels so early, as both Professors Bell and Wood give the usual time of birth as June, or the middle of the summer. With regard to the "dray," it is a great bunch of moss, twigs, and fibres tightly worked together, and placed in the most concealed or inaccessible spot attainable, such as the fork of a high bough, or a fork or cavity of the tree; and as squirrels prefer remaining about their old haunts, the foresters or wood-wards of the large proprietors who suffer, would be able to give every information of a likely position. But, practically, I would recommend your correspondent to be cautious in meddling with the contents of the nest, or as certainly as his fingers are placed inside, the sharp teeth of the owner will revenge his or her wrongs, and when once locked in the flesh it is no easy matter to choke the squirrel off, where all is free; with the advantage of the nest to drag against, the bite might border on a serious matter. *O.*

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Heaths.—Successional winter flowering Heaths as they go out of bloom should be well cared for, otherwise it is useless expecting them to do much for the future. It is not the easiest matter to get these plants to make satisfactory growth, when they have flowered for the first time after leaving the hands of those who grow them for sale, as the treatment they usually receive is more with a view to produce an effective appearance than any consideration of their being of further service when they have once flowered. Nevertheless if carefully managed they may be induced to grow on and attain considerable size, but their quick growth as compared with other Heaths, and their erect habit, necessitates a free use of the knife; two-thirds of last year's growth should be cut away, they should then be stood in a good light pit with attention as to air and water, and as soon as they evince signs of growing ought to be moved into pots 2 or 3 inches larger, being especially careful in their case to press the new soil firm. Their progress will be materially assisted through the spring by shutting up a little earlier in the afternoon than would be advisable for the hard-wooded section of Heaths.

If plants of Genista and Acacia armata, which were forced early into bloom and cut back after flowering some time ago, are not already potted, they should be seen to at once, otherwise the current growth will be too far advanced to benefit to the full extent by the new soil. Roses that are well established in pots by being grown in them one season at least, and have now been for some time in a house or pit where they have received a little more warmth than the temperature of a greenhouse, will be fast pushing up their flowers. Plants treated in this way will bloom much finer and be of more use than such as were hurried into flower earlier with more heat. There are few things more valuable for conservatory decoration than Roses so managed, nor at any time of the year will they be found more acceptable. They will be much benefited by liberal applications of manure-water until the flowers begin to open; not only will the flowering of the present year be improved by its use at this time, but the strength of the plants will be increased for the future. Avoid cold draughts, or mildewed foliage is sure to be the result. Syringe freely, to keep down red-spider, and fumigate or dip in tobacco or quassia water the moment green-fly is detected. It is useless attempting to grow pot Roses unless the growth is well sustained by liberal feeding, and they are kept scrupulously clear of insects and mildew. Where there is any deficiency in the stock of pot Roses, if not already done, a sufficient number should now be potted, and plunged out-of-doors in a bed of coal ashes if possible, regularly attended to with water, and kept free from insect pests through the summer. So treated they will flower much more satisfactorily than by the makeshift practice of removing them from the open ground and potting in the autumn, as by such means they cannot be expected

to bloom like established plants. The earliest forced plants should, after blooming, have as much care and attention bestowed upon them as those that are yet to flower, without which they will fail to produce the strong wood indispensable to their yearly increased blooming capabilities, which under good management they acquire. If treated in accordance with their requirements Roses, after a dozen years' pot culture, will be in no ways exhausted. The useful winter-flowering Deutzia gracilis is an exception to the rule bearing on most hardy plants, inasmuch as it is much better grown in pots under glass. If plants that have been forced can be accommodated in a vinery or Peach-house at work, or any similar structure where the atmosphere is more close and moist than that of an ordinary greenhouse, it will just suit them. The plants usually make a number of strong shoots at the base. If when these have advanced a few inches in length, the whole of the old wood that has flowered is cut away, the root-power will be directed into the young growths, which will acquire much greater strength with proportionate increase of flowering capabilities for another year. By this means the plants never get so large, but for general purposes this is an advantage, as smaller pots will suffice. If the soil is exhausted, or the plants have insufficient root-space, they should have pots a size larger, but do not give them too much room, as growth can be supported by the use of manure-water.

Soft-wooded Greenhouse Plants.—Large-flowered Pelargoniums will now require attention. Such as were tied out in the exhibition form will have sufficient sticks putting to them to open them out to the shape they are intended to assume. Fancy varieties do not want so much support as the large-flowered kinds, but they ought to have their shoots well opened out. For ordinary decorative purposes formal tying should be avoided, but enough sticks must be used to keep the branches open, so as to admit light through the plants. The soil will now be getting full of roots, which, together with the drier condition of the atmosphere and more leaf-surface to support, will necessitate the regular use of manure-water, otherwise the foliage will assume a sickly yellow colour. It will be well to stop some of the plants back, to afford successional bloom; those that have their points pinched out now, will flower towards the end of June. Zonal varieties should be well tied out, otherwise they are more apt to become drawn than the other kinds. All ought to have as much light as can be given them, and will be benefited by being shut up about 4 o'clock in the afternoon and syringing overhead. Both herbaceous and shrubby Calceolarias should now have manure-water twice a week, especially if the pots they are in are small, for in this case it will be necessary to assist them by this means, as larger pots will be of no avail after they have begun to throw up their flowers. Those who possess a good strain of Cineraria, and are desirous of improving or keeping them up to the requisite standard from year, to year can only do so by at this season selecting for seeding a few of the best coloured and best formed flowers produced by plants of a strong robust dwarf habit, and that naturally make plenty of bold large foliage; without this latter the plants never look well. The reds and crimsons, the blues of different shades, and the tipped flowers with white ground, should each be placed separately in a small frame at a considerable distance apart, if possible, from the time their flowers begin to open, so as to expose them less to the chance of getting crossed by bees. Where this is not done, but the seeds are gathered indiscriminately, it is impossible to keep the strain from degenerating, particularly in colour; the number of blues generally begins to preponderate, and the colours, especially of the crimsons and reds, lose their character. The little labour this separation involves will be well repaid by the improved character these most useful of all soft-wooded spring flowers will assume. *T. Baines.*

Orchids.—As many of the plants begin to exhibit signs of returning growth and activity, very careful watching will now need to be exercised, for as the new breaks start away, and the tender roots start from the breaks and push into the soil, it will be necessary to treat the plants according to the requirements and needs of the separate subjects. Under the influence of an increased amount of heat and moisture, it will be found that almost every day some fresh start, either in root growth or flowering-buds, will have taken place, and this will be a sign to give to many an increase of water, to some others a little extra heat, whilst in all it will make it incumbent upon those who have charge of them, to note that the season of increased vigilance is upon them, and that by careful attention to the first symptoms, and giving the assistance which signs clearly indicate to be necessary, the health of the plants will be retained, and they will also increase in size and vigour, and take on the dark green glossy appearance which gives a pleasure and satisfaction to the beholder. The syringe may now begin to be more freely used, though at present it should only be applied between the pots, on the paths, stages, &c., so that by this means the air may be made more moistened, which for a short time, is better than giving suddenly a great increase of water at the roots. The night temperatures must now be advanced, gradually increasing them so that by 6 A.M. the East India-house may stand at about 65°, Dendrobium-house 60° to 63°, Cattleya-house 60°, Odontoglossum-house 55°—the day temperatures of course being a feature in the increase. Extreme care is needful with these advances that the night air in the houses does not get too dry, otherwise the thrips and red-spider will quickly put in an appearance. The evaporating troughs should now be filled, so that some moisture from this means may counteract the advancing heat. The shading, too, must always be carefully attended to during the bright sunshine in the middle of the day, but do not keep the blinds down longer than is really requisite, and at about 3 P.M. they should be drawn up, giving the stages and floors a damping down, and closing the ventilators, so that the heat may run up 5° to 10°; this will be found to be of great benefit and help to all such as are starting into growth. The Calanthes that have been shaken out and laid in heaps, or, doubtless, in some cases laid on their sides under the stage—though in this latter case they are more often placed out of reach or further from the eye, and thus the condition of the young breaks cannot be so well ascertained as when they are shaken out and kept near on the stage—must now be looked to and carefully seen to. Keeping the last season's bulbs by themselves and the older ones apart from them. These must now be potted and placed in the East India-house, where at first only a small amount of water must be given; for if the soil in the pots is allowed to become very wet the tips of the young breaks are very apt to become discoloured and turn black, and the strength of the shoots is considerably impaired, so that probably during the whole of the season the effects are observable, and only a small diseased bulb is produced where a large and vigorous one might have been expected. The soil for these must be of a loose, open nature—one that will allow the roots easily to push themselves through, but at the same time such as will hold water without turning sour. Turfy loam, leaf-soil, some sharp white sand, and some sphagnum moss well mixed will be found to be of the kinds which they delight and in which they succeed well, though in some cases where the loam is not of a sufficiently fibrous nature some extra moss and a little peat may be used with it to advantage. These may be grown in baskets, and if kept well supplied with water after the breaks have got nicely away they will be found to do well, the baskets being hung up in the house, on account of the extra light, as well also as the slightly drier atmosphere, seeming to supply just the conditions in which they delight. *W. Swan, Fallowfield.*

FRUIT HOUSES.

Pines.—To persist in a course of close treatment, such as was recommended in the foregoing Pine Calendar, for rootless suckers and fresh-started plants much beyond the period when active growth in the plants is established, would be most pernicious in its effects, producing a soft and attenuated growth. See therefore that at the time indicated the restrictive conditions referred to are gradually relaxed, and substituted by a liberal scale of ventilation whenever circumstances are such as to admit it. The plants in question will now make roots rapidly, and will soon be fit to be transferred to fruiting pots. Let these and all other requirements be at hand and in readiness for the purpose, so that the operation can be effected before the roots become too much matted together. Re-plunge the plants after they are potted into a brisk bottom-heat of from 90° to 95°; water them carefully with tepid water, and add to the surface about half an inch of manure from a spent Mushroom-bed, which should be run through a fine sieve to prevent the rays of the sun and other arid influences from directly operating detrimentally upon the surface soil in the pots. The shading of these plants should now be discontinued, excepting when sunshine is very powerful and the plants are in close proximity to large squares of glass. The fruiting department is now becoming very interesting, and no lack of attention should be wanting to further the ultimate result. A moist and genial heat of about 70° or 75° at night, and from 80° to 90° throughout the daytime will be most suitable for this compartment; ventilate and close the house at about 80°, keep the heat at the roots regular at about 90°, and carefully attend to watering the plants, as on this matter being properly performed very much depends. Avoid using stimulating agents, excepting in a mild form, in this condition it should be applied on every occasion. Vigorous Queen plants and others in small pots — 10-inch ones — should be examined about twice every week at this season and onwards, if the weather be at all sunny. Remove all superfluous suckers as soon as they are large enough to have the heart screwed out, reserving one for stock on each plant, which is ample, unless the stock is to be greatly increased. Successional plants which are intended to show fruit in the autumn should be encouraged to grow rapidly and sturdily. Give these plants a syringing overhead once or twice every week, according to circumstances. At this season a sprinkling may be given whenever the axils of the leaves are dry, providing it be not so abundantly supplied as to run away down the collar of the plant. *Geo. Thos. Miles, Wycombe Abbey.*

KITCHEN GARDEN.

Sowing seeds, both for main crops and for succession, will now require timely attention, as on the promptitude with which this is carried out now will depend the success or disappointment through many future months. If the sowing of the main crops of Onions is not already completed, let no time be lost; also sow a bed broadcast, and very thickly, for pickling purposes. To keep up a succession for present kitchen purposes the beds sown in the autumn should be thinned out, and a good bed of the thinnings planted in rich soil. These will be found very useful in keeping up a good supply through the summer. See that the beds intended for the main crops of Carrots are frequently tormented over in dry weather, as a good depth of fine soil is very necessary to their well-doing. A good breadth of Parsnips should and rather rich soil should now be ready for the general sowing of the various sorts of Broccoli and winter greens of all sorts. Of the Broccoli tribe there are some few sorts which should never be omitted in the main crops to stand through the winter, such as Veitch's Early Spring White, Cooling's Matchless, Dalmeny May, and Cattell's Eclipse. These should be the mainstay, but it is very desirable that they should be supplemented by any of the other popular sorts which have been found suitable to different localities, as it is always well to try various new varieties as they come out, as it is very rarely but some of them will be found to fill a gap somewhere. For example, we have been cutting Perkins' Leamington through most of this month at intervals, which will carry us well into Veitch's and other early sorts. But we need more experience of new sorts before we can put them forth as reliable. Of Cattell's Eclipse as a late Broccoli too much cannot be said; we find here that it keeps up a supply until the coming in of the Cauliflowers from winter stores, and these again being supplemented by the Walcheren and other Broccoli and Cauliflowers for the autumn now in course of successional preparation leave nothing to be desired in the way of Broccoli most of the year. The only item which is likely to interfere with a continual supply, and the most important, is the want of manual strength when work is pressing on all sides. With regard to winter greens, all are good in one way or another but a few are indispensable, of which Brussels Sprouts, Scotch Kale, Couve Tronchuda, Savoys, Purple Sprouting Broccoli, and for very late purposes Buda Kale, will be found very good, which is greatly assisted by a good supply of Cabbages almost all the year round. The time has now arrived for the sowing of all the above for the main crops, and it will be as well to give them as much room as possible in the seed-bed so as to avoid drawing them up weakly, or if time will serve to thin them out in the beds, and prick out the superfluous plants before finally transplanting them, this method will often be found useful where the ground intended for their winter quarters is still occupied. In order that a good supply of Cabbage plants may always be ready, sow at least once a month all through the season. Little Pixie, Carter's Heartwell, Cattell's Reliance, and Early Dwarf York (when true) are excellent kinds for present sowing. Sow Lettuces both of the Cabbage and Cos varieties, in drills, so that when required for transplanting they may be thinned out in the rows, and plants left at the proper distance. These will often stand well and grow freely in hot weather, when transplanted ones will turn in and run to flower. Continue the successional sowings of Peas, Beans, Spinach, and Turnips; also the thinning out of Lettuces and small salading. Radishes should be sown on a border facing the sun, and plentifully watered in the early part of the day. Sow Chicory and Whitloof, for blanching in the winter for salads. Sow also Salsafy, Scorzonera, and Cardoons if required. Do not neglect the pricking-out of Celery and the various Cauliflowers and Broccoli for autumn. The earliest crops of Peas will now require the support of stakes or rizels, and always prick up the ground between the rows after staking is finished. Thin out the stools of Globe Artichokes, and plant new beds if required; also Seakale, Rhubarb, and Asparagus beds may still be planted. Keep up a good supply of fermenting materials, in preparation for the sowing of ridge Cucumbers and Vegetable Marrows; pot off advancing seedlings of Tomato, Capsicum, and Chilis, and keep them growing freely for the present. Sow seeds of Thyme, Marjoram, and other herbs, and regulate the beds of the same by filling up vacancies and dressing over with rich soil. *John Cox, Rolleston.*

THE
Gardeners' Chronicle.

SATURDAY, MARCH 31, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	April 2	Leeds Spring Show (two days).
WEDNESDAY,	April 4	Royal Horticultural Society: Meeting of the Fruit and Floral Committees, at 11 A.M.: and Scientific, at 1 P.M.
THURSDAY,	April 5	Linnean Society: Meeting at 8 P.M.
FRIDAY,	April 6	Sale of Scientific Apparatus, &c., at Stevens' Rooms.
SATURDAY	April 7	Sale of Roses, Shrubs, Fruit Trees, Gladioli, &c., at Stevens' Rooms.

TO no class of the community is a knowledge of ECONOMIC ENTOMOLOGY more important than to plant-cultivators. It is soothing to our vanity, no doubt, to consider ourselves as Lords of the Creation, but what with "blights" and "moulds," and the hosts of insects and fungi which prey upon ourselves and our crops, it becomes a question whether they are not the lords, and we the slaves. At any rate, nothing but knowledge of their forms and habits of life can afford us any reasonable chance of obtaining dominion over them. As a matter of pure science, the study of any of GOD's creatures is invariably of importance and practically inexhaustible. But the gardeners and farmers have special reasons for appreciating the action of the Government in establishing a Museum of Economic Entomology. Such a museum, however, is of relatively little value, unless it is illustrated by a good catalogue. It is, therefore, with special interest that we call attention to Mr. MURRAY'S[*] recently published volume, which, whether as a scientific record or for practical use in matters of daily life, is of great value. Mr. MURRAY'S perfect grasp of his subject enables him to lay it before his readers in a form which all can understand, whilst those who may not be disposed for the study of the more strictly scientific parts will be led on simply by the charm of the well-given descriptions.

The volume now issued, containing Aptera, is the first part of the catalogue which it is proposed to publish of the Collection of Economic Entomology now at the Bethnal Green Museum, and which was commenced at South Kensington in 1868, when Mr. MURRAY was requested to undertake the charge of its formation and arrangement. The object of the collection is, by means of specimens, models, and drawings, to give the history of the insects most noticeable as beneficial or injurious, and (where it is possible) the remedies. The descriptive catalogue is intended not only as a guide but also for practical reference. Under the head of Aptera this volume contains Crustaceans (represented by Oniscidæ), Myriapoda (centipedes), Arachnoidæ (spiders, scorpions and mites), Thysanura (springtails), and Parasitica or Anopleura (lice). Of this number, some are insects, and some come under the head of animals allied to, or likely to be mistaken for insects by similarities in habit and locality or structural affinities. Economically it is requisite they should be classed together, and the scientific reasons of the arrangement will be found given in various parts of Mr. MURRAY'S book.

After the requisite notes on the Oniscidæ (the woodlice of our gardens, and the representatives here of the Crustacea), Mr. MURRAY passes to the Myriapods, giving here, as throughout the volume, a view of the distinguishing characteristics of the orders, and where (as in the case of the Acarina) the minor divisions have been little studied throwing the distinctive points (as known up to the present time) into a clearly condensed and, at the same time, readable form. The generic differences are shortly given, and in most cases each species has its locality and habits and specialities of appearance extended, according to the interest of the subject, into longer notices. The illustrations are in some instances from life, in others of details, or of the objects scientifically displayed, and in the case of the plant gall-mites sketches are given of some of the peculiar leaf or bud-diseases following their attacks. In many instances each species has its illustration, and amongst the ample number, which in their clear definition can leave even the most general reader under no doubt as to the appearance of the described object, the beautiful woodcuts of the Glyciphagus palmifer, p. 284, by Mr. WHYMPER, deserve a word.

Proceeding onwards from the Oniscidæ, under the Myriapoda we have the two great divisions of Julidæ, injurious as preying on vegetable matter, and the Scolopendridæ (centipedes), whose bite, dreaded in warmer latitudes, is here useful as a means of keeping the smaller insects in check.

Amongst the Arachnoidæ, after the scorpions (represented with us by the minute tailless Chelifer), we pass through the link of the Galeodes (spider-like but distinguished by its segmented abdomen and tracheal breathing apparatus) to the true spiders, the Arachnoidæ, "the most powerful insect friends to man," as contributing largely to the destruction of other insects, and generally interesting with regard to the trap-door spiders with underground galleries, and weakly hinged doors perpetually requiring replacing; the huge hairy Mygale, and the delusions connected with the bite of the Lycosa tarantula, and other special peculiarities.

The subdivision of the Acarina or mites occupies nearly half the volume, and is of great importance economically. Here we have vast numbers of minute, sometimes microscopic insects, whose special mission in a large proportion of cases appear to be as tormentors of the vetebrate animals, or injurers of vegetable growth. Amongst the eight families we have the spinning mites, represented amongst many other species by the red-spider of our gardens, harvest mites, Ixodes or ticks (adapted even to hold their position on the scaly coat of the python), and others too numerous to enter on, but the Trombidium gryllarium deserves a word as the especial scourge of the American locust. Of this species Mr. MURRAY mentions that in 1852 the locusts of the eastern coasts of America were found infested by little red mites. "Ten or a dozen of them would frequently be found pertinaciously adhering to the body of a locust beneath its wing-covers and wings. The dread of the locust has now passed from New England. It is in the Western prairies that it now reigns, where immense swarms of locusts descend from the Rocky Mountains, where they breed, and spread desolation and famine over thousands of square miles. But the little red mite that helped to reduce their numbers in the East, or an equivalent species, is there at its post in the West, employed on the same duty." The eighth division of the Acarina is of especial importance, for here we have the Phytoptidæ, or gall-mites, the originators of the curiously shaped nail-like galls of the Lime and Maple leaf, and many others by which the leaves and young leaf-buds of our plants are injured; and the Sarcoptidæ, the itch and louse mites.

At the first glance this particular branch of the subject is uninviting, but it is, therefore, all the more necessary to be brought forward; the prevalent ignorance of treatment and symptoms of the diseases consequent on attacks of these parasitic pests, often allowing them to gain a footing only to be met by the destruction of the attacked animal, and in this division the notes of the Sarcoptes cati and S. mutans are especially to be recommended to the study of poultry and rabbit fanciers, and those of Psoroptes equi to the caretakers of farm stock.

In the succeeding order, Anoplura (lice), we pass in the first group of Mallophaga from the feather-eating and bird-infesting louse mites just noticed to the six-legged pests of our poultry and of some others of the vertebrata; and in the second group (Hæmatopina), restricted to mammalia, we have a most interesting account of the genus Pediculus, including LEEWENHOEK'S personal experiments (by tying up two large female lice between his own leg and a fine black stocking) as to the rate of increase, the result showing that "two female lice might in eight weeks be grandmothers, and see 10,000 of their own offspring!" The methods of prevention and cure will be valuable to many, and the concluding sentence with regard to the effects of white precipitate ointment will be read with singular satisfaction —"it kills them all." Nevertheless, we have seen such ill results from careless use of so potent a poison that we think it right to add the caution, that even in this case the remedy may be worse than the disease.

The order Thysanura (springtails), minute insects especially injurious to young vegetables, conclude the book, of which the contents are made easily attainable by an excellent index. In addition there is a list of illustrations numbering more than 400, and a list of the contents of the cases at Bethnal Green Museum described in it. It is difficult in short space to do justice to the great research and powers of condensation by which the mass of useful information contained in the volume is placed so as to be clear and comprehensible to the general as well as the scientific reader.

It is an excellent book, and of a practical utility which makes it desirable that it should find a place both in our private and public libraries.

In subsequent volumes we would suggest that the index of common names be extended; for instance, there are not many gardeners who would think of looking for red-spider under the name Tetranychus telarius.

[*] *Economic Entomology: Aptera.* By Andrew Murray, F.L.S. (Chapman & Hall)

—— WE understand that there is a probability of the growers for Covent Garden Market having a grand field day in the Royal Horticultural Society's Gardens, South Kensington, shortly. The idea is to have an EXHIBITION OF COVENT GARDEN PRODUCE, *i.e.*, plants, cut flowers, fruits, and vegetables, shown in exactly the same manner as they are sent to market. Such an exhibition should prove highly popular and instructive, and we heartily hope that it will be carried out to a successful issue.

—— The INTERNATIONAL POTATO EXHIBITION will not take place as originally announced, the negotiations having, through some accident, fallen through. It is now definitely arranged to be held at the Royal Aquarium, Westminster, on October 3, 4, and 5 next. The schedule provides for a series of classes ranging from twenty-four to single dishes, and the prizes amount to about £130. Copies of the schedule may be obtained on application to Mr. J. MCKENZIE, 1 and 2, Great Winchester Street Buildings, E.C.

—— In the descriptive account of the gardens and pleasure-grounds, woods and plantations, attached to Inverary Castle, the seat of the Duke of ARGYLE, which appeared in our columns in December last, Mr. EVERSHED alludes (p. 836) to a RED CEDAR tree —a large one of its kind—measuring 6 feet in circumference at 5 feet from the ground, and at least 50 feet in height, of which we are now enabled to give an illustration (fig. 64), thanks to Mr. CAIE, who kindly obtained for us a beautiful sketch by Miss JOHNSTONE. Mr. CAIE informs us that, about the beginning of the year, some of the branches were broken off by the high winds, and this has somewhat destroyed the well-balanced appearance which the tree previously had.

—— The *Hamburger Gartenzeitung* reports that last year's harvest of tree, Clover, grass, and other seeds was generally very short, consequently increasingly high prices must be expected. Some kinds of



Fig. 64.—The red cedar (Juniperus virginianus) at Inverary.

grass and Clover are no longer to be had first-hand. Lucerne especially is very scarce, and Clovers are short both in Europe and America. Seed of the Scots Pine, Weymouth Pine, and Pinus Abies was abundant last autumn, whereas Larch and Spruce Fir was almost wholly wanting. Acorns were scarce, and Beech-mast a total failure. It is a noteworthy fact that the same scarceness or almost total absence of certain fruits extended to this country.

—— Some time since we had occasion to mention a volume by M. E. Vianne, entitled *Prairies et Plantes Fourragères*, published by M. Rothschild, of Paris; and we have now to mention a companion volume, under the title of *Les Prairies Artificielles*. It is devoted to the history and culture of the principal forage plants. The researches of Messrs. Lawes and Gilbert are laid under contribution, as well as those of French authors, the result being that we have in small compass a mass of information of great value to agriculturists. The work is copiously and well illustrated.

—— The propriety of leaving Fruit Trees Unpruned has been again discussed at a meeting of the Cercle d'Arboriculture of Ghent by M. Burvenich and others. M. Burvenich, while admitting that the advocates of non-pruning are to some extent right in their notions, yet points out that as long as it is desirable to secure the production of fruit in a given place, so long will pruning be necessary. So long as there are walls, trellises, borders, so long will pruning be required. The unpruned tree bears fruit, but the pruned one yields them in convenient and predetermined spots. Orchard culture is not possible in all places, but there are many odd corners where fruit trees, such as Doyenné du Comice, Louise Bonne

d'Avranches, Duchesse d'Angoulême, &c., may be profitably grown as orchard trees without pruning.

—— We must go abroad or read foreign journals if we wish to know what we do, and what we eat and drink, in this country. A French journal tells us, for example, that the rootstocks of Typha latifolia (Bulrush) are eaten pickled in vinegar. It may be so, but we never heard of it. The Russians in some parts of their vast territory, on the same authority, eat the young shoots of the same plant, instead of and with as much relish as Asparagus. The French comment on this is, "*Quand on n'a pas ce qu'on aime, il faut aimer ce qu'on a.*"

—— At a meeting of the SOUTHAMPTON LITERARY AND PHILOSOPHICAL SOCIETY, held on March 23, in the council chamber of the Hartley Institution, a paper entitled "The Microscope as a Means of Recreation" was read by Mr. A. C. ROGERS, son of Mr. W. H. ROGERS, J.P., of the Red Lodge Nursery, Southampton.

—— French papers record the death of M. THOMAS, of the firm of SIMON LOUIS, of Metz, well-known for his pomological attainments, and author of a recently published book on fruits and their synonyms.

—— The next exhibition of the NATIONAL AURICULA SOCIETY will be held in Manchester, in connection with the Botanical Society's show, in the Town Hall, King Street, on Friday, April 27.

—— A correspondent in the *Journal of the Society of Arts* draws attention to the distinctly different methods which prevail in China and England in MAKING TEA, or rather the infusion, by which he shows that the millions of tea drinkers out of China are perfectly ignorant of the proper mode of extracting from the tea leaf all that is valuable, just so much and no more. First and foremost, of course, a great deal depends on the quality of the tea itself, and we are reminded that, "the upper classes in China from very long experience in the matter select the very choicest tea which they can afford, generally the young leaves from old trees. To make the infusion a few leaves are put into a cup and water not quite boiling is added; it soon cools sufficiently to be quaffed by the Chinese, who usually take their tea very hot." By the above quick method they skim, as it were, only the superficial flavour of the leaf, which is very capable of yielding up, when required, a bitter extract, which they avoid. This is the prime source whence the used leaves spoken of by analysts come from. In England, on the other hand, every resource which science can conceive is brought to bear on the opposite extreme, viz., to take out every atom of extractive matter if possible to the last iota. Now, the infusions from choice Tea may be compared to those scents which in their concentrated form are offensive, but which when diluted are very fragrant and exhilarating. The march of science, therefore, is driving the British public in a wrong direction—one in which ladies and men with delicate or nervous constitutions so suffer that medical men here and there peremptorily put a stop to the use of tea at all." There is no doubt a a great deal of truth in these remarks. Instead of a carefully prepared infusion, tea, as used in this country, is more of the character of a liquor from stewed leaves. The conclusions of the writer from whom we have gathered the foregoing remarks are, that a very delicately flavoured beverage is unknown to the bulk of the English people, because they have been taught to prepare tea by a method which "appears to have been brought in at the very extreme point of the wrong end of the matter." It is farther suggested that the choicest tea at 10*s.* per pound is cheaper in the end than the advertised "strong tea" at 2*s.* 6*d.* per pound, inasmuch as a few leaves of the former, if used after the Chinese fashion, will suffice to make an agreeable beverage.

—— We are requested to state that the address of Professor REICHENBACH for the next ten days is at the Herbarium, Royal Gardens, Kew.

—— If any illustration were needed of the great decorative value of some of the hardy Primulaceæ at this season of the year, it would be found in a group of PRIMULA DENTICULATA now in bloom in the Auricula-house of the Rev. F. D. HORNER, at Kirkby Malzeard. They are strong plants in 48 and 32 pots, each plant bearing several trusses of flower, and as they are having the advantage of some artificial heat necessary to the Auricula bloom, not only are the trusses of unusual size, but the individual blossoms are of great beauty. If this plant were now introduced for the first time, the horticultural world would go into ecstasies over it, for its delicate beauty is of a very high order. And yet it is almost new to many; and there is need for a constant reference to its excellencies of habit, freedom and duration of bloom, to attract to it some of the worship given to floral objects of a less valuable character. At Kirkby, Mr. HORNER illustrates its great fitness as an indoor plant, shining out with redoubled beauty when aided by a little genial artificial warmth. At Chadderton, Manchester, during the month of April, and at the time when the genus Primula holds high festival in Cottonopolis, Mr. SAMUEL BARLOW uses it as an edging on a sheltered border by the side of his carriage drive, and with equally happy results. When is the Primula, with all its varied beauty of expression and transcendent charms, to have a Society formed for its encouragement, and that not nearly so much to obtain new forms as to reintroduce those already known?

—— At a recent meeting of the Central Horticultural Society of France, M. DUCHARTRE adverted to his experiments made some years since on the FORCED LILAC. The learned Professor then showed—and his results have been abundantly confirmed since—that by forcing a Lilac in a well-lit forcing-house at an average temperature of +15° Cent. (59° Fahr.), perfectly white flowers were produced. In one of his experiments one branch of a Lilac was allowed to escape into the open air through a hole in the glass, while the rest of the shrub was within the forcing-house. Under these conditions the forced flowers were white, as above; but those which were on the branch exposed to the open air expanded a fortnight later, and were of the ordinary lilac colour. M. PIGEAUX adds that it is only the S. vulgaris which acts in this manner, the flowers of S. persica when forced assuming the ordinary lilac colour.

—— The practice of thinning-out the berries of GRAPES in order to obtain larger and more perfectly ripened fruit, appears to be gaining advocates on the Continent. The *Hamburger Gartenzeitung* describes the results of some experiments in this direction with the Early Black July Grape. Instead of an almost uneatable fruit, which is usually abandoned to sparrows, wasps, and children, good-flavoured, well-ripened large bunches were produced. If such an improvement can be effected with an inferior variety, it is clear that the practice of thinning might profitably be extended to all dense-clustered varieties, when the object is to gain the best quality, and it is recommended for outdoor culture as well as under glass.

—— Mr. STEPHEN OSBORN, formerly gardener to the late Sir CHARLES LOCOCK, Bart., at Binstead, Isle of Wight, has been appointed gardener and bailiff to the Earl of EFFINGHAM, at Insmore House, Bicester, Oxon.

—— ODONTOGLOSSUM ANGUSTATUM INTEGRUM now is finely in bloom in the splendid collection of plants belonging to J. BROOME, Esq., Didsbury. The sepals and petals are sulphur in colour, beautifully spotted with purplish brown; the lip white, tipped with sulphur, and blotched on the anterior part with lilac. It is a very striking plant when flowered as this is, with branching spikes about 3 feet in height, with forty of its fully expanded blossoms. This variety is far better than angustatum, and is worthy of a place in every collection; and blooming as this does during the winter and spring months, it is the more valuable.

—— The *Leicester Advertiser* states that all the farm labourers and workmen employed on the BEAUMANOR estate were lately summoned to the steward's office, no intimation having been given as to the reason why their presence was required. Their surprise was only equalled by their gratitude when they were informed that they had been called together to receive a legacy of one year's wages bequeathed to them by their late benevolent master. This last proof of Mr. HERRICK'S kind consideration for all about him was fully appreciated by the poor men as they hastened home with the (to them) large sums of money they had so unexpectedly received.

—— Intending visitors to London during the Easter holidays will find the DISPLAYS OF FLOWERS in all or any of the nurseries very interesting just now. The exhibitions of spring-flowering bulbous plants provided by Messrs. VEITCH & SONS and Messrs. W. CUTBUSH & SON are still in fine order, and well worth inspection. In addition to the Hyacinths, Tulips, &c., Messrs. VEITCH & SONS' Orchid-houses contain many fine things in flower, and in other departments the Roses and Clematises make a show in themselves, whilst in a few days a house of Gloxinias will provide a rich floral treat.

—— The DESTRUCTION CAUSED BY COCKCHAFERS in some parts of the Continent is so great in some seasons as to almost ruin nurserymen and market-gardeners of small means. Cases are reported of a nurseryman losing more in one season than the total revenue of his commune, and of another saving scarcely a hundredth part of his trees. All the crops in market gardens, whole fields of Lucerne, and meadows of great extent are sometimes completely devastated. Strawberry plants and Lettuce are favourite prey, and row after row disappears till none are left. It is in the larva state that they effect this kind of destruction; but the perfect insect feeds upon the leaves of trees and herbs, and does much damage. The larvæ feed upon the roots, and their presence is usually indicated by the withering of the plants, of which they have devoured the roots. All sorts of remedies have been suggested and tried, but the larva in its burrow is tolerably safe until it reveals its whereabouts by the destruction of one plant at least. A Belgian contemporary recommends that a law should be enacted compelling owners to wage war with the perfect insect, just as they are now obliged to beat their hedges and trees for caterpillars before February 19. It would not be altogether without direct remuneration, because it has been proved that, mixed with Barley or some other meal, they form a good fattening food for pigs. In 1872 cockchafers were so abundant in Wurtemberg that they were collected by bushels and cartloads, and their value as food was tried on a large scale. Fortunately, we are seldom seriously overrun by this insect, or, indeed, by any other; and we doubtless owe our immunity in a great measure to the preservation of rooks, and the abundance of small insectivorous birds. On the other hand, there is reason to fear that the latter are becoming scarcer from year to year, in spite of the now necessary license to use a gun, and the Birds' Protection Act. Thousands of small birds are netted to afford the abominable amusement of shooting them from a trap. We have frequently called attention to the dismal reports on the damage caused by insects in various parts of France, where a rage has long existed for shooting every bird that comes within range. Now efforts are being made to preserve the birds and restore something like an equilibrium between these different classes of the animal kingdom, which must certainly result in a great advantage to the vegetable kingdom. Without over-preserving birds, we should be careful not to give insects the chance of multiplying to an alarming extent.

——Amongst other Orchids in flower in Mr. BULL'S nursery at the present time is a very distinct variety of ODONTOGLOSSUM TRIUMPHANS. The lip is white, with a blotch of crimson instead of yellow and brown—the colour usually predominant in this species; and the sepals and petals are broader and smoother, more spotted rather than barred, and more intense in colour. Altogether the plant presents a pleasing variation from the common forms of O. triumphans. The beautiful upright flowering Medinilla amabilis is flowering in 5-inch pots in the same establishment.

—— It would appear from a paper published by Mr. CHAS. B. PLOWRIGHT, surgeon, of King's Lynn, in the *Fenland Meteorological Circular* for February 1, that he has repeated the experiments first made by Mr. WORTHINGTON SMITH, and secondly by Mr. C. EDMUND BROOME, with Potato haulms, as originally reported in these columns. As far as our knowledge went, no one, up to the present time, either

here or abroad (other than the two gentlemen above named), had succeeded in raising the Resting spores of the Potato Fungus—Peronospora infestans. It would now, however, appear that a third gentleman, Mr. Plowright, has gone over the experiments with diseased Potato foliage and haulms and water, and obtained results quite similar to those recorded by Messrs. Smith and Broome. Mr. Plowright writes :—"It must not be supposed that because a haulm has putrified and become reduced to the state of a mere dry stick that the rest-spores in it have lost their vitality. I have before me some haulms that have been rotting in water for several months, until they have now ceased to bear all semblance to haulms, and are a mere mash, yet the rest-spores are unimpaired;" and elsewhere in the same paper, "In the May of last year I had the opportunity of watching the development of some rest-spores which Mr. Smith obtained last summer. It was very interesting to observe them produce the Peronospora and its conidia."

—— The thirty-third annual competition of the Scottish Pansy Society will be held in the Calton Convening Rooms, Waterloo Place, Edinburgh, on Friday, June 15.



Fig. 65.—spray of the red cedar, juniperus virginianus. (see p. 405.)

RELATIONS BETWEEN PLANTS AND INSECTS.

(*Continued from page 306.*)

Use of the Brown Colour.

Now for the brown colour. It is evident that this makes the caterpillar even more conspicuous among the green leaves than would otherwise be the case. Let us see then whether the habits of the insects will throw any light upon the riddle. What would you do if you were a big caterpillar? Why, like most other defenceless creatures, you would feed by night and lie concealed by day. So do these caterpillars. When the morning light comes they creep down the stem of the food plant, and lie concealed among the thick herbage and dry sticks and leaves near the ground, and it is obvious that under such circumstances the brown colour really becomes a protection. It might indeed be said that the caterpillars having become brown, concealed themselves on the ground; that in fact we were reversing the state of things. But this is not so, because while we may say, as a general rule, that (with some exceptions due to obvious causes) large caterpillars feed by night and lie concealed by day, it is by no means always the case that they are brown, some of them still retaining the green colour. We may then conclude that the habit of concealing themselves by day came first, and that the brown colour is a later adaptation. It is, moreover, interesting that while the caterpillars which live on plants often go down to the ground and turn brown, those which feed on large trees or plants remain on the underside of the leaves, and retain their green colour.

Thus, in Smerinthus ocellatus, which feeds on the Willow and Sallow; S. populi, which feeds on the Poplar; and S. tiliæ, which frequents the Lime, the caterpillars all remain green; while in the Convovulus hawk-moth, which frequents the Convolvulus, Chærocampa nerii, which feeds in this country on the Periwinkle; Chærocampa celeris, Ch. elpenor, and Ch. porcellus, which feed on Galium, most of the caterpillars turn brown.

There are, indeed, some caterpillars which are brown, and yet do not go down to the ground, as for instance those of Aspilatis aspersaria, and indeed of the geometridæ generally. These caterpillars, however, place themselves in peculiar attitudes, which, combined with their brown colour, make them look almost exactly like bits of stick or dead twigs.

The Eye Spots.

The last of the five points to which I called your attention was the eye-spots. In some cases spots may serve for concealment, by resembling the marks on dead leaves. In Deilephila hippophae, which feeds on the Hippophaë, or Sea Buckthorn, a very grey-green plant, the caterpillar also is a very similar grey-green, and has, when full grown, a single red spot on each side, which, as Weismann suggests, at first sight much resembles in colour and size one of the berries of Hippophaë, which, moreover, are present, though not ripe, at the same period of the year. Again, in Chærocampa tersa, there is an eye-spot on each segment, which mimics the flower of the plant on which it feeds (Spermacoce hyssopifolia). White spots, in some cases, also resemble the spots of light which penetrate foliage. In other cases, however, and at any rate in our elephant hawk-moth, the eye-spots certainly render the insect more conspicuous. Now in some cases, as Wallace has pointed out, this is an advantage rather than a drawback. Suppose that from the nature of its food, or any other cause, as for instance from being covered with hair, a small green caterpillar was very bitter, or in any way disagreeable or dangerous as food, still in the number of small green caterpillars which birds love it would be continually swallowed by mistake. If on the other hand it had a conspicuous and peculiar colour, its evil taste would serve to protect it, because the birds would soon recognise and avoid it, as Weir and others have proved experimentally. We have a striking case of this among the hawk-moths in Deilephila euphorbiæ, which feeding on the Euphorbia with its bitter milky juice, is very distasteful to birds, and is thus actually protected by its bold and striking colours. The spots on our elephant hawk-moth caterpillar do not admit of this explanation, because the insect is quite good to eat, I mean for birds; we must, therefore, if possible, account for them in some other way. There can, however, I think be little doubt that Weismann is right when he suggests that they actually protect the caterpillar by frightening its foes.

Every one must have observed that these large caterpillars have a sort of uncanny, poisonous appearance; that they suggest a small thick snake or other evil beast, and the eyes do much to increase the deception. Moreover, the segment on which they are placed is swollen, and the insect when in danger has the habit of retracting its head and front segments which gives it an additional resemblance to some small reptile. That small birds are, as a matter of fact, afraid of these caterpillars (which, however, I need not say are in reality altogether harmless) Weismann has proved by actual experiment. He put a caterpillar in a tray in which he he was accustomed to place seed for birds. Soon a little flock of sparrows and other small birds assembled to feed as usual. One of them lit on the edge of this tray, and was just going to hop in, when she spied the caterpillar. Immediately she began bobbing her head up and down, but was afraid to go nearer. Another joined her, and then another, until at last there was a little company of ten or twelve birds, all looking on in astonishment, but not one ventured into the tray, while one which lit in it unsuspectingly beat a hasty retreat in evident alarm as soon as she perceived the caterpillar. After watching for some time, Weismann removed the caterpillar, when the birds soon attacked the seeds.

Other caterpillars also, probably of nearly allied species, are protected by their curious resemblance to spotted snakes.

The peculiar hues of the death's-head hawk-moth caterpillar, which feeds on the Potato, and unites so beautifully the brown of the earth, the yellow and green of the leaves, and the blue of the flowers, that, in spite of its size, it can scarcely be perceived unless the eye be focussed exactly upon it. The other is the anceryx. The caterpillars of this genus differ in style of colouring from all other sphinx larvæ, having longitudinal bands of brown and green. Why is this? Their habitat is different. They feed on the leaves of the Pinaster, and their peculiar colouring offers a general similarity to the brown twigs and narrow green leaves of a conifer. There are not many species of Lepidoptera which feed on the Pine, but there are a few, and I have here diagrams of two, Achatia spreta and Dendrobinus pini, both of which, as you will see, have a very analogous style of colouring, while the latter has also tufts of blueish green hair which singularly mimic the leaves of the Pine. I have added also

the larvæ of a species of saw-fly (one of the Hymenoptera), which also attacks the Pine, and you will see that here also the colouring is curiously similar (Lophyrus socia).

But, as Wiesmann points out, we may learn another very interesting lesson from these caterpillars. They leave the egg, as we have seen, a plain green, like so many other caterpillars, and gradually acquire a succession of markings, the utility of which I have just attempted to explain. The young larva, in fact, represents an old form, and the species in the lapse of ages has gone through the stage which each individual now passes through in a few weeks. Thus the caterpillar of Cherocampa porcellus, the small elephant hawk-moth, a species very nearly allied to Ch. elpenor, passes through almost exactly the same stages as that of Ch. elpenor. It issues from the egg with a subdorsal line. No one can doubt, however, that there was a time when the new-born caterpillars of Ch. porcellus were plain green, like those of Ch. elpenor. In this respect, then, Ch. porcellus is a newer specific form than Ch. elpenor. Again, if we compare the mature caterpillars of Cherocampa we shall find that there are some forms, such as Ch. myron and Ch. cherilus, which never develope eye-spots, but correspond to the second stage of Ch. elpenor. Here then we seem to have a species still in the stage which Ch. elpenor must have passed through long ago.

The genus Deilephila, of which we have in England three species—the Euphorbia hawk-moth, the Galium hawk-moth, and the rayed hawk-moth—is also very instructive. The caterpillar of the Euphorbia hawk-moth begins life of a clear green colour, without a trace of the subsequent markings. After the first moult, however, it has a number of black patches, a white line, and a series of white dots, and has, therefore, at one bound, acquired characters which in Ch. elpenor, as we have seen, were only very gradually assumed. In the third stage the line has disappeared, leaving the white spots. In the fourth the caterpillars have become very variable, but are generally much darker than before, and have a number of white dots under the spots. In the fifth stage there is a second row of white spots under the first. The caterpillars not being good to eat, there is, as has been already pointed out, no need for, nor attempt at, concealment. Now, if we compare the mature caterpillars of other species of the genus, we shall find that they represent phases in the development of D. euphorbiæ. D. hippophae for instance, even when full grown, is a plain green, with only a trace of the line, and corresponds, therefore, with a very early stage of D euphorbiæ; D. zygophylli, of South Russia, has the line, and represents the second stage of D. euphorbiæ; another Deilephila has the line and row of spots, and the third stage; lastly, D. vespertilia and D. galii have progressed further, and lost the longitudinal line, but they never acquire the second row of spots which characterise the last stage of D. euphorbiæ.

It is a remarkable fact, and except on those principles with which the name of our great countryman, Mr. Darwin, are justly united, I do not see how it can be accounted for, that the forms of larvæ do not depend on that of the mature insect. In these diagrams, for instance, are represented some very similar larvæ, and the very dissimilar perfect forms which they ultimately assume. In other cases, similar or comparatively similar, perfect insects have very dissimilar larvæ. Indeed, a classification of insects founded on larvæ would be quite different from that founded on the perfect insects. The Hymenoptera, for instance, which, so far as the perfect insects are concerned, form a very homogeneous group, would be divided into two—or rather one portion of them, namely, the saw-flies, would be united to the butterflies and moths. Now, why do the larvæ of saw-flies differ from those of other Hymenoptera and resemble those of butterflies and moths? It is because their habits differ from those of other Hymenoptera, and they feed on leaves like ordinary caterpillars.

From this point of view the transformations of the genus Sitaris, which has been very carefully investigated by M. Fabre, are peculiarly interesting. *Sir J. Lubbock, in the Society of Arts Journal.*

(To be continued.)

Home Correspondence.

The Heating Power of Boilers.—I believe I state a very common impression among gardeners when I say that the actual heating power of horticultural boilers is usually overstated by the makers, as the term "heating power" is understood. A very small boiler will heat 1000 feet of piping, but to what degree? If the boiler will make the water in the pipes lukewarm, it may be said to "heat" it; but gardeners expect much more than this, though it would appear that is all the boiler-makers mean. It is not advisable to make the pipes very hot for the sake of the plants in our houses; but, as a matter of fact, gardeners have every day to heat their pipes up to 180° or more to sustain the minimum temperatures, and this is what boilers ought to be reckoned to do if necessary; but just ask any boiler-maker if this is what he means by the heating-power of his boiler, and hear what he says, or if he will guarantee his boiler to do any such thing. Last summer we had a house erected containing 600 feet of piping, 500 feet of which was 4-inch, and the remainder 3 inch. To heat this quantity a small boiler—one of the most popular saddle kinds—was sent, and in the circular which accompanied it it was said to be able to heat 900 feet of 4-inch piping, or 300 feet more than what it was wanted to do. I did not, however, believe in its capabilities, and told the builder of the house as much. His contract was to supply a boiler capable of heating the pipes efficiently in the coldest weather, or, as was explained to him, up to 180° at least, and he was distinctly informed, before setting the boiler, that he would be held to his contract, and that if the boiler he had sent did not do its work he would have to replace it at his own risk. The consequence was that the boiler was sent home again, and a larger one sent to replace it, and calculated, nominally, to heat 1200 feet. This was fixed, and it has been as fully taxed as it can be all the winter to keep the water in the pipes at about 170°. We have various kinds of saddle and conical boilers here, and all are nominally entered to heat far more piping than they can do efficiently. Numbers of inexperienced people are deceived in this way. *A Gardener.*

Pennyroyal.—I have heard this herb called "organy" in Wales, the Marjoram "organs," and I concluded the latter ("organs" being mentioned) was the herb inquired after. There is a Pennyroyal, the Hedeoma pulegioides, much used in America, in popular medicine. It is a little herb, growing on sunny hills all amongst stones, with very nearly the same flavour and odour as the English or European plant. *Helen E. Watney.*

Dodder.—In reference to your correspondent's letter respecting Dodder on an Azalea, p. 344, I remember reading, I think in the *Gardeners' Chronicle* some years ago, that a strong solution of blue vitriol, 1 lb. to the gallon of water, applied by means of a watering pan and rose, would destroy the Clover Dodder in the field, without damaging the Clover plant. I have had no means of testing it here, and had mentioned the matter to several farmers whose Clover crops have been infested with it, but I don't think any one ever took the trouble to try. However, as Mr. Coombs is probably more interested in his Azalea than farmers generally are in the purity of the seed they grow to sell, perhaps he may think it worth trying, in which case I should be glad to know the result. A trial could easily be made by dipping a small branch of the Azalea or Dodder in a flower stand full of the solution. *John Gould.*

Amaryllis Storr's Beauty.—I called on a friend a few days ago at Storr's Hall, and had my attention drawn to a very fine Amaryllis, named Storr's Beauty, which was raised by Mr. Evans, the gardener there, in 1875. It is the result of a cross between Gravaiana and Queen of the Netherlands. The four flowers on a spike measured nearly 8 inches across, and were of a bright scarlet colour, with a band of white half way up the petal, bordering into violet. At the same time I saw about 500 seedlings, which have not yet flowered, and which are all crosses between such well known varieties as Ackermanni pulcherrima, Meteor, Eclipse, Magnet, marginata, conspicua, &c. *Charles Chaplin, Gr. to H. W. Schneider, Esq., Belsfield, Windermere.*

Orchids in Flower with Mr. Joseph Broome, Didsbury, near Manchester.—I have been favoured with a sight of some of the Orchids designed for exhibition at the Manchester Town Hall on the 20th inst., but which were obliged to be kept at home on account of the frost. Certainly, in the compass of a good-sized parlour, which is about the area of the house in which the plants at this moment in bloom are brought together, there never was beheld a more striking spectacle. First and foremost in effect are eight excellent plants, three or four of them very fine, of the old Dendrobium nobile, the flowers different in the shade of their lilac and purple in every one of the eight, and held up in glorious bunches of a score apiece. Then comes a superb example of the scarce and very beautiful Dendrobium Wardianum, the principal raceme holding exactly a dozen blooms of the loveliest hues imaginable, the white sepals and petals being tipped with purplish rose, the lip a rich orange margined with white, and in the cavity a double crimson spot: altogether on this specimen there are twenty-four open flowers. The exquisite Dendrobium Devonianum is fast coming on as a charming after-piece. Overhanging the Wardianum is an Oncidium ciliatum, the flower-stem of immense length, and bearing twenty-four flowers of crispy brown and gold, the margins waved and crisped like a well-known and favourite variety of the Hart's-tongue Fern. For companion it has an Odontoglossum angustatum integrum, bearing forty flowers in a grand fourfold panicle which exceeds a yard in length. This is believed to be the first time of this glorious species blooming in England. Please say if the belief is well-founded. Close adjacent are several grand examples of Phalænopsis Schilleriana, the larger ones bearing twelve blooms each, and the foliage in itself interesting in the diversity of its maculation. After these came charming specimens of Odontoglossum Pescatorei, Bictoniense palchellum, Hallii and triumphans, with Masdevallia ignea, Oncidium macranthum, Cymbidium eburneum, and a lovely Cattleya Mendelii, not to mention a crowd that are individually pushing for the front. These plants of Mr. Broome's would have sufficed to render the Town Hall show a brilliant orchideous one. Twelve better East Indians were never seen than those we have named. The miscellaneous houses are rich in Palms, Crotons, Anthuriums, Nepenthes, and everything else that is choice and noble, with exquisite Dracænas and allied plants, the aggregate declaring good taste on the part of the owner, and doing great credit to his gardener, Mr. Williams. *Visitor.*

How to Preserve Garden Crops from Rats.—About 50 or 100 yards behind your vineries, and in some convenient place, put up a pigsty of wood, cover the roof with 2 inches thick coat of straw and the outside of the nest with a thickness of Fern, Heath, or such-like stuff. Feed the pigs well, and, fatten them as often as necessary. If a horse is kept, the stable litter every morning will keep the pigs clean, and no nuisance need be feared. Everybody knows the value of this home-made guano, and may rest assured that every rat which finds his way to the garden will take up his quarters here, where he can be easily trapped. Miss Fuss, too, will often find entertainment here. There can be no greater annoyance to a gardener than a rat in the house, especially where ripe Grapes are hanging. Although I have caught hundreds, one some years ago defied me for more than three months, and of course did horrible mischief, such as taking out of pots all the French Beans sown, a crop of potted Potatos, and so on. His last grand trick was to cut in two a Vine in full bearing of some years' standing. Happily such a cunning fellow as this does not often appear. My Grape crops here have been wretchedly dealt with by them, but since adopting the plan of feeding a fatting pig or two (now for some years) not a single case of damage by rats has come under my notice. I suppose a pig's-sty, pigs' society, and good barleymeal, are all the luxuries this busy pest requires. *W. F. C.*

Petroleum (or Paraffin) as a Preventative against the Ravage of Birds, Mice, &c., on Seeds.—Your correspondent, Mr. H. C. Ogle (p. 377), asks if any one has tried petroleum for this purpose, and with what results? I have used it for the last two seasons, and find it answer perfectly, not only preventing mice and small birds from taking the seeds, but pheasants and rooks also. I have a piece of kitchen garden near to a rookery. I used to be obliged to wire over all Peas, Beans, &c., as soon as sown, but since I have used the petroleum the rooks have done but little damage, excepting scratching up a few when first sown, and leaving them on the surface. They have evidently no taste for petroleum. I place the seeds to be sown in a large tin saucer, kept for the purpose, and pour in just enough petroleum to moisten the whole, and sow at once. I have frequently used red-lead for the same purpose, but find petroleum less trouble. *Thomas Keetley, Newton House.*

Ilex Aquifolium.—To settle a controversy, we have agreed to submit the following question to you, viz.:—Is Ilex aquifolium the Mahonia aquifolium and Ilex Aquifolium, why is the specific in the neuter and the generic in the feminine gender? Why not Mahonia and Ilex Aquifolia? *E. S. C., New York.* [Aquifolium is a substantive name, employed by the old Latin writers and adopted by the moderns. It is not used as an adjective, and therefore need not agree with the preceding substantive. In all such cases, following the example of Linnæus, the name should be spelt with a capital for distinction sake. EDS.]

The Double Poinsettia.—As there has been a great deal written of what I should term unpractical surmises about this new plant, and that by parties who should know better, I send with this a top of bloom that will prove ultimately to be its true habit. The plant is strong, and a fair size—in fact, it was cut from the original plant received from Mr. Veitch,

which, on account of our not wanting a stock, was allowed to grow on. It came into bloom in the middle of December, and, as you will see, it begun shortly after to shed the large outer bracteas, and throw up thick clusters of small bracts from the centre, until the flower-bearing stem is elongated several inches with a fine rich double top and centre—not at all coarse, like the single one, but perfection itself for bouquets and culling. You can fancy the effect of this placed against white. I doubt not but that it will ultimately be had half the year round—at least, this looks a very way likely to continue growing from the centre for some time to come, and even if the bracts diminish it will not render it the less useful for many purposes, and large plants will be particularly useful and showy. I think it the best and most useful new plant sent out for several years. *T. K., March* 26.

Mice and the Peas.—I have put a mixture of red-lead and sweet oil on my early Peas previous to sowing for the last ten years, and have never known a mouse to touch them. I have tried benzoline this year for the first time, with the same result. I may one who is troubled with mice will give either of these remedies one trial, I feel assured they will be quite satisfied with the results. I sowed my first Peas on November 18 last, and neither mouse nor bird has touched them since. *George Clinger, The Gardens, Beechlands, Caterham Valley, Surrey.*

Chlidanthus fragrans.—We are much pleased to be able to confirm your opinion, expressed in your last issue, p. 377, that "single-flowered varieties of species usually bearing a truss are not very uncommon," for we have to-day in flower a spike of Chlidanthus with three flowers fully expanded. *F. H., The New Plant and Bulb Company, Colchester, March* 27.

Waltham Cross Grape.—In reference to your reply to "J. Mcl." at p. 346, on the merits of the above Grape, permit me to remark that whatever may be the good qualities of that variety when it comes to be seen in good form, it will not, according to my observations, ever be generally grown. I know one or two noted Grape growers who have completely failed with it. It would be interesting, if your readers who have grown Waltham Cross would give a candid report in your columns to how it has behaved with them. Should they do so, I have no doubt but you would see fit to alter your editorial opinion. We annually grow a number of pot Vines for fruiting, and amongst our this year's batch was a strong well ripened cane of Waltham Cross. The other varieties were Black Hamburgh, Gros Colman, Trebbiano, and Foster's Seedling, all of which showed an abundance of fruit, except Waltham Cross, which did not show a single bunch. By all means let us have as many new Grapes as possible so long as they are real improvements on kinds, but not unless. I do not think the Fruit Committee should certificate any new Grape without having growing specimens in fruit before them, so that they may judge of its habit, constitution, &c. There are several good practical gardeners on the committee who could tell at a glance whether a Vine was likely to be a fruitful variety or not. Personally, I feel strongly on this point, as I think all true lovers of gardening must, seeing that many gardeners have got into trouble with their employers this last few years through purchasing high-priced new Grapes that a few years have had to be discarded as not worth growing. I do not think the fortunate owner of any good thing would at all suffer by more caution being exercised in the matter, as in these days of free communication amongst both employers and gardeners a real good thing soon becomes widely known, and is sure to sell in quantities. I have several times of late asked myself and other gardeners this question—In what way would our employers' dessert-tables or gardeners' reputations have suffered had, say, two-thirds of the new Grapes sent out this last twelve or fourteen years never seen light? My own reply and that of several acquaintances was, Both are large creditors, not debtors. What say your readers? *H. J. C. G.*

Cyclamen Culture.—I have often heard people in this part of the country say that they have failed to grow these beautiful Cyclamens as well as they could wish, and having had myself a fair amount of success for several years past, I beg to send you the details of my mode of culture. The compost I use is made up of equal parts of loam, peat, and leaf-mould, with a liberal quantity of silver-sand. Six-inch pots are well drained one-third of their depth, and then filled with compost to within half an inch of the rims, when they are well watered with warm water, and the seeds sown thinly, and covered with about one-eighth of an inch of silver-sand. A piece of glass is placed over the pots, and they are put on a shelf near to the glass in the plant-stove, and kept constantly moist. When the plants are 1½ inch high they are potted singly into 2-inch pots, the bulbs being carefully kept above the soil at all times. They are again returned to the stove, kept near the glass and constantly moist, and sprinkled overhead with a fine rose once or twice a-day, and shaded from bright sunshine. As soon as the roots reach the side of the pots they are shifted into 5 inch pots, an addition being made to the compost of one part of well-decayed cow or horse manure. After this the plants are kept in the stove till the pots are well filled with roots—about the third week in June—when they are removed to a pit, and the pots plunged to the rims in a slight bottom-heat. The plants are sprinkled overhead with warm water daily in bright weather, and an abundance of air is given when the weather is favourable, with a little shade in the middle of the day. About September they are removed to shelves in the conservatory, where a temperature of from 50° to 60° is kept up. Here they commence to flower from November, and continue to do so till May. Seed may be sown at any time. I find it takes from me from twelve to fifteen months to produce good plants from seed; but I have always found young plants to produce the finest flowers. *Henry Ellis, The Hollies Garden, Timperley.*

Botryanthus conicus.—When I was in Italy, some years ago, I found in the Campagna and elsewhere a Grape Hyacinth, which appeared to me exactly intermediate between Muscari botryoides and racemosum. It has always puzzled me. The bulbs I brought home have flourished and increased in my garden, and a short time since I submitted a blooming specimen to the inspection of Mr. Baker, of Kew. He pronounces it to be Botryanthus (Muscari) conicus of Jordan. *H. Harpur-Crewe, Drayton Beauchamp Rectory, Tring, March* 20.

La Grosse Sucrée Strawberry.—We find the above to be a capital variety for early forcing. We put fifty plants on a shelf in our second vinery when we started it the second week in January, and they are now ripening off a good crop of fruit, of which the enclosed is a fair average sample. One great point in its favour is that it sets its fruit well in a temperature 6° to 8° higher than our usual standard variety, viz., Keens' Seedling, consequently saving time. Our plants are growing in 5-inch pots, and average about seven fruit to a plant, all of which swell to an equal size. *H. J. Clayton, Grimston Gardens, Tadcaster.*

Spent Hops.—I have been reading in your valuable paper the remarks of Mr. Dains on spent Hops for Potato culture. I notice that the use of "spent" or, as we call them, refuse Hops as manure, is not at all general with you. Many of your readers must know the great value of Hops as manure but many I am convinced do not. Less than ten years ago one large firm in Bristol carted their refuse Hops into the nearest field as the best way to get rid of them—but I know for a fact, which plainly shows that the market gardeners of Bristol did not believe much in Hops. With us it is quite the reverse, spent Hops are sought after quite as much as any animal manure. Near all large cities they are difficult to obtain, and often fetch as good a price as the stable manure. As I have used during the last seven years many hundred tons, I can, I think, say that I have given it a fair trial. I have tried it side by side with well rotted stable manure on such crops as Potatos, Cabbage, Celery, Carrots, and even Wheat, Barley and Oats, and proved it quite equal to the manure, more particularly on heavy loam; on a very light soil I think it would be less beneficial. If used fresh from the brewery it will do no harm, but I prefer to have it lay in a good big heap for a year and be well turned over. Half-and-half mixture of one-half stable manure and one-half fresh spent Hops will retain heat much longer than if made entirely of stable manure. When two or three years old and thoroughly rotten, so rotten that it will easily run through a half-inch sieve, it is a fine substitute for leaf-mould, so good in fact that we never look for leaf-mould. All our common greenhouse plants, such as Pelargoniums, Carnations, Fuchsias, Begonias, &c., in fact almost without an exception all soft-wooded greenhouse plants, thrive finely with a liberal allowance of rotten Hops. *Witham Seely, Bethlehem, New York, U.S.A.* [Spent Hops are largely used in London market gardens. Eds.]

Town Squares.—I have read with some interest your remarks and Mr. Eyles' explanation of his plan for laying out squares, &c., in London and other large towns, and as you commend them to the serious consideration of those who have to take action in matters of this kind, and as I happen to fall under this denomination, will you kindly find space for one or two observations on the subject? In treating the matter of London squares it must be looked at from more than one point of view. The landscape gardener must consider whether his first duty is to give satisfaction to the powers that have the management of the square, or whether he should simply seek to conscientiously fulfil his mission; by this I mean to say, is he to lay out the garden so that it shall look nice and pretty for a few years, or should he rather not look to the future? This is the great difficulty to contend with. Mr. Eyles' design, he tells us, is eventually to shade the promenade and gravel walk in summer time or sunny weather, and to give a good dry path in the dull season of the year; and he considers a good greensward one of the greatest desiderata. Now if Mr. Eyles plants his Planes, as he proposes, at the edge of the grass, by the time they have grown sufficiently to form the arch he talks of certainly they will have extended a very considerably greater distance on either of the external sides, and one may safely say not less than 10 feet; and we all know that it is simply impossible in the London smoke to have the faintest semblance of grass under a dense mass of trees, and more particularly when an unlimited number of children and nursemaids convert it into a playground. I think myself, with such a number of trees in so small a space, in a few years you would neither have a good walk nor a fair sward; and I feel sure, if Mr. Eyles will give the matter a little further consideration, he will find a better issue out of the difficulty. There is one point in laying out these squares that must never be lost sight of. Londoners will have their host of Laburnum and other such trees. It is no use—they will not be denied them; and in the old squares the inhabitants know every peculiarity of the time of flowering, difference of colour, &c., and as they are seedlings this is considerable, and they look with pride on the one big Plane or old Thorn, or what not. These are points that must be considered, and indeed never lost sight of, or the landscape gardener is in trouble in a moment. As you justly remark, these squares have to answer the purpose of private gardens for those who have the right of entry, and in some of the old squares in the inner London one may see a little gardening, under almost every disadvantage, that fairly puts Belgravia and South Kensington to the blush. *R. P. G.*

Mushroom Culture.—There have been several writers of late disclosing some very interesting facts respecting Mushroom and Asparagus forcing, which will make us think there has been some fairy agency at work. If the year 1877 proves as it has begun, abounding in horticultural wonders, may we not expect our blue Dahlias and various other imaginary things? I am an advocate for the more steady and rational system of forcing which, if carried out skilfully, is sure to obtain success. It has been lately my good fortune to witness a very successful Mushroom bed treated by the gardener here. The following is his method of treatment:—The requisite quantity of horse-droppings was collected and wheeled into a shed, turned several times to sweeten, then there was some good loam sifted and mixed with it at the rate of one barrowload to eight of droppings. The whole was well mixed and made into a bed 15 feet by 4 feet 6 inches and 14 inches deep, and trodden firm; a bottom-heat thermometer was then inserted, and as soon as the heat declined to 85° the bed was spawned—pieces about the size of a Walnut were inserted in the bed 3 inches deep, about 4 inches apart, and the holes filled with the compost; then it was left for two or three days, to make sure heat did not rise again; afterwards the whole was covered with about 2 of sifted loam, beaten firm and then damped and smoothed off with the back of a spade; some hay was sprinkled over it, and the bed set to work on September 28, and the first dish of Mushrooms was gathered on December 5. Since then it has kept the family supplied, with some to spare, and it has altogether borne a large quantity of fine Mushrooms. On February 17 there was a clump taken from it, fourteen in number, weighing upwards of 2 lb. The length of time between spawning and the production is owing to the temperature and unfavourable circumstances, the shed in which they are grown being merely an extension of a stokehole at the back of a range of vineries, consequently when the fire is stopped it is often filled with the fumes of the sulphur emitted, to counteract which some old trelliswork raised on flower-pots was placed over the bed, and double matted, being constantly kept damp. The spawn was obtained from Messrs. Veitch, Chelsea. *F. W. F.*

Vine Weevils: Otiorhynchus picipes.—Destructive as these are to the leaves of Vines, which they feed on by night, they are more to be dreaded while in the larva state, as then they attack the roots both large and small, and this to such an extent as nearly to sever them. So troublesome have they been in the late Vine border here, which is inside the house, that I had to take it out and replace it with fresh soil, and in doing this many of the roots had to be cut away, as they were so channelled and furrowed that only a small portion on one side was living. Above

the part so injured young fibrous roots were forming freely, and this decided me to prune off all the decorticated part, as I could plainly see that any of the root below was not likely to be of any further use to the Vines. I attributed their presence in this house to having top-dressed the border with some rather fresh cow manure that was allowed to lie on the surface as a mulching, where it remained till it became so decomposed as to be incorporated with the surface soil. This manure was collected as it laid on the pasture, and whether the weevil was introduced in that way I know not, but certain it is I never had it before, except an occasional one or two, while in this case we often found as many as twenty or thirty by searching for them at night, and we had to continue destroying them in this way to prevent them devouring the whole of the lower leaves, which they otherwise would soon have accomplished. My knowledge of entomology is not sufficient to allow me to say anything as to the length of time they remain in the larva state, or what becomes of them after they assume the beetle form, but no doubt many of your readers can fully enlighten us on this head, and tell us how to guard against having them in our vineries, for which information I shall be very thankful, for they are sly, destructive fellows, working in the dark as becomes them; but this I would not object to if if they would only keep above-ground, as then we could cope with them. *J. Sheppard.*

Orchids in March.—The show-house is rich in beauty but not in variety, but, happily, the most abundant are not the least beautiful. Next month promises to be fertile of both.

Vanda Cathcartii
,, cærulescens
,, suavis Veitchii
Cattleya Trianæ
,, Warscewiczii delicata
,, Trianæ (pure white variety with golden lip)
,, Trianæ (the richest dark crimson)
,, chocoensis
,, bogotensis
Lælia Jongheyana
,, anceps
,, crispilabia
,, acuminata
Dendrobium lituiflorum
,, capillipes (rich golden)
,, barbatulum
,, primulinum
,, speciosum Hillii
,, nobile
,, Wallichii
,, Pierardii
,, nobile pendulum
,, Boxallii
,, japonicum
,, Wardianum
,, crassinode
,, Kingianum (a gem)
Cypripedium Argus
,, hirsutissimum
,, venustum
,, niveum biforum
,, barbatum nigrum
,, Schlimmii (a gem)
,, Harrisonianum
,, villosum
Ada aurantiaca
Odontoglossum Alexandræ
,, Cervantesii
,, Rossii
,, constrictum
Odontoglossum Pescatorei
,, Rozzii
Phalænopsis Schilleriana
,, amabilis
,, rosea
Maxillaria picta
,, tenuifolia
Sophronitis grandiflora
Oncidium Cavendishii
,, pulvinatum
,, Philpsianum
,, Weltoni
,, sphacelatum
,, species (bought at Stevens' as macranthum, imported, flower-spike 4 feet, flowers small, leaves worthless)
,, ampliatum majus
,, fuscatum
Eria lasiopetala
Masdevallia ignea
,, Veitchii
,, polysticta
Dendrochilum glumaceum
Epidendrum fragrans
,, cochleatum
,, Stamfordianum
,, tesselatum
,, diobromum
Acineta Humboldtii
Gongora portentosa
Angræcum sesquipedale
,, eburneum virens
Calanthe Veitchii
Leptotes serrulata
Trichopilia tortilis
Zygopetalum crinitum cœruleum
,, maxillare
,, Gautieri
Cœlogyne cristata
,, flaccida

Edward W. Cox, Moat Mount, Hendon, March 26.

Japanese Mushrooms. — The Japanese are famous for doing things in a different manner from ordinary people, and in their cultivation of Mushrooms they illustrate their character for this peculiarity. In growing Mushrooms, or rather edible fungi, as we learn from the report of Her Majesty's Consul in Japan, the Japanese (of Kanshiu) cause Mushrooms of more than ordinary large growth to appear by heavily beating logs of wood till the wood swells. We also obtain knowledge of the remarkable fact that if the same logs "are beaten gently a great number of small sized Mushrooms grow up in succession." There is still another plan for forcing Mushrooms in Japan, sometimes the cut logs are interred in the ground for a year; when twelve months have passed over the logs are resurrected and "beaten in the manner above described." In all these cases the logs have been previously split by the Japanese each into four pieces, incised with hatchets and placed in a wood. "Every morning" (after three years have rolled over), says the report, these logs are "put in water, where they remain till the afternoon, when they are taken out, laid lengthwise on the ground, and beaten with a mallet. They are then ranged on end in the same slanting position as before, and in two or three days Mushrooms will again make their appearance." These logs are not cut from the Walnut tree, and so can hardly be said to confirm the truth of our old adage of "the Walnut tree—the more you beat it the better it be." The name of the tree, says Her Majesty's Consul, is the "Shii-tree," and the name of the fungus the "Shii-take." The report does not inform us whether this "Shii-tree" is in any way related to the familiar British boot-maker's "boot-tree," although this relationship would not seem improbable, for we are told in the same report that the second-best Japanese Mushroom is the "Kik-urage." The names of the Mushroom localities in Japan are most peculiar, and some sound like a sneeze, as "Idzu" and "Hitachi." Small parcels of fungi, says Her Majesty's Consul, "come from Zezo," and are estimated in "piculs and catties." *W. G. S.*

Vegetables for India.—We hear of such terrible famines in India from failure of the crops that I venture to ask whether there are not some vegetables or roots (differing from those now sown) which might resist long droughts better. It would be a great boon to the country if experienced gardeners could suggest such auxiliaries, not to supersede, but to aid when the favourite crops failed, and assist at all times. I am in hopes that through your so well known *Gardeners' Chronicle* some good hints may be given. *H. B.*

The Royal Horticultural Society.—Now that Mr. Veitch has set the good example of opening a list for Fellows and guinea members, it is most desirable that other nurserymen, not only in London but in the country, should follow his lead: they would get their own horticulture cannot be promoted without at the same time increasing the demand for plants. *George F. Wilson, Heatherbank, Weybridge Heath, March 26.*

Reports of Societies.

Newcastle-on-Tyne Horticultural: *March 21 and 22.*—The spring exhibition of this Society—one of the oldest in England, having been established in 1824—took place on the above dates, and proved a success beyond the most sanguine expectations of its promoters. Long as the Society has existed it is the first spring exhibition it has ever held, and the holding of this show marks the era of a great change in the circumstances of the Society. For years past it has existed in name that is all. As this great centre of commercial enterprise increased on every hand the Society progressed in an inverse ratio; it depended for the most part on money taken at the gates, and as the weather regulated the number of those who visited the shows, the committee often found themselves in very great financial difficulties. It would appear to be the fate of all societies connected with horticulture, great and small, to become involved, and in 1872, so small was the amount of money taken at the gates, that it was not sufficient to meet the working expenses, and the prize money could not be paid.

During the time of the greatest depth of depression some local horticulturists were found believing in the possibility of a better state of things, and it was considered that the claims of the Society only required to be more prominently brought before the public to result in a prosperous state of things. The attempt was made, the basis of the committee was broadened, two gentlemen of position—Messrs. W. J. Taylor and J. H. French—were appointed hon. secretaries, with the assistance of a working Secretary; an appeal was put forth to the residents in the counties of Durham and Northumberland, and the venture succeeded beyond the most sanguine expectations of the promoters. The assistance so much required has been unsparingly tendered, and there is now a body of members numbering nearly 2500, with an assured annual income of over £1000. The list of Vice-Presidents and Patrons includes a large number of the nobility and Members of Parliament of the counties of Durham and Northumberland, who have subscribed liberally to the funds. The committee arranged to hold three exhibitions during the present year: the spring exhibition, now held in the Town Hall and Corn Exchange; a large summer exhibition on July 12 and 13, in the Leazes Park; and a large autumn exhibition on September 12 and 13, in the Town Hall.

On the occasion of the spring show the whole of the spacious Corn Exchange was filled with plants, while the Town Hall was reserved for the table decorations. These have long been a leading feature of interest in the district. Each competitor had to provide a table decoration of flowers, plants, and fruit, each competitor allowed a table-room 10 feet by 5 feet 4 inches, and to provide a white cloth. There were five competitors for the handsome money prizes given by the President, Major Woods, of Holeyn Hall, the 1st prize being taken by Mr. J. Sanderson, gr. to W. H. Parker, Esq., Gosforth; the 2d by Mr. Thompson, gr. to Lindsay Wood, Esq. In addition there were epergnes, bouquets, and buttonholes, the competition being confined to ladies, and which brought an extensive and spirited competition.

The extensive Corn Exchange had a very pleasant and bright appearance. Hyacinths were the leading feature—the principal class being for twelve pots of Hyacinths, three bulbs in each. The bulbs were generally in 32-pots, and there were some remarkably fine spikes in the three leading collections, the exhibitors having three spikes of one variety in a pot. Some had three different varieties, viz., white, blue and red, but the result was unevenness and confusion. The 1st prize was taken by Mr. J. Thompson, Ravenside Nursery, Fenham, who had Charles Dickens, Grand Lilas, Lord Macaulay, Ornement de la Nature, Alba Maxima, Grandeur à Merveille, Argus (very good), Von Schiller, Victoria Alexandrina, and Madame Hodgson, as his best examples; 2d, Mr. W. J. Watson, seedsman, Town Hall Buildings, with fine examples of Lord Macaulay, Leonidas, General Havelock, Miss Nightingale, Ida, La Grandesse, Lord Palmerston, Bleu Aimable, Mont Blanc, and Hadyn. Mr. Thompson was also 3d; and after that there was a considerable falling off. Hyacinths were also shown in glasses. Narcissi were very attractive, the best sorts being Grand Primo, Soleil d'Or, States-General, and Bazelman. Several bulbs were in a pot, and good heads of blooms resulted. Crocuses were in much larger pots than are usually seen in London, and they were generally well grown—the leading varieties, Queen Victoria, white; Walter Scott, pale striped, very fine; David Rizzio, purple and large yellow. Scillas in pots were capitally done, and were represented by sibirica, bifolia, and bifolia alba. Tulips were but sparingly produced, and there is no reason why they should not have been more numerously produced and better grown, as there are many fine sorts well suited for pot culture. Of single varieties the best were White Pottebakker, Van der Neer, Vermillion Brillant, Van Vondel, Royal Standard, and Canary Bird; double varieties, Tournesol and Rex Rubrorum.

Of spring-flowering plants, Rhododendrons, Camellias, Azaleas, and Acacias were represented; and of commoner forms, Cinerarias, Lily of the Valley, Deutzias, some of them well grown and bloomed; Astilbe japonica, very good; Cyclamen, Mignonette, Epacris, Heaths, &c., were in plenty. Of hardy flowering plants there were Hepaticas, Anemones, Polyanthus, among which we were glad to see some fine old-fashioned gold-laced varieties, such as George IV., Formosa, &c.; Auriculas, Wallflowers, and Daisies.

Handsome foliage plants were shown by Mr. A. Methven, gr. to J. Lange, Esq., and other exhibitors, and flowering plants by several; and among these was a capital example of Abutilon megapotamicum variegatum, well grown and flowered.

Large and varied collections of spring-flowering and foliaged plants, of great advantage from a decorative point of view, were furnished by the following nurserymen of the town and district:—Messrs. W. J. Watson, J. Thompson, J. Charlton, R. Balfour, and Stuart & Mein, Kelso, N.B. A box of coloured Primroses, sent by Mr. R. Dean, Ealing, London, excited considerable interest.

Royal Horticultural of Antwerp.—This Society held its 128th exhibition on March 11 and following days. Although held at an unusually early date the flower show exceeded all expectation, as much in the variety as in the beauty, freshness, and abundant flowering of the plants. The splendid room of the Royal Society of Harmony, so well adapted for exhibitions, was, while the show lasted, the favourite meeting-place of the aristocracy and lovers of horticulture. The room presented a dazzling appearance, and the cold weather out-of-doors was a singular contrast to this attractive garden, glittering with the brightest colours of spring flowers, and perfumed by their divers scents. To give an exact idea of the exhibition we should be obliged to touch on every staged object, hence we shall only mention the most prominent things.

Let us speak first of the amateurs. M. Beaucarne, of Eename, carried off the palm of the day. He staged remarkable Orchids, magnificent Coniferæ and ornamental plants, Azaleas and Camellias of an uncommon height, combined with perfect culture and abundant flowering. The Ericas, Epacris, and New Holland plants of the Baron de Caters, the President of the Society, as well as the Orchids, Palms, the former especially, of Mdme. Le Grelle-D'hanis, excited general admiration. A brilliant collection of hybrid Amaryllis, raised by M. H. Vander Linden, charmed all spectators—abundant foliage, gay colours, fine forms, strong stems, no fault was to be found with these handsome flowers. In his rich group of bulbous ous plants we observed a Crinum raised from seed that we considered one of the finest of its kind. The excellent Azaleas and Camellias of M. Flor. Pauwels were, however, surpassed by his incomparable group of hardy Rhododendrons, amongst them a Prince Camille de Rohan displayed its enormous crown, ornamented with more than 400 trusses of flowers. The fine varieties of Coniferæ, Aucuba, Euonymus, and Pelargoniums of Mdme. Rigelé, M. le Comte de Bergeyck's good collection of hardy plants, the splendid Anthuriums and Cyeads of M. Van de Womver, the striking standard Roses of M. Van

Bomberghen, the charming new Azalea of M. de Graet, of Ghent, together with the superb Cinerarias, Roses and Cyclamens of M. Everaert all deserve high praise.

The nurserymen, too, contributed very much to the beauty of the exhibition. M. De Beucker had furnished very pretty and strong Phormiums, many varieties of Cacti, and an entirely new species of Maranta from Brazil. M. L. Berckelaers received much praise for his Cyclamens, his large group of flowering plants, as also M. H. De Beukelaer for his well-arranged bouquets of natural flowers. M. Ch. Vuylsteke, of Loochristy, near Ghent, sent a most beautiful collection of a distinct variety of Azalea indica, with an exquisite group of hardy Rhododendrons, truly magnificent plants, full of bloom, rich and varied in colours, from the purest white to the brightest red. The valuable plants staged by M. Vander Mersch formed an attractive display, and the Coniferæ, &c., of M. Nagels produced a very good effect.

Lastly, but not least, it must be mentioned that several artists had decorated the room with their pictures. Amongst them Mdlle. Anna Peters, of Stuttgart, held a prominent position with her charming "Roses in Autumn;" M. Mattelé, of Ghent, and M. De Naeyer, of St. Josse-ten-Noode, also exhibited proofs of their great talent. By means of this highly successful show Antwerp proves once more that it has made, especially of late years, a rapid improvement in horticulture, and is following the example set by Ghent, the famous flower city of Belgium. *C.*

The Villa Garden.

ROCKWORK IN THE VILLA GARDEN.—A piece of rock garden is very often a part of a Villa residence. In a great many cases it is thought to be "the thing," and it is very frequently constructed in such a way that the plants placed thereon are characterised by a kind of unhappy existence, the appearance of the rockwork having been the first consideration, to which the well-being of the plants stands in the relation of quite a secondary matter of importance. In many cases it happens that the rockwork is set up in a hot, dry, elevated position, in full exposure to the sun; it is therefore impossible plants can grow thereon, but then it is not unfrequently the case the erection is so ornamented as that it, and not the plants, becomes the attraction.

In his pleasant book on *Rustic Adornments and Homes of Taste*, Mr. Shirley Hibberd amusingly sketches such a piece of rockwork as we have just referred to. He states:—"Take a flower garden, and in the midst of it make a pyramid of vitrified bricks and flints, or throw up a hillock of huge stones, and set upon the top of it a small plaster statue, or a cast of Queen Elizabeth, or Shakespeare, or Paganini; daub the stones over with blue and green paint, in fact, moss them and bronze them, and use plenty of colour. Then stick in anywhere a Geranium, a Fern or two, put a few shabby Lilacs at the back, and make round the whole a gravel path, edged with white flints or brick-rubbish, to correspond with the eminence, and you have one of those 'model rockeries' that delight Londoners when they take their walks abroad, and which many of them copy in arranging their own grounds. It is the best fun in the world to visit a garden where there is plenty of rockwork, but you must be reticent as to your opinion of it, or risk all the consequences of giving an unforgivable opinion if you should speak your mind on the matter." Grotesque as it seems, this is a very true picture of many constructions under the name of rockwork. Not long since we were invited to inspect a piece of home-constructed rockery that had cost its designer—no, not designer, for there was no design about it, as all kinds of puerile conceits had been worked in as the task proceeded, in order to make it effective—had cost the worker immense trouble; but scarcely a plant was growing on it. There was scarcely a fissure into which the plants could make roots; even the common Stonecrop and House Leek looked miserable in the hot blazing sun. To make amends for the lack of plants pieces of coloured glass, tinted shells, lumps of spar, &c., had been introduced in plenty; and this garish, gaudy, unnatural performance was considered a masterpiece of local inventive genius. Such a picture may provoke a smile; but it is a correct one, and copies of it abound.

Many residents of Villas think a piece of rockwork indispensable, and sometimes it is set up under a north wall, sometimes under a south wall; in the former case it is rarely blessed with a gleam of sunshine, in the latter it is in the full exposure of the sun, and literally roasted for want of shade. Another time a piece of rockwork is set up under trees and shut in from the genial influences of sun and air; it becomes a habitation for vermin, and the drip from the overhanging branches quenches almost every aspect of plant life.

A piece of rockwork, if properly constructed, is calculated to maintain plants in a flourishing condition in the fullest exposure, provided there be a sufficient bed of soil to root into. It is in regard to this point that so many failures occur. As we write we have in our mind's eye a rocky bank, set up to separate a flower garden on a lower level from a piece of kitchen garden raised some 3 feet or so above it. Some large pieces of Bath-stone formed the foundation, but as the work proceeded the spaces were filled up with suitable soil, and as the work mounted upwards this was even more carefully attended to, the result being that a bed of soil extending to the very bottom and rammed well home was provided for the plants to root into. This bank is now completely covered with plants in the most flourishing condition. In early spring there are bulbs, Primroses, Aubrietias, Arabis, &c., and these are followed by Alyssum saxatile, Helianthemums, Plumbago Larpentæ, Convolvulus mauritanicus, &c.; and almost all the year round there is something of interest to attract. The secret of its success lies in the fact that there is an abundance of soil within the rockwork for the maintenance of the plants, and all choice things are carefully planted in specially prepared nooks, where they cannot starve in the driest weather.

The chief mistake made is that of not providing a feeding place for the roots of plants for the embellishment of the rockwork. If the openings between the stones, however narrow they are, are filled with soil, the roots will go down deep into it, and this is how it is that the plants can bear so much exposure during hot dry weather.

The practice of employing roots or stumps of trees to make a foundation for rockwork, or even of constructing such a piece of work wholly of wood, is one to be condemned, and for this reason apart from others that might be given—the woodwork rots in course of time and subsides, the soil sinks down, and the arrangement becomes uneven and practically useless.

In planting rockwork a few choice subjects should be used, mixing them with a selection of plants suitable for covering it, or else certain quick-growing plants that will cover it quickly should be introduced. Much depends on the position of the rockwork. If it be in the shade, and away from the sunlight, then it may be planted with things suitable as a screen; if it be in the open let some good things form a part of the arrangement, taking care they do not become smothered in course of time by the more robust growing plants employed for covering purposes.

Notices of Books.

The Life of a Scotch Naturalist (Thomas Edward, A.L.S.). By Samuel Smiles. London: Murray.

A book so remarkable as this should not so long have remained unnoticed in these pages had it not been necessitated by exigencies of space, and the necessity of inserting matter of more strictly horticultural character which admitted less delay. As it is, the history of "Tam Edward" is now known through the length and breadth of the land, and by the thoughtful kindness of the Queen he has been placed beyond the reach of absolute want.

The history of this Scottish naturalist is at once a most painful and a most amusing one. It is painful to find in Scotland, which boasts of its educational advantages and appreciation of the benefits of knowledge, that a man of such rare singleness of purpose and absolute devotion to natural history should have been suffered to drag on a miserable existence, unbefriended by those of his neighbours who had the means of assisting him. Whatever lessons may be learnt from his life, and they are many, "virtue is its own reward" is either not one of them, or if it be, then the reward is not what most people would desire for themselves. Apart from the grievous injustice which has somehow befallen the hero of this book, the loss to science must have been very great indeed. Much indeed has been done by Edward, as is testified by the fact that the Linnean Society of London fulfilled one of its missions by conferring on him the honorary title of Associate, but that is rather a barren honour for a hungry man. How much more might he have done had he been placed beyond the necessity of toiling for his daily bread at the cobbler's stool. We observe that a contemporary points out the very different way in which a poor country like Norway knew how to appreciate, and then how to treat a man of such rare qualities. Sars, the great Norwegian zoologist, was, it appears, raised from a position almost as unfavourable to scientific research as that of Edward by the Government. He was made a Professor in the University of Christiania, and allotted such a stipend as to enable him to pursue his researches without the fear of penury before his eyes. It is useless, however, to lament the sins of omission on the part of those who had the opportunity of doing good service and missed it, rather would we congratulate Edward that at last he has found a good friend in Mr. Smiles, and a sympathetic benefactor in the Queen, while, following these examples, the Aberdonians have at length done something to redeem their previous neglect. Passing over the darker shadows of the book, let us say that the general reader who appreciates a well-told story of a remarkable life, will find much to gratify, interest, and amuse him in the pages of this book. The story is simply that of a child born in the humblest circumstances, growing up under the most adverse and depressing conditions, over and over again almost borne to the ground in manhood by adversity, nevertheless pursuing throughout, with perfectly unquenchable zeal and love, the search for and the study of the Creator's works. A theologian pursuing his studies with equal zeal and enthusiasm would have been looked on in the light of a martyr or a saint, but poor Tom Edward, in spite of his blameless life, was considered simply as one not quite *compos mentis*. It is a book every one should read if he can, and may be especially commended to young gardeners; that they will not find the task very irksome we may show by appending the following extract, one of many showing the straits to which Edward was reduced in his love of Nature:—

"On one occasion he got some boys to accompany him to a wood near Polmuir, about two miles from town, on a bird-nesting expedition. While they were going through the wood, a little separated, one of them called out, 'A byke, a byke [a bees' nest], stickin' on a tree, and made o' paper.'

"A byke was regarded as a glorious capture, not only for the sake of the honey, but because of the fun the boys had in skelpin' out the bees. Before they had quite reached the spot, one of the youngest boys yelled out, 'Oh, I'm stung, I'm stung!' He took to his feet, and they all followed. After they had run some distance, and there being no appearance of a foe, a halt was made, and they stood still to consider the state of affairs. But all that could be ascertained was that the byke was on a tree, that it was made of paper, and that it had lots of yella bees about it.

"This so excited Tom's curiosity that he at once proposed to go back and take down the paper byke. His proposal was met with a decided refusal; and on his insisting upon going back, all the other boys ran away home. Nothing daunted, however, he went back to that part of the wood where the byke had been seen. He found it, and was taking it from the underside of the branch to which it was attached, when a bee lit upon one of his fingers and stung it severely. The pain was greater than from any sting that he had ever had before. He drew back, and sucked and blew the wound alternately, in order to relieve the pain.

"Then he thought, 'What can I do next?' There the byke hung before him. It was still in his power to remove it—if he could. To leave it was impossible. Although he had nothing to defend himself from the attacks of the bees, nor anything to put the byke into when he had taken it down, still he would not go without it. His bonnet would scarcely do. It was too little and too holey. His stockings would not do; because he wished to take the byke home whole. A thought struck him. There was his shirt! That would do. So he took off his jacket, and disrobed himself of his shirt. Approaching the tree very gently, though getting numerous stings by the way, he contrived to remove the byke from the branch to which it was hanging, and tucked it into his shirt. He tied the whole up into a sort of round knot, so as to keep all in that was in.

"It was now getting quite dark, and he hurried away with his prize. He got home in safety. He crept up the stairs, and peeped in at the key-hole, to see that the coast was clear. But no! he saw his father sitting in his chair. There was an old iron pot in a recess on one side of the stair, in which Tom used to keep his numerous 'things,' and there he deposited his prize until he could

unpack it in the morning. He now entered the house as if nothing had happened. 'Late as usual, Tam,' said his father. No further notice was taken. Tom got his supper shortly after, and went to bed.

"Before getting into bed, he went a little out of the way to get undressed, and then, as much unseen as possible, he crept down beneath the blankets. His brother, having caught sight of his nudity, suddenly called out—

"'Eh, mother, mother, look at Tam, he hasna gotten his sark!'

"Straightway his mother appeared at the bedside, and found that the statement was correct. Then the father made his appearance.

"'Where's your shirt, sir?'

"'I dinna ken.'

"'What! dinna ken!'—addressing his wife—'Where's my strap?' Tom knew the power of the strap, and found that there was no hope of escaping it.

"The strap was brought.

"'Now, sir, tell me this instant—where is your shirt?'

"'It's in the bole on the stair.'

"'Go and get it, and bring it here immediately.'

"Tom went and brought it sorrowfully enough, for he dreaded the issue.

"'And what have you got in it?'

"'A yellow bumbee's byke.'

"'A what?' exclaimed his father and mother in a breath.

"'A yellow bumbee's byke.'

"'Did I not tell you, sir,' said his father, 'only the other day, and made you promise me, not to bring any more of these things into the house, endangering and molesting us as well as the whole of our neighbours. Besides, only think of your stripping yourself in a wood, to get off your shirt to hold a bees' byke!'

"'But this is a new ane,' said Tom, 'it's made o' paper.'

"'Made o' fiddlesticks!'

"'Na; I'll let ye see it.'

"'Let it alone, I don't want to see it. Go to bed at once, sir, or I shall give you something (shaking his strap) that will do you more good than bees' bykes!'

"Before the old couple went to bed they put Tom's shirt into a big bowl, poured a quantity of boiling water over it, and, after it was cold, they opened the shirt and found—a wasps' nest!"

Food: some Account of its Sources, Constituents, and Uses. By A. H. Church, M.A. Oxon.

This is one of those marvellously cheap and good handbooks for which South Kensington Museum has become famous. As its title indicates, it bears upon the food collection, once a great point of attraction at South Kensington, but now removed to the branch museum at Bethnal Green. The history of this collection, at once so instructive and interesting, is told in a very few words in the preface to the book under notice, how the first suggestion for the formation of such a series was made by Thomas Twining, Esq., the proprietor of the ill-fated Economic Museum at Twickenham, the first arrangement of the collection at South Kensington being made in 1857—Dr. Lyon Playfair, and subsequently Dr. Lancaster, having charge of it, which charge, since its removal to Bethnal Green, has been entrusted to Professor Church, who has re-arranged and enlarged the collection, and produced the admirable descriptions attached to the different products, which in an enlarged and detailed form constitute the bulk of the present volume. The introductory part of the book, on the uses of food, the composition of the human body, the supply and qualities of water, and the chemical composition of foods, is explicitly told in a brief but comprehensive manner. Under the head of "Carbon Compounds or Heat-Givers," we have some information regarding the part which starch plays as a heat-giver in human food. Starch is abundantly contained in the cereal grains, particularly in Rice and Indian Corn, and about 17 per cent. can be obtained from Potatos. Starch is known in various forms, as tapioca, arrowroot, sago, &c., amounting in each respectively to 83 lb. in every 100, while in fine wheaten flour it is 74 per cent., Wheat 71, and Maize 64. Sugar is another well-known and largely-consumed heat-giver. The two principal commercial sources of this commodity is the Beetroot (Beta vulgaris) and the Sugar-cane (Saccharum officinarum), the latter being the best known, as the bulk of the sugar consumed in this country has until quite a recent date been derived from it. Though widely spread in tropical countries our present supplies of sugar from the Sugar-cane come from Brazil, Mauritius, and the West Indies. Latterly, however, the Beetroot has become more extensively cultivated for sugar-making purposes, and has largely supplanted the cane. In proof of this we are told that "it has been stated that 700,000 tons of sugar from Beetroots are annually prepared in Europe, an amount which is about half of the total European import of sugar from the Sugar-cane." Of maple-sugar, furnished by Acer saccharinum, A. pennsylvanicum, A. Negundo, and A. dasycarpum, we read that "these trees of Canada and the northern United States contain a sap in which about 2 per cent. of cane-sugar occurs. In the spring the sap in collected and boiled down. It is stated that 1,546,000 lb. of maple-sugar were produced in Pennsylvania in 1870." The distinction between cane and grape sugars is treated in such an interesting manner that we give it in the author's own words:—

"Grape-sugar," he says, "comes next in importance to cane-sugar. Just as the latter sugar is found in many plants besides the Sugar-cane, so grape-sugar is abundantly distributed through the vegetable kingdom; more than this, it may be readily made from starch, dextrin, and cane-sugar by the action of weak acids. But perhaps a still more remarkable mode of obtaining this sugar is by means of the action of strong sulphuric acid or oil of vitriol upon cellulose, the compound which forms the main substance of paper, cotton, linen rags, and some woods. Thus it happens that all these substances are now used for the manufacture of grape-sugar, or glucose, as it is called. This glucose, being immediately fermentable, may be used to strengthen the worts in brewing, and for the direct production of alcohol. So spirit may be made from old rags and waste pawnbrokers' tickets!

"Grape-sugar, or glucose, exists in three forms at least. Two of these, dextrose and lævulose, make up the main bulk of honey; the third, maltose, occurs in malt, a sprouted grain. The variety of glucose called dextrose exists largely in sweet fruits, as the Grape, and crystallises out in hard warty masses when ripe Grapes are dried, as in the case of Raisins and French Plums. The lævulose of honey and of acid fruits will not crystallise, but can only be dried up into a glassy or resinous mass. These sugars, as well as maltose, are less sweet than cane-sugar. They are immediately absorbed into the circulation when taken into the stomach. They are valuable nutrients, especially for the young, but may give rise in some disordered condition of the stomach to an unusual production of lactic acid, two proportions of which are producible from one proportion of any of the sugars."

The foregoing extracts will serve to show the nature and character of the book. The treatment of the several products under separate and distinct headings, the common English name being placed first, then the French, German, and Italian, and finally the Latin names, renders the book what it professes to be—a handbook on the all-important subject of food. The analyses also will be found of great interest, many of them being absolutely new and made expressly for this work.

—— The Lawson Company have issued a sixth edition, in very elegant guise, of their treatise on cultivated grasses, called *Agrostographia*. But little additions to the text have been rendered necessary, but a series of illustrations have been given of the principal grasses. Of these illustrations the botanical details appear to be the best part, the specimens of the entire plant selected for illustration being in general much too small to be characteristic. The portrait of the late Lord Provost of Edinburgh will be welcome to all those who had the pleasure of his acquaintance.

—— The indefatigable Baron Von Mueller has gathered into one volume of about 300 pages a great amount of information concerning various plants which might be profitably introduced into cultivation in the colony of Victoria. The volume is entitled *Select Plants readily Eligible for Industrial Culture, or Naturalisation in Victoria*, and, apart from its strictly local value, will be useful as a reference-book on the subject of economic botany. The plants are arranged first alphabetically, then geographically, lastly according to their uses. In addition, an index of vernacular names is given.

—— The *Victorian Year Book, or Notes on the Colony of Victoria* (London: Trübner), is a very valuable digest of the history, geography, meteorology, and social statistics of the colony, which should be perused by all intending emigrants, and should be kept for reference on the library shelves of those who may at any time need information on this flourishing colony. The climate of Melbourne approximates to that of Lisbon, the seasons, of course, being reversed—thus the spring months are from September to November, the summer months from December to February, the autumn months from March to May, and the winter from June to August. The following are the mean temperatures for the several months:—

January	66°.7	July	47°.7
February	65°.6	August	50°.1
March	63°.8	September	53°.3
April	59°.8	October	57°.1
May	53°.3	November	60°.8
June	49°.8	December	63°.9

In seventeen years the thermometer in the shade has risen sixty-one times to or above 100° (in the months of November, December, January, and February). In the same seventeen years there were fifty instances wherein the thermometer fell to or below the freezing-point — July being the coldest month, the lowest temperature registered being only 27° on July, 1869. The mean temperature of the soil at the surface is noted at 62° in spring, 76° in summer, 61°.9 in autumn, and 49° in winter, the yearly mean being 62°.4. The following table gives the temperature, omitting fractions, at different depths below the surface:—

Seasons.	14 inches.	3 feet.	6 feet.	8 feet.
Spring	53	57	57	56
Summer	65	67	66	63
Autumn	58	63	65	64
Winter	46	51	55	56
Year	56	60	60	60

The rainfall is very variable in amount in different seasons, the mean of thirty-five years being 27¼ inches, and the number of days on which rain fell 136. In spring there are on the average of fourteen years forty-one days on which rain falls, the amount being 7.79 inches; in summer, twenty-four days, and 6.41 inches; in autumn, twenty-eight days, and 5.7 inches; and in winter, forty-one days, and 5.6 inches of rain. The annual rainfall is not so great as that of Sydney, but much greater than that of Adelaide.

—— We have next to bring under the notice of our readers a similar publication to the above on the parent colony of the Australias, New South Wales, drawn up by Mr. G. H. Reid (Trübner & Co.). In this volume we have a summary of the history, physical geography, climate, social and commercial history of the colony, and of its various provinces and towns. The account of the various natural resources of the colony, of the favourable climate and other local advantages, impress the reader with a wonderful sense of the future development and possibilities of this the oldest of the Australian colonies—so old, that it has only passed its centenary by seven years, so that Lady Smith, whose death we recorded a few weeks ago, was an infant of three years when Captain Cook first landed in Australia!

—— Under the title of *Les Aliments*, M. Rothschild has published a translation of M. Vogl's treatise on the adulteration of articles of food and the means of detecting it. For those to whom Dr. Hassall's book is too bulky the present treatise may be commended. The woodcuts are excellent, and may be recommended to microscopists.

Variorum.

FRENCH STATISTICS.—An article by M. Dubost in *Annales Agronomiques* states that the number of sheep and cattle generally greatly diminished in France in 1872 as compared with 1862 and 1866—a diminution accounted for by the war, the loss of territory, cattle plague, &c. The diminution in the quantity of sheep amounted to no less than five or six millions of animals. The total value of Cabbages, Carrots, and Gourds consumed by thirty-six millions of inhabitants is estimated at fifty millions of francs, or 1 fr. 40 c. a head. Melons are estimated at twelve millions of francs, Asparagus ten millions, Artichokes seventeen millions, salads thirty-five millions, and for various vegetable produce twenty-seven millions of francs. The value of fruits exported annually from France is stated to be thirty millions of francs. In spite of the ravages of the Phylloxera, which have caused the abandonment of 200,000 hectares of vineyards, and will speedily cause the abandonment of an equal area—in

spite of all this, the three last vintages have yielded supplies above the average. The annual produce is about 55,000,000 of hectolitres, rather less than half of which are sold; 5,000,000 to 6,000,000 of hectolitres are converted into alcohol, and the remainder is consumed by the growers. Of cider the production is estimated at 11,000,000 of hectolitres. Of Beetroot sugar, 400,000,000 of kilogrammes are made on the average. The general annual value of the subjoined products is thus given :—

Beetroot (sugar)	120,000,000 francs.
Oil-yielding seeds, &c.	100,000,000 ,,
Fibre	140,000,000 ,,
Olive, Walnut, and Almond ..	75,000,000 ,,
Silkworms	50,000,000 ,,
Dye plants	27,000,000 ,,
Miscellaneous	35,000,000 ,,
	547,000,000 ,,

TREE FELLING BY ELECTRICITY.—The accompanying note is from the *Homeward Mail* :—

"A novel and interesting experiment has been attempted in the compound of the Strangers' Home, Mazagon, and there can be little doubt that ultimately great results will accrue from what may at first sight appear to have been not a great success. The experiment referred to was tree-felling by electricity instead of by the ordinary method of the clumsy axe. The patentees of the process are Mr. H. S. Parkinson and Mr. W. H. Martin, both of Bombay, and the experiment was superintended by Dr. Lyons. The plan is simple. The two ends of the copper wires of a galvanic battery are connected with platinum wire, which of course instantly becomes red-hot, and while in that state it is gently see-sawed across the trunk of the tree to be felled. When arrangements were made for the experiment, it was never for a moment doubted that the wire comprising merchants of Bombay were possessed of all the made thicknesses of platinum wire, but it turned out that the thickness of the thickest that could be got was only that of crochet cotton. It was at once seen that a wire of such thinness would be consumed before the tree was half severed from its trunk. However, the attempt was made. The burning wire performed its task very well so long as it lasted, but, as anticipated, the wire continually broke, and at length there was no wire left. There can be little doubt that with a stronger battery—the one used was only a twelve-chambered one—and a thicker wire, the experiment would have been entirely successful. As it was the tree was sawn one-fifth through. It is calculated that under proper conditions a tree, which at present takes two hours to fell, will come to the ground by this process in fifteen minutes. It is almost needless to add that there is no waste of wood, no saw-dust. The process is one worth the attention of all Governments engaged on forest clearing."

THE NETTLE TREE, CELTIS AUSTRALIS, although of moderate dimensions, furnishes a timber of great commercial value, and the slender flexible branches are in great request in many parts of Europe for whip stocks. In the neighbourhood of Udine, according to the German papers, large plantations are now cultivated, actually tilled, and manured. The trees are planted about 6 feet apart, the lower branches being trained off, and in ten years the trunks attain a diameter of 6 to 8 inches. The wood from these plantations is fine-grained, is easily cleft, and, being of a beautiful yellow colour, fetches a higher price than the ordinary quality. In Istria this tree is commonly planted in the squares and near churches. In Moschenizza there is a tree with a trunk 5 feet in diameter at the base ; and in Gemino there is one 6 feet in diameter, supposed to be a thousand years old.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, MARCH 28, 1877.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.						Hygrometrical Deductions from Glaisher's Tables xiii Edition.	WIND	RAINFALL.
	Mean Reading at 32° Fahr.	Departure from Normal for 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean for Day from Mean of 16 Years.	Dew Point.	Degree of Humidity. Sat. = 100.	Average Direction.	
Mar	In.	In.	°	°	°	°	°	°			In.
22	29 53	−0.27	49.3	26.7	22.6	35.6	− 6.3	30.6	81	S.W.	0 07
23	29 40	−0 39	51.2	26.1	25.8	36.7	− 5.3	31.4	83	S.S.W.	0.12
24	29 07	−0.81	53.0	33.0	20.0	41.3	− 0.8	35.3	80	W.S.W. to W.	0 35
25	28 81	−0 93	55.8	42.0	13.8	47.6	+ 4.7	40.0	77	S. to S.S.E.	0.12
26	28 08	−0 70	48.7	39.1	9.6	41.2	+ 0.7	40.6	90	S.S.E. to E.S.E.	0.13
27	29.18	−0.58	57.4	39.5	17.9	45.0	+ 2.3	42.4	91	S.S.W. to S.W.	0.21
28	29 55	−0 21	57.6	38.0	19.6	46.2	+ 3.4	39.6	78	S.S.W.	0.06
Mean	29 21	−0.57	53.2	34.9	18.4	42.2	− 0.2	37.1	83	S	sum 1.06

March 22.—Fine but cloudy till 3 P.M. Very dull and cloudy, with heavy showers of hail, rain, and snow till 8 P.M.; cloudless afterwards. Hoar-frost in morning.

— 23.—A fine day, partially cloudy. Snow and sharp frost in morning. Rain at night.

— 24.—A fine day, cloudy at intervals. Heavy rain in early morning, and frequent showers after 3 P.M.

— 25.—A very fine bright day, partially cloudy. Showers in early morning, and at 6.30 P.M.

— 26.—A very dull cloudy day, frequent rain throughout.

— 27.—Fine and bright till 3 P.M., overcast, dull with rain till 9 P.M. Cloudless afterwards. A little rain also fell in early morning.

— 28.—Fine and bright, cloudy at times. Little rain fell in early morning.

LONDON : *Barometer*.—During the week ending Saturday, March 24, in the suburbs of London the reading of the barometer at the level of the sea decreased from 29.66 inches at the beginning of the week to 29.29 inches by the night of the 20th, increased to 29.79 inches by the morning of the 23d, and decreased to 29.01 inches by the end of the week. The mean reading for the week at sea level was 29.48 inches, being 0.35 inch below that of the preceding week, and 0.51 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 53° on the 24th to 41° on the 21st ; the mean value for the week was 48°. The lowest temperatures of the air observed by night ranged from 26.1 both on the 22d and 23d to 33° on the 24th ; the mean value for the week was 29½°. The mean daily range of temperature in the week was 18½°, the greatest range in the day being 24½°, on the 23d, and the least 10°, on the 21st.

The mean daily temperatures of the air during the week were as follows :—18th, 39°.6 ; 19th, 36°.9 ; 20th, 35°.3 ; 21st, 35°.2 ; 22d, 35°.6 ; 23d, 36°.7 ; 24th, 41°.3 ; and the departures in defect of their respective averages were :—2°.1 ; 4°.8 ; 6°.4 ; 6°.6 ; 6°.3 ; 5°.3, and 0°.8. The mean temperature of the air for the week was 37°.2, being 5°.6 below the average of observations extending over a period of sixty years.

The highest readings of a thermometer, with blackened bulb in vacuo placed in sun's rays, were 109° on the 18th, 112° on the 23d, 113° on the 24th ; on the 20th the reading did not rise above 46°. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 22° on the 22d, and 25° on the 19th, on the 24th the lowest reading was 30°.

Wind.—The direction of the wind was variable, and its strength moderate. The weather during the week was generally fine and cold. *Snow* and *hail* showers fell on the 20th, 21st, 22d, and 23d.

Rain, *hail*, or melted *snow* was measured on five days during the week, the amount collected was 0.73 inch.

ENGLAND : *Temperature*.—The highest temperatures of the air observed by day were 54¾° at Bristol and 53¾° at Cambridge ; at Bradford 46° was the highest temperature. The mean value from all stations was 50½°. The lowest temperatures of the air observed by night were 23° at Nottingham, and 24° at both Eccles and Hull ; at Leeds 31° was the lowest temperature. The general mean from all stations was 27°. The range of temperature in the week was the greatest at Nottingham, 28½°, and the least at Leeds, 16°. The mean range of temperature from all stations was 23½°.

The mean of the seven high day temperatures was the highest at Bristol, 49½°, and the lowest at Bradford, 43¾° ; the mean value from all stations was 46½°. The mean of the seven low night temperatures was the lowest at Wolverhampton and Eccles, 27¾°, and the highest at Portsmouth, Norwich, Liverpool, Leeds, and Sunderland, all about 33°. The mean from all stations was 30½°. The mean daily range of temperature in the week was the greatest at Eccles, 20½°, and the least at Norwich, Liverpool, and Bradford, all 11½°. The mean daily range from all stations was 16°.

The mean temperature of the air for the week from all stations was 37½°, being 3½° higher than the value for the corresponding week in 1876. The highest occurred at Sunderland, 39°, and the lowest at Wolverhampton, 34½°.

Rain.—The amounts of rain and melted snow measured at the various stations ranged between 1½ inch at Truro and Sheffield, and one-tenth of an inch at Nottingham, Bradford, and Leeds ; the average fall from all stations was half an inch.

The weather during the week was somewhat fine but cold, with snow showers. Thunder was heard at Cambridge and Sunderland on the 22d, and lunar halos were seen at Cambridge on the 19th, 20th, 21st, 22d, and 23d inst.

SCOTLAND : *Temperature*.—The highest temperatures of the air observed by day varied from 49° at Edinburgh and Dundee to 44° at Aberdeen ; the general mean from all stations was 47½°. The lowest temperatures of the air observed by night ranged from 23° at Perth to 28° at Greenock ; the mean from all stations was 25½°. The mean range of temperature in the week from all stations was 21½°.

The mean temperature of the air for the week from all stations was 36½°, being 4° lower than the value for the corresponding week in 1876. The highest was 38°, at Greenock, and the lowest 36°, at Perth.

Rain.—The amounts of rain or melted snow measured at the several stations varied from six-tenths of an inch at Greenock to one-tenth of an inch at Leith and Perth ; the average fall over the country was a quarter of an inch.

DUBLIN.—The highest temperature of the air was 49°, the lowest 23½°, the range 25½°, the mean 37½°, and the fall of rain was 1¼ inch.

JAMES GLAISHER.

Obituary.

WE regret to record the death, on March 23, of MR. THOMAS DICKSON of Chester, the youngest son of the late Mr. Francis Dickson, the founder of the well-known firm of Francis & Arthur Dickson & Sons, of which Mr. Arthur Dickson is now the head.

Enquiries.

He that questioneth much shall learn much.—BACON.

177. HOSE REEL WANTED.—I shall be obliged if you, or any of your readers, can inform me where I can obtain a windlass or implement whereby I can utilise my water tubing for watering my garden and glass houses in the following manner : I have 80 feet of tubing fixed to a waterworks tap, whereby I get an unlimited supply of water at all times. I want to be able to coil this tubing round a wheel placed as a fixture near the tap, which will revolve so easily as to admit of my carrying in my hand the row of jets and delivering the water just as far as I require to water the plants or borders and no farther, leaving the rest of the tubing round the wheel, and which must be of sufficient diameter to allow the water to pass through it, and so that when I have finished watering I can wind back the tubing on to the wheel, there to remain until again required to be used. The utility of such an implement must be apparent as a means of preserving the tubing from constant bursting by getting into angles whilst in use. *A Constant Reader*.

178. TOXICOPHLÆA SPECTABILIS.—I shall be obliged to any of your correspondents who have flowered this plant if they would give me the course of cultivation they followed. The plant I have sold, apparently healthy, ripens its growth well, and is in peat, in a small pot for the size of plant, but it never shows for bloom. *T. P. P.*

179. LIME FOR CHALK SOILS.—A great part of our nursery is on light sandy loam, resting on a subsoil of broken chalk and stones ; and when this soil is trenched chalk is thrown in more or less quantities to the surface. There are some spots in this soil (which, however, are not by any means those where the chalk is present in greatest quantities) which, in spite of heavy manurings, refuse to grow the trees planted on them with any degree of vigour. Can any of your correspondents give me any information as to making soils in which chalk is already present in considerable quantities are ever benefited by applications of lime, and, if so, to what extent the lime should be applied ? *E.*

Answers to Correspondents

ADIANTUMS : *A. M.* The fronds have probably been caught by some of the gleams of sunshine we have had, and in this way become browned. The remedy would be to keep them shaded during bright intervals.

AUCUBA : *Enquirer*. The nat. ord. of this plant is Cornaceæ.

BEETLES : *E. Holmes*. Hylobius Abietis ; feeds on Conifers. *A. M.*

CLEMATIS : *J. E. M.* You can propagate either by layering or grafting the eyes on pieces of Clematis root. The latter is the best process if you require quantity—that is, supposing you have the proper appliances of propagating pits, &c., but the former will give you a limited number of strong plants in a shorter period.

CREEPERS : *O. M. Barrett*. Stauntonia latifolia, or Passiflora coerulea.

GLADIOLUS : *F. O. C.* No. 3 is the correct one—Gladiolus.

GRAPES : *F. J.* Your Grapes are badly attacked by a disease known as "rust," which is brought about in several different ways, such as admitting a cold current of air into the house soon after the berries are set, or by rubbing them with the hand while thinning them, or by the application of sulphur to the pipes, &c. The only way to stop it is to guard against these contingencies.

INSECTS ON VINES : *A. E.* The insect was hopelessly smashed when it reached us. Send another sample in a quill or phial. It looks like mealy-bug.

NAMES OF PLANTS : *P. Breed*. We cannot undertake to name garden varieties of Camellias, or florists' flowers of any kind.—*W. K., Leicestershire*. 1, Picea Lowiana ; 2, Picea grandis.—*J. R. M.* The Orchid is Trichopilia suavis.—*J. L. P.* Eria obesa.—*P. H. G.* Schlimia trifida.—*C. R.* 1, Dendrobium

albo sanguineum, one of the best flowers we ever saw; 2, Dendrobium anceps = Aporum anceps of Lindley.—*W. T. T.* Malva capensis, an old-fashioned green-house shrub. Have you a plant to spare?—*J. A. S.* Epidendrum crassifolium.

"NATURAL HISTORY JOURNAL": *R. M.* Published by Mr. W. Sessions, Printer, Ousegate, York.

NEPENTHES RAFFLESIANA: *J. A. S.* Your plant with 9 inches of bare stem and only four leaves is evidently in a delicate condition. I should by no means advise its being cut down until it has attained a height of 3 or 4 feet, previous to which time it will not exhibit its true character by making full sized pitchers. Nepenthes do not require, nor will they bear, much root-room. The pot must be well drained, the soil should consist of the fibrous portion, with all the earthy matter knocked out, of good Orchid peat and chopped sphagnum in equal parts, to which add a fifth of small broken crocks and some sand. The roots are extremely brittle, and if broken in repotting the plant are not likely to succeed. It requires a strong heat summer and winter—68° to 70° night temperature in the winter with 5° or 6° more by day, 75° in the night during summer, and 80° or 90° by day—placed near the glass, carefully shaded from the sun, watered at the root two or three times a week in winter and daily as well as syringed overhead in the summer. When the plant is shaded-down sever it within a foot of the collar, making cuttings of the stem, two joints to each, and putting in the top with three or four leaves in sand, under a bell-glass, keep moist with plenty of heat. Although Nepenthes do not succeed in the too much confined atmosphere they are sometimes placed in, yet they must not be subjected to a current of air, neither will they grow in a house where so much air is given as to make the atmosphere too dry. They should be hung in one corner, away from where the air is admitted. This refers to the summer time; in the winter they need little or none given, as enough for them will find its way in through the laps. You will find more full directions for their cultivation in the weekly Calendar of Operations, January 29, 1876. I know of no treatise on the cultivation of Nepenthes. *T. M.*

UPAS TREE, &c.: *D. C.* 1. Antiaris toxicaria, nat. ord. Artocarpaceæ, a native of Java; 2. *How Crops Grow*, published by Macmillan, at 8*s.* 6*d.*

VINE LEAVES, &c.: *C. W.* The Primroses and Polyanthuses cannot make to much. The Vine leaves appear to have been scalded. The bright sunshine has caught them while they have been covered with dew—an evil which may be corrected by giving a little air at the back of the house.

VINES: *J. S.* Your case is, we fear, hopeless. The mealy-bug should have been attacked at an earlier stage. If you attempt now to destroy the insects you will risk destroying the vines, but at that will be useless if left as it is, we should advise syringing with hot water daily till you see the insects are got under.

CATALOGUES RECEIVED:—Messrs. Ellwanger & Barry (Mount Hope Nurseries, Rochester, New York, U.S.A.), Descriptive Catalogue of Roses.—W. Paul (Crossefiat and Greenlaw Nurseries, Paisley), Catalogue of Florists' Flowers.—Messrs. Bliss & Sons (34, Barclay Street, New York, U.S.A.), Catalogue of Seed Potatos.—Messrs. Thibaut & Keteleer (Rue Houdan, 87, a Sceaux, Seine, France), General Priced Catalogue.—Messrs. Daniels Brothers (Norwich), List of New Roses.—A. G. Lambert (26, Rue de Samtois, Argenteuil, Seine-et-oise), General Catalogue of Asparagus, Strawberries, Fruit Trees, &c.—W. Evans (Royal Nursery, Penge), Catalogue of Florists' Flowers, Cuttings, Seeds, Grooded Plants, &c.—Messrs. Daniels Bros. (9, Exchange Street, Norwich), Catalogue of Select Agricultural Seeds.—Messrs. Carter & Co. (237 and 238, High Holborn, London, W.C.), Catalogue of Farm Seeds.—Messrs. Price & Winchcombacker (80, State Street, Albany, New York, U.S.A.), Annual General Spring Catalogue.—Messrs. Rawlings Bros. (Old Church, Romford, Essex), Descriptive Catalogue of Dahlias.

COMMUNICATIONS RECEIVED:—W. D. (anticipated in our last)—H. E.—J. G. B.—T. B.—F. W. B.—S. J.—Anti-Bunkum.—J. W.—H. A. S.—M. P.—R. D.—J. F.—W. Rollisson & Sons (many thanks).—W. B. H.—W. H.—J. R.—J. N. V. (yes, please).

Markets.

COVENT GARDEN, March 28.

This being Passion Week, business has been at a standstill, consequently perishable goods have been with difficulty cleared at lower rates. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.

	s. d.	*s. d.*
Azaleas, per dozen	24	0 to 0
Begonias, per doz.	6	0 to 12
Bouvardias, do.	12	0 to 24
Cinerarias, per doz.	9	0 to 18
Coleus, per dozen	3	0 to 9
Crocus, per dozen	1	6 to 3
Cyclamen, per doz.	12	0 to 30
Cyperus, do.	6	0 to 12
Dracæna terminalis	30	0 to 60
— viridis, per doz.	18	0 to 24
Ferns, in var., p. doz.	6	0 to 30
Ficus elastica	18	0 to 24
Fuchsias, per dozen	9	0 to 18
Heaths, variety, doz.	9	0 to 24
Heliotrope, per doz.	6	0 to 9
Hyacinths, per doz.	18	0 to 24
Hydrangeas, per doz	18	0 to 30
Lily of the Valley, do.	12	0 to 18
Mignonette, per doz.	6	0 to 9
Myrtles, do.	3	0 to 9
Palms in variety, each	5	0 to 21
Pelargoniums, scarlet, per doz.	6	0 to 12
Primula sinensis, doz.	4	0 to 9
Richardia æthiopica, per doz.	9	0 to 18
Solanums, per doz.	6	0 to 24
Spiræa, per doz.	12	0 to 30
Tulips, per dozen	8	0 to 12
Valotta purpur., doz.	12	0 to 18

CUT FLOWERS.

	s. d.	*s. d.*
Azaleas, 12 sprays	0	6 to 2 0
Bouvardias, per bun.	1	0 to 4 0
Camellias, 12 blooms	2	0 to 6 0
Carnations, per dozen	1	6 to 4 0
Crocus, 12 bunches	2	0 to 6 0
Cyclamen, per doz.	2	0 to 9
Daffodil, dbl., 12 bun.	4	0 to 9 0
— single, 12 bun.	2	0 to 9 0
Epiphyllum, 12 blms.	1	0 to 3 0
Eucharis, per doz.	6	0 to 12 0
Euphorbia, 12 sprays	2	0 to 9 0
Gardenias, per doz.	2	0 to 18 0
Heliotropes, 12 sp.	0	6 to 1 0
Hyacinths, p. dozen	2	6 to 6 0
— Roman, 12 spr.	1	0 to 4 0
Lily of the Valley, 12 sprays	1	0 to 4 0
— sprays	0	0 to 4 0
Mignonette, 12 bun.	2	0 to 9 0
Narcissus, 12 sprays	2	0 to 4 0
Pelargoniums, 12 spr.	1	6 to 3 0
— zonal, 12 sprays	0	0 to 3 0
Primroses, per dozen	1	0 to 3 0
Primula, dbl., p. bun.	1	0 to 2 0
Roses, indoor, p. doz.	2	0 to 12 0
Spiræa, 12 sprays	1	6 to 4 0
Stephanotis, 12 spr.	9	0 to 15 0
Tropæolum, 12 bun.	2	0 to 6 0
Tulips, per dozen	1	0 to 2 6
Violets, 12 bun.	1	0 to 4 0
Wallflowers, p. doz.	6	0 to 12 0

VEGETABLES.

	s. d.	*s. d.*
Artichokes, per bush.	4	0 to --
— Egg-Globe, doz.	4	0 to 6
Asparagus, Fr., bun.	20	0 to --
— English, p. bun.	8	0 to 0
— Fr., natural, bun.	4	0 to --
— Sprue, per bun.	1	6 to --
Beans, French (new), per pint	2	0 to 2 6
— French, Long-pod, ½-bushel	2	0 to --
Beet, per doz.	1	0 to 2 0
Brussels Sprts. bush.	7	0 to --
Cabbages, per doz.	2	0 to 4 0
Carrots, per bunch	0	6 to --
— New Fr., p. bun.	2	0 to --
Cauliflowers, per doz.	4	0 to 8 0
Celery, per bundle	1	6 to 2 0
Chilis, per doz.	1	0 to 2 0
Cucumbers, each	0	8 to 2 0
Endive, per doz.	1	0 to 2 0
— Escarolas, p. doz.	1	0 to 2 0
Garlic, per lb.	0	6 to --
Herbs, per bunch	0	2 to 0 4
Horse Radish, p. bun.	4	0 to --
Leeks, per bunch	0	2 to 0 4
Lettuces, Fr., p. doz.	1	0 to 2 0
— Cos, per doz.	1	6 to --
Mint, green, bunch	0	2 to --
Mushrooms, per pot.	0	6 to 1 6
Onions, per bush.	5	0 to 8 0
— young, per bun.	0	8 to 1 0
Parsley, per bunch	0	4 to --
Peas, green, per lb.	0	6 to --
— shelled, per qt.	8	0 to --
Potatos, new, per lb.	0	0 to 2 0
— Kidneys, per bush.	6	0 to 9 0
— Spanish, doz.	1	0 to --
— New Jersey, doz.	2	0 to --
Rhubarb, per bundle	1	0 to --
Salsafy, per bundle	1	0 to --
Seakale, per punnet	1	6 to --
Shallots, per lb.	0	6 to --
Spinach, per bushel	4	0 to 5 0
Tomatos, per lb.	0	6 to 1 0
Turnips, per bundle	0	4 to 0 6

Potatos.—Kent Regents, £5 to £6: Essex Regents, £4 10*s.* to £5: Kidneys, £8 per ton.

FRUIT.

	s. d.	*s. d.*
Apples, per ½-sieve	3	0 to 8 0
Cobs, per lb.	1	0 to 1 6
Grapes, per lb.	0	0 to 6 0
Lemons, per 100	4	0 to 0 0
Oranges, per 100	4	0 to 0 0
Peaches, per doz.	0	0 to 0 0
Pears, per doz.	0	0 to 0 0
Pine-apples, per lb.	2	0 to 5 0
Strawberries, p. oz.	0	6 to 1 0

CORN.

Trade at Mark Lane on Monday was on the whole decidedly heavy. Wheat of superior quality and in good condition was well held at the prices of the previous Monday, but for inferior and ill-conditioned produce offers of less money were not altogether rejected. Fine malting Barley was in request at better quotations; grinding and other sorts, however, experienced a slow, dragging sale. Malt was quiet on former terms. Oats of an inferior kind were in some instances quite 1*s.* per quarter cheaper than on Monday se'nnight. Maize was 9*d.* to 1*s.* per quarter lower and Beans could only be disposed of on reduced terms. Peas were much the same, as also was flour.—On Wednesday the Wheat trade was very firm; but the demand was not in a busy way brisk. Flour was 6*d.* lower value. Malting Barley was scarce, and maintained an upward tendency; grinding qualities were quiet and unchanged. Beans and Peas showed no quotable change. Oats were not worse by 1*s.* per quarter than on Monday, sold slowly; and Maize was very dull of sale.—Average prices of corn for the week ending March 24:—Wheat, 51*s.* 2*d.*; Barley, 41*s.* 3*d.*; Oats, 24*s.* 9*d.* For the corresponding week last year:—Wheat, 43*s.* 4*d.*; Barley, 33*s.* 1*d.*; Oats, 25*s.* 5*d.*

CATTLE.

At the Metropolitan Market on Monday trade in beasts was dull and prices lower. There being a reduced demand for sheep, prices gave way in some instances. Good calves continued scarce and dear. Quotations:—Beasts, 4*s.* 4*d.* to 5*s.*; 5*s.* 4*d.* to 5*s.* 8*d.*; calves, 6*s.* to 7*s.*; sheep, 5*s.* 8*d.* to 6*s.* 2*d.*, and 6*s.* 8*d.* to 7*s.* 6*d.*; and pigs, 4*s.* to 5*s.*

HAY.

Owing to the supply at Whitechapel market on Tuesday being large, trade was dull and prices for clover were somewhat lower. Prime clover, 100*s.* to 130*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 123*s.*; inferior, 70*s.* to 85*s.*; and straw, 40*s.* to 54*s.* per load.—Current Market quotations:—Superior meadow hay, 128*s.* to 135*s.*; inferior, 108*s.* to 117*s.*; superior Clover, 130*s.* to 140*s.*; inferior, 110*s.* to 118*s.*; and straw, 52*s.* to 57*s.* per load.

POTATOS.

At the Borough and Spitalfields markets supplies of Potatos have been plentiful, and prices were not very well supported. Kent Regents, 100*s.* to 120*s.* per ton; Essex do., 80*s.* to 110*s.*; Scotch do., 95*s.* to 110*s.*; rocks, 85*s.* to 90*s.*; flukes, 140*s.* to 180*s.*; Victorias, 130*s.* to 160*s.*—The imports into London last week comprised 28,553 bags from Hamburg, 21,376 Antwerp, 6295 Ghent, 1200 Bremen, 1290 packages 291 casks Malta, 1000 bags 1000 casks 40 barrels Odessa, 175 bags 45 sacks Boulogne, 240 sacks Rouen, 223 bags Dordrecht, and 100 Rotterdam.

COALS.

There was a small supply of house coals at market on Monday owing to the detention of the steamers through stormy weather, and the prices advanced 1*s.* per ton. Quotations:—East Wylam, 16*s.* 6*d.*; Walls End—Hetton, 20*s.*; Hetton Lyons, 17*s.* 9*d.*; Lambton, 19*s.* 6*d.*; Tunstall, 17*s.* 9*d.*

Sole Medallists for the Best Hot-Water Apparatus at the United States Centennial International Exhibition, Philadelphia.

By Royal Her Majesty's Letters Patent

WRIGHT'S ENDLESS-FLAME-IMPACT HOT-WATER BOILERS.

GUARANTEED

The most Powerful, the most rapid, the most Economical, the Simplest, and the Cheapest in the World.

"The 'Boiler of the Future.' I have no doubt about this."—WM. THOMSON, *Tweed Vineyards.*

From the "Gardener," March, 1877.

WRIGHT'S PATENT

ENDLESS-FLAME-IMPACT BOILER.

"This boiler is attracting a good deal of attention in the horticultural world at the present time; and as I have just had one of their largest-sized ones fitted up here, and have now got it well tested, I can bear testimony from my own experience that boilers may not be without some advantage to some of your numerous readers. I have had some experience as to the annoyance and extra labour caused by badly-constructed boilers, and any improvement effected in these to save labour and fuel demands the attention of all interested parties.

"To give your readers a better idea of the work this boiler has to do, I may begin by stating that our hothouses consist of a range having a total length of 102 feet, with span-roofed greenhouse in front, being in the centre, two lean-to Vineries on each side, with Camellia-house and general plant-house at each end; on opposite side of wall we have a Fern-house, partly lean-to and partly span, 99 feet in length, varying in width from 10 to 30 feet. Attached to end of boiler-house is our laundry, with a drying chamber fitted up with about 250 feet of 4-inch piping.

"The whole of the above houses are heated with hot water, and have a total of about 1500 feet of 4-inch piping. We had formerly two oval flue boilers, one being 4 feet 6 inches long, the other 4 feet long. With these two boilers kept hard fired we always found a great difficulty in keeping a good temperature during frosty weather, and had frequently to lose a night's sleep attending to the fires. On the last day of last year the larger boiler came to grief—the water from it drowned out the fire; and in taking down some of the brickwork it was found to have cracked beyond repair. I was then left in charge of the house with only the one boiler was no joke. I had to look out for another without delay. I have given a good deal of attention to the construction of hot-water boilers, and I may say that I had never seen one that came up to my idea of what a boiler should be until some time ago my attention was called to a drawing of Wright & Co.'s boiler, which appeared to me perfect.

"After talking the matter over with my employer, W. S. Mitchell Esqr., he at once granted permission to get the boiler I had formed such an opinion of. I at once put the order into the hands of Messrs. Meikle & Philp, hothouse builders and hot-water engineers, Terpbichen, and they have fitted it up and attached the piping in the most complete manner. I also got some additional tight valves attached, so that if anything should at any time go wrong it can be attended to without disturbing the piping.

"And now as to the capabilities of the boiler for the work. As formerly I had considerable difficulty in keeping up the heat with the two oval flue boilers kept hard at work. I now find that with the remaining one I have only to be required a little attention, and the laundry to a degree they never were before, and that with much less coal than it took to fire one of the oval flue boilers.

"Our chimney consists of a flue 70 feet long, led horizontally through centre of back wall, with 18 feet of a perpendicular stalk. Some doubt was entertained that, as we required a chimney pipe attached to boiler about 6 feet long, there would be deficiency of draught; but we have found the opposite to be the case. I attached a 6 feet length of 9-inch stove pipe, with elbow at boiler, and cleaning door on the angle, and as I found the draught very strong I got a slide-valve damper fitted into the bend of the stove pipe, and am able to regulate the fire to a nicety, and by banking-up the fire at 10 P.M., and turning the damper full on, I find I can keep it in to work with the greatest confidence till the usual time of commencing labour the following morning; I and instead of, as formerly, having to stir up firing for half of the night at times, and sometimes whole ones, we can retire to rest at a reasonable hour, confident of sleep being undisturbed by unpleasant dreams of plants and fruits going to ruin. In concluding my remarks I may say that not the least of the good qualities of this boiler is its portability. We had not the slightest difficulty in putting it through the contracted stockhole through a temporary door 2 feet long by 2 feet broad, and fitting it up in a recess 4 feet square, and I am confident that with the assistance of two men I could take the whole to pieces and have it again in full working order in two hours. I have no hesitation in saying that for rapidity of circulation, small consumption of fuel, portability, and cleanliness, it has no rival, and have no doubt this boiler will win its way; and where coals are high in price it will effect a considerable saving, and as there is good fire power in it will be found a capital boiler for burning wood and other fuel."—J. CLARK, *The Gardens, Perrott's Green, Aldbury.*

"We have a very high opinion of this boiler, and trust that it will take a foremost place in heating hothouses and all other buildings, and shall have some further remarks to make about the principles of it next month.—ED. *Gardener.*]

"I think yours the most perfect '**Heat Trap**' yet invented.—DAVID THOMSON, *Dunsinane Gardens.*"

For details and particulars as to the various sizes made, and prices, please see our pamphlet, entitled, "OUR BOILERS AND HEATING," which will be handed to all applicants, post-free.

We are prepared to supply **Thirty Different Boilers** of all powers, sizes, and heights, and can vary these to suit any particular situation or requirement.

WM. WRIGHT & CO.,
HOT-WATER ENGINEERS,
AIRDRIE, near GLASGOW, N.B.

SPECIAL NOTICE.

GRAND EASTER GIFT.

THE FINEST AND MOST VALUABLE GIFT EVER OFFERED.

EACH READER of this PAPER will be entitled to receive from the NATIONAL FINE-ART UNION, 35, Great James Street, London, W.C., a copy (23 inches by 16 inches) of the beautiful Steel-Plate Engraving, entitled

WARWICK CASTLE.

(COPYRIGHT.)

This Magnificent Picture has been specially Engraved to form a companion to that of WINDSOR CASTLE, and it is only necessary to state that the artistic merit and skill displayed in Engraving WARWICK CASTLE is fully equal, if not superior, to that of WINDSOR CASTLE.

This great work may fairly be considered as one of the finest productions of high art of modern times: it is from the celebrated Picture painted by E. Duncan, Esq., and is engraved in the finest style on steel by that well-known artist, G. Godfrey, Esq.

The scene is an English Pastoral one, and is one of the best examples of the English School, which is well-known to be the finest and richest in Landscapes of all the various Schools of Art. In the foreground are groups of cattle drinking from a stream of crystal clearness, which meanders through the most luxuriant and picturesque district of our island home. The magnificent woodland, in all the glories of light and shadow, stretching away to the right, leaves the central portion of the picture open for the portrayal of the most complete representation of simple and sweet country life, while the gigantic old Castle rising upward in the distance tells of a power and greatness which shall protect our hearths and homes for all time. In this picture will be found the only representation extant of that portion of Warwick Castle lately destroyed by fire. The associations that crowd around this historic structure, in which the Great Earl of Warwick, called "The King Maker," lived, are fitly exemplified in the work itself, while the ability displayed in engraving it cannot be too highly praised. It has both an historical and an artistic value, while its intrinsic worth may be gathered from the following :—

"*March* 29, 1877.

"*Dear Sir,—The Engraving of* Warwick Castle *is copyright, and has never been issued under the regular retail price of One Guinea.* (*Signed*) "CHARLES GOOLD, *Manager.*

"*National Fine-Art Union, 35, Great James Street, London, W.C.*"

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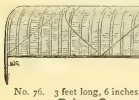
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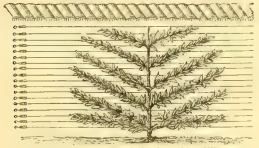


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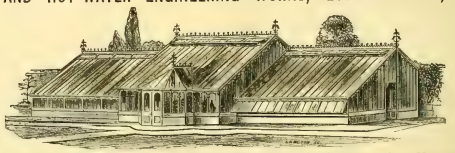


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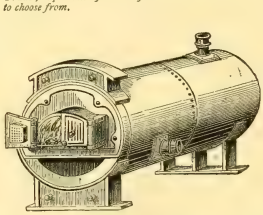
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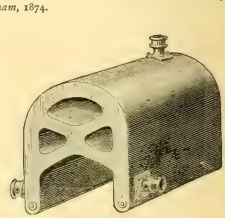
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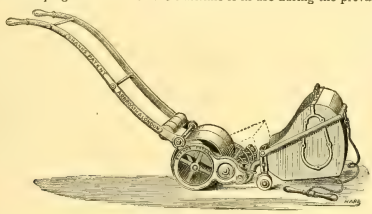
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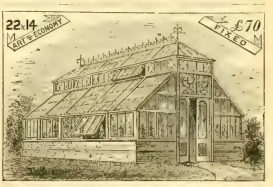
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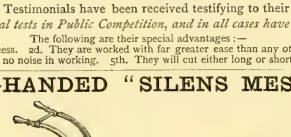
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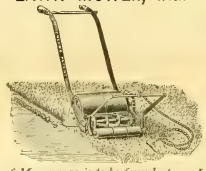
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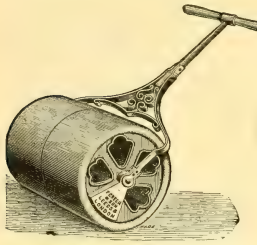
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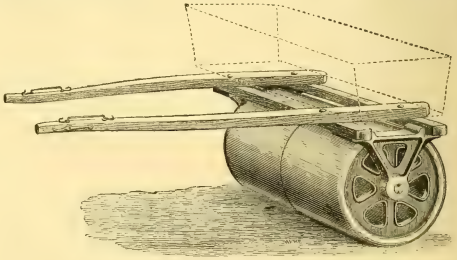
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Including postage to the United States, is **$6.30** gold, to which add premium on gold for U.S. currency at the time, and 25 cents exchange—payable in advance.

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Now Ready, in cloth, 16s. 6d.,

THE GARDENERS' CHRONICLE

VOLUME for JULY to DECEMBER, 1876.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

CRYSTAL PALACE.—AURICULA SHOW, April 14; GREAT FLOWER SHOW, May 12; ROSE SHOW, June 23. Schedules for the two latter can be had on application to

GENERAL MANAGER, Crystal Palace.

ROYAL MANCHESTER BOTANICAL and HORTICULTURAL SOCIETY.—AURICULA SHOW, &c., at the Town Hall, Manchester, on April 27. The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1877 (ONE THOUSAND POUNDS in Prizes) will open on May 18. Special SHOW of ROSES, TULIPS, DINNER-TABLE PLANTS, on May 25 and 26. ENTRIES close on May 10. For Schedules apply to

BRUCE FINDLAY, Curator and Secretary.

Royal Botanic Gardens, Manchester.

GRAND FLOWER SHOW will be held by the Orleans House Club, Twickenham, on FRIDAY and SATURDAY, May 25 and 26. The Show will be under the entire superintendence of Mr. Thomas R. Rollisson. Schedules and full particulars can be had of WILLIAM ROLLISSON and SONS, The Nurseries, Tooting, S.W.

Captain H. WOMBWELL, Manager and Secretary.

Offices, 14, Waterloo Place, W.

Important Notice

HORMSON, of the HORTICULTURAL WORKS, Stanley Bridge, Chelsea, S.W., begs to inform his Friends and Supporters, and the Public generally, that

GEORGE W. CUMMING

is no longer in his employment.

Exhibition of Spring Flowers, &c.

DOWNIE and LAIRD, Royal Winter Gardens, Edinburgh, will hold during the month of APRIL, in the above Gardens, an EXHIBITION of RHODODENDRONS, HYACINTHS, and other Spring Flowers. Inspection invited. Admission free.

NURSERYMEN COMING to HOLLAND during the International Horticultural Show at Amsterdam, in April, 1877, are kindly requested to Visit my Nursery.

A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

PROTHEROE and MORRIS, Horticultural Market Garden and Estate Auctioneers and Valuers, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

Transit Agency for Plants, Seeds, &c.

C. J. BLACKITH and CO. (established 1829), Cox's and Hammond's Quays, Lower Thames Street, London, S.E.—Forwarders to all parts of the World.

NEW REGAL PELARGONIUMS (Two of the Gems of the Season).

"PRINCE OF WALES" and "PRINCESS OF WALES."

Price 1 guinea each.

To be sent out the first week in May by

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Pelargoniums.

CHARLES TURNER can supply strong healthy plants of all the classes; they will have a good head of bloom this season.

The Royal Nurseries, Slough.

SPIRÆA PALMATA.—Fine Crowns for Forcing, 75s.; smaller, 25s. to 50s. per 100.

CHARLES NOBLE, Bagshot.

CENTAUREA CANDIDISSIMA.—Nice plants, in single pots, 20s. per 100, package included. Terms Cash.

JOHN HOUSE, Eastgate Nurseries, Peterborough.

Centaurea candidissima.

C. GUY AND SON beg to offer the above in strong plants, from single pots, 12s. per 100, for cash.

Monkton Nursery, Ryde, Isle of Wight.

Carnations, Picotees, and Cloves.

CHARLES TURNER can supply the above in great variety. Now is the time for planting them out.

The Royal Nurseries, Slough.

Clematis Roots for Grafting, 30s. per 1000.

CLEMATIS.—Finest named kinds, spring and autumn flowering, any number at very reduced prices.

CHARLES NOBLE, Bagshot.

New Spring Catalogue.

CHARLES TURNER'S CATALOGUE of PLANTS is now ready, and may be had free on application.

The Royal Nurseries, Slough.

Verbenas.

JNO. CARTER, Nursery, Keighley, has to offer a few thousand PURPLE VERBENAS, very fine and strong, from cutting pots. Price on application.

Verbenas, Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other mixed sorts, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, package included. Cash to accompany all orders.

Islington Nursery, Park Street, Islington, N.

Balsam, Cineraria, and Primula Seed.

F. AND A. SMITH offer the above, saved from their unrivalled strains, in 1z., 2z. 6d., and 5z. packets. Price per weight to the Trade on application.

The Nurseries, West Dulwich, S.E.

ORANGES, LEMONS, &c.—Large specimens for Sale.

E. COOLING, Mile Ash Nurseries, Derby.

Finest Lawn Mixture.

JAMES DICKSON AND SONS' Mixture, composed only of the finest dwarf Evergreen Grasses and Clovers, is much superior to all others. Price 1z. 3d. per lb., 12lbs. per cwt., carriage free.

108, Eastgate Street, Chester.

Gentlemen's Gardeners, Amateurs, and Others

REQUIRING

GARDEN POTS of best quality, are requested to send their orders to

J. MATTHEWS, Royal Pottery, Weston-super-Mere.

Price List on application.

To Private Growers.

WANTED, a regular supply of choice CUT FLOWERS. Description, lowest price (trade), &c., by letter only.

G. B., 4, Neitherwood Street, Kilburn, N.W.

WANTED, 500 Common LAURELS, about 2½ feet.

W. AND J. BROWN, Stamford.

WANTED, EUONYMUS, Green, Gold, and Silver, various sizes. Send samples and price per 100 for Cash to

W. FROMOW, Sutton Court Nursery, Turnham Green, London, W.

WANTED, strong Common ASH and BIRCH, 3 to 4 feet. Reply, by post, stating quantity to dispose of and price, to

W. BARRON AND SON, Elvaston Nurseries, Borrowash, Derby.

WANTED, transplanted Scotch FIRS and Austrian PINES, 1 to 1½ foot, and Common HOLLIES, 2 feet. State quantity of each, with price, to

RICHARD SMITH, Nurseryman, Worcester.

WANTED, a quantity of AMERICAN POTATOS, either imported or grown in this country. State lowest price for any variety to

ALFRED WINFIELD, Wesigate, Gloucester.

BEGONIAS, tuberous-rooted. — Strong seedlings, just starting into growth, fine for Planting Out this summer, 5s. per dozen, 60s. per 100.

RODGER McCLELLAND AND CO., 64, Hill Street, Newry.

BOX EDGING.—A large quantity to be Sold, on reasonable terms.

Mr. J. BUXTON, Nurseryman, Onehouse, Stowmarket.

PONTICUM RHODODENDRONS —for Cover—2½ to 3 feet, fine, £8 per 100.

J. JACKSON, Nursery, Kidderminster.

HAWS, or THORN QUICK SEED.—Sound Haws, fit for sowing at present, or spring coming, guaranteed free from soil or other mixture, and thoroughly well preserved. About 30 tons on hand. For lowest prices apply to GRANT AND CO., Park Nursery, Portadown, Ireland.

BIRCH, 5 to 8 feet, 50s. per 1000. PEARS, Hessle, Standards, 75s. per 100.

APRICOTS, Maiden, 50s. per 100.

WILLIAM FLETCHER, Ottershaw Nursery, Chertsey, Surrey.

Larch, Alders, and Poplars.

JNO. CARTER, Nursery, Keighley, has a few thousand LARCH, 1½ to 2½ feet, and ALDERS, 2½ to 3½ feet, really good plants; also POPLARS of sorts, 6 to 8 feet. Price on application.

CUPRESSUS LAWSONIANA, 2 to 3 feet, good plants, 15s. per 100. RETINOSPORA PISIFERA, 2 to 3 feet, 20s. per 100.

E. COOLING, Mile Ash Nurseries, Derby.

HOLLYHOCKS.—Lists of Varieties, with their colours and price, on application; also TEA ROSES in pots.

L. WOODTHORPE, Glazenwood Nursery, Braintree, Essex.

To the Trade.

HOLLYHOCKS.—Choice named, consisting of nearly 200 of the newest and best sorts, fine plants, free from all disease, 50s. per 100.

J. JACKSON, Nursery, Kidderminster.

To the Trade.

PINUS INSIGNIS, 1-yr., in single pots, 8s. per 100, 70s. per 1000.

IVY, Irish, 1-yr., 8s. per 1000, 70s. per 10,000; 2-yr., about 1 to 2 feet, 80s. per 1000.

RODGER McCLELLAND AND CO., 64, Hill Street, Newry.

To the Trade.

FIRS.—Scotch, seedling, 100,000, 2-yr.; Spruce, 200,000, 2-yr., guaranteed true native.

PINUS AUSTRIACA, 100,000, 2-yr.

Samples and price on application to

PETER BLAKE, Summerhill, Enfield, Ireland.

CUCUMBERS.—Cooling's King and Fearnought, the two best in cultivation, 2s. 6d. per packet each, post free.

E. COOLING, Seed Merchant, Derby.

ASPARAGUS, Giant, 3-yr. and 4-yr., fine, price 3s. per 100.

R. BATH, Crayford, Kent.

To the Trade.

ASPARAGUS, Giant, 1-yr., 2-yr., 3-yr., and 4-yr., fine.

JAMES BIRD, Nurseryman, Downham.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

VINES.—Splendid Planting Canes of leading varieties, perfectly ripened without bottom-heat, and a few extra strong Canes for Immediate Fruiting.

JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

Vines, Vines, Vines.—The Planting Season.

THE COWAN PATENTS' COMPANY, The Vineyard, Gorston, near Liverpool, can supply excellent Planting Canes of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

Vines.

F. AND A. SMITH can still supply strong well grown Fruiting and Planting Canes of all the best sorts.

The Nurseries, West Dulwich, S.E.

Grape Vines.

B. S. WILLIAMS has still on hand a large stock of MUSCAT of ALEXANDRIA and SCOTT'S MUSCAT, strong Planting or Fruiting Canes, 5s. each. Early orders respectfully solicited.

Victoria and Paradise Nurseries, Upper Holloway, N.

SEED POTATOS.—Extra Early Vermont, a fine sample, true to name, 5s. per bushel, 14s. per sack.

W. BARNARD, High Street, Epsom.

SALES BY AUCTION.

Auction Mart, Tokenhouse Yard, London, E.C.
ALTERATION of DATE of SALE.

IMPORTANT UNRESERVED SALE of about 3000 LILIUM KRAMERI, SPECIOSUM RUBRUM and ALBUM, just arrived from Japan in splendid condition; a quantity of GLADIOLUS, English-grown LILIES and other HARDY BULBS; a splendid assortment of 200 Standard and Dwarf ROSES, selected hardy CONIFERÆ SHRUBS and AMERICAN PLANTS, and a choice collection of CARNATIONS, PINKS, PICOTEES, &c.

MESSRS. PROTHEROE AND MORRIS beg to announce that the above Stock will be SOLD by AUCTION, at the Mart, on TUESDAY, April 10, at half-past 11 o'Clock precisely (instead of the 16th, as announced last week).

On view morning of Sale. Catalogues had at the Mart, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Cheltenham.

UNRESERVED SALE of Mr. James Cypher's unrivalled Collection of Exhibition STOVE and GREENHOUSE PLANTS.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL the above noted COLLECTION of PLANTS, by AUCTION, on the Premises, the Queen's Road Nurseries, Cheltenham, on WEDNESDAY and THURSDAY, April 11 and 12, at half-past 12 o'Clock precisely.

May now be viewed. Catalogues are now ready and may be obtained (*6d.* each, returnable to purchaser) on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C.

For full particulars see *Gardeners' Chronicle* of March 17.

Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 12, at half-past 12 o'Clock precisely, a quantity of established ORCHIDS, part from a Gentleman's Collection, comprising many fine plants of rare and valuable sorts; also some fine established plants of Cattleya Schilleriana, Lælia purpurata, Oncidium Marshallianum, concolor, Odontoglossum Roezlii, and many other choice sorts, 250 fine plants of Musa Ensete, and a few Seeds from Madagascar.

On view the morning of Sale, and Catalogues had.

Specimen Plants—Tree Ferns.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 12, at half-past 12 o'Clock precisely, a Collection of fine young Specimen PALMS, FERNS, CROTONS, DRACÆNAS, &c., all in good healthy condition; also some TREE FERNS from the New Plant and Bulb Company, comprising the entire stock of a New Cyathea, Dicksonia squarrosa, Cayathea Smithii, Cyathea dealbata, &c.

On view the morning of Sale, and Catalogues had.

Choice Imported East Indian Orchids.—(4932.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, April 13, at half-past 12 o'Clock precisely, a quantity of EAST INDIAN ORCHIDS, recently imported in the best possible condition, consisting of 200 strong plants of Dendrobium Wardianum, 300 Dendrobium crassinode, 200 Dendrobium Devonianum, several hundreds of Dendrobium suavissimum, fine plants of Vanda cœrulescens, also 25 established plants in flower of Phalænopsis Schilleriana, and 20 good plants of Oncidium verrucosum, a plant of which will be on view in flower, with lip close upon 2 inches in diametar; a collection of ESTABLISHED ORCHIDS, and some specimen STOVE and GREENHOUSE PLANTS, an importation of Odontoglossum Hallii, O. roseum, O. cirrhosum, Oncidium crispum, 3 cases of Araucarias, and 3 cases of Aloes, 9 cases of Lilium auratum, imported masses of Cypripedium spectabile, and a quantity of CONIFER and PALM SEEDS.

On view morning of Sale, and Catalogues had.

Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 16, at half-past 12 o'Clock precisely, a large importation of some hundreds of plants of CYMBIDIUM EBURNEUM, just arrived in splendid condition, several of the plants with flowers on them that have expanded in the cases while in transit; many of the plants are large and fine masses, with from six, eight, ten to twelve growths each. At the same time will be sold immense quantities of many other CHOICE ORCHIDS, such as Vanda striata, Cymbidium giganteum, Vanda cœrulea, Vanda Cathcartii, some hundreds of good plants of Aerides Fieldingii (Foxbrush), Dendrobium formosum, Dendrobium nobile Wallichii; hundreds of plants of the rare Cœlogyne barbata, various Pleiones, and some good plants, just imported, of Oncidium varicosum varieties, O. Rogersii type, and some healthy plants of Odontoglossum vexillarium.

On view morning of Sale, and Catalogues had.

Upper Edmonton, N.
To NURSERYMEN, FLORISTS, and OTHERS.

MR. F. W. SEARLE is instructed to SELL by AUCTION, at the Angel Hotel, Edmonton, on WEDNESDAY, April 11, at 6 for 7 o'Clock in the evening, the LEASE, STOCK, and GOODWILL of all those premises situate and known as Grove Street Nursery, Snells Park, comprising about Half an Acre of Ground, Five Greenhouses, and Stock of about 30,000 Bedding and Greenhouse Plants. Held on lease, at a low ground rent. It is situate within easy distance of the markets and on good road, within 5½ miles of town.

May be viewed, and Catalogues had of the Auctioneer, Tottenham and Enfield.

Edmonton, N. (4215.)

Seven miles from Covent Garden, and close to the Station.

TO BE DISPOSED OF, as a Going Concern, a capital MARKET NURSERY, about 2½ Acres in extent, comprising a six-roomed detached Dwelling House, nine Greenhouses in good repair, and several Ranges of Pits. Lease nineteen years unexpired, at £100 per annum. Stock and Utensils in Trade at a Valuation, or open to an offer. Incoming about £400 Further particulars of

Messrs PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

To Nurserymen, Seedsmen, and Florists.

FOR DISPOSAL, a BUSINESS, fine large HOUSE and SHOP, small compact NURSERY close to, three Greenhouses well heated with hot water, and sixteen Frames, fully stocked with saleable Bedding Plants. Good Jobbing connection, and every chance of greatly increasing it. Shop in first-class position. Long Lease and moderate rent. Apply for further particulars on the premises,

2, Swiss Terrace (adjoining Swiss Cottage Station, Metropolitan Railway), Belsize Road, St. John's Wood, N.W.

To Nurserymen and Florists.

TO BE LET on LEASE, in a commanding position for Business, in south-west district of London, a HOUSE and SHOP, with HALF AN ACRE of GROUND adjoining; has been a Nursery for the last thirty years. To an energetic man with small capital a first-rate opening. For terms apply by letter to

Mr. JOHN EASTERBROOK, Gloucester Brewery, Croydon, Surrey.

Centenary Celebration.

BATH and WEST of ENGLAND SOCIETY (Established 1777), and SOUTHERN COUNTIES ASSOCIATION.

BATH MEETING, JUNE 4, 5, 6, 7, and 8.

ENTRIES of LIVE STOCK, CHEESE, IMPLEMENTS, WORKS of ART, &c., CLOSE APRIL 18, after which date no Fees or Entries can be received.

POULTRY ENTRIES CLOSE MAY 2.

FORMS and all information supplied on application to

JOSIAH GOODWIN, Sec.
4, Terrace Walk, Bath.

NOTICE.—The Business heretofore carried on by the undersigned WILLIAM HOOPER, under the style of HOOPER & Co., in Central Avenue, Covent Garden, W.C., and elsewhere, WILL BE CARRIED ON henceforth by the undersigned BENNETT HOOPER, who will RECEIVE and PAY ALL MONEYS DUE to and from the said Business.—Dated March 31, 1877.

W. HOOPER.
BENNETT HOOPER.

Witness—O. E. DAWSON, 10, Hart Street, Bloomsbury Square, Solicitor.

Transfer of Business.

MESSRS. J. CROUCHER and H. BOLLER beg to inform the Public that they have TAKEN THE BUSINESS lately carried on by C. PFERSDORFF, at 75, South Row, Kensal New Town, and hope to receive the confidence of those who patronised the late C. Pfersdorff; also the Public generally.

All orders for any Succulent Plants, both miniature and others, will receive prompt attention.

Messrs. C. & B., having had great experience in this class of plants, can guarantee correct names. The Trade supplied.

T. FOX (late of Tooting), having spare time, is open to SELL NURSERY STOCK, or Covent Garden Market Produce, on Commission.—T. F., *Gardeners Chronicle* Office, W.C.

Superior New English Scarlet Runner Beans.

FREDERICK GEE has to offer a few Quarters of the above, at 35*s.* per bushel, for cash. These are a very rare article this season, and are far preferable to Foreign, which are now being sold; also a few Quarters of EARLY LONGPOD BEANS, at 7*s.* 6*d.* per bushel; common WINDSORS, at 10*s.*; fine Selected BROAD WINDSORS, at 14*s.* per bushel.

Seed Establishment, Biggleswade, Beds.

ROSES, Dwarf, on Manetti, fine plants, 25*s.* per 100.
SEAKALE, good Planting, 25*s.* per 1000.
ASPARAGUS, Giant, 2-yr., 15*s.* per 100; 3-yr., 20*s.* per 1000.
SEAKALE CUTTINGS, fit for Planting, 7*s.* 6*d.* per 1000.
Cash only.
RICHARD LOCKE, Redhill, Surrey.

Pelargoniums, Pelargoniums.

JAMES HOLDER AND SON have a fine healthy Stock of the above to offer, at the following low prices for Cash, viz., 35*s.* per 100, distinct sorts, hamper and package included; also extra strong plants, in 32-pots, 18*s.* per dozen, in 48-pots, 9*s.* per dozen, 60*s.* per 100, basket and packing extra. Crown Nursery, Reading.

Important Notice.

JAMES HOLDER AND SON beg to inform their numerous customers, and the public generally, that the PELARGONIUMS advertised by them are not the Zonal Class, but consist of Show, French, and Fancy varieties. The Stock and Collection is First-class, as certified by numerous testimonials received from various parts of the country.
Crown Nursery, Reading.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.
Mr. WEBB, Calcot, Reading.

Centaurea candidissima or ragusina,
PACKAGE FREE.

WOOD AND INGRAM offer fine plants of the above, thoroughly established in single pots, at 20*s.* per 100, or £9 per 1000. Not less than 50 will be sold at the 100 price, or 500 at the 1000 price.
The Nurseries, Huntingdon.

Verbenas, Verbenas, Verbenas.

WILLIAM BADMAN offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, at 12*s.* per 100; or turned out of pots, 10*s.* per 100 Good rooted Cuttings, 6*s* per 100, 50*s.* per 1000, package included. Terms Cash.
Cemetery Nursery, Gravesend, S.E.

Special Offer.—150,000 Vesuvius.

WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, 10*s.* per 100; or from store-pots, 8*s.* per 100, 75*s.* per 1000, package included. Terms Cash.
Cemetery Nursery, Gravesend, S.E.

SEEDS—SEEDS—ALL KINDS.—Before ordering your Seeds, send for Illustrated CATALOGUE, which contains full Directions,
How, When and What to Sow.
PENGILLEY AND POOL (successors to the Heatherside Nurseries Company), 59, Queen Victoria Street, London, E.C.

To the Trade.

STANDARD and DWARF ROSES of the leading sorts—splendid Plants, no better in the Trade, well-ripened wood—about 15,000 Standards and 5000 Dwarfs, guaranteed true to name. For lowest prices apply to
GRANT AND CO., Park Nursery, Portadown, Ireland.

To the Trade.—Turnip Seeds.

H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.
Seed Growing Establishment, Wisbech.

IVY, Irish (Hedera canariensis). — Good plants, 3*s.* per dozen, 10*s.* per 100, 80*s.* per 1000. Eighteen other kinds. See CATALOGUE.
LAURUSTINUS (Viburnum tinus).—Nice plants, with fine roots, 9 to 12 inches, 3*s.* per dozen, 15*s.* per 100, £6 10*s.* per 1000; 15 to 18 inches, 4*s.* per dozen, 20*s.* per 100, £8 per 1000.
JAMES SMITH, Darley Dale Nurseries, near Matlock.

VERBENAS, VERBENAS, VERBENAS. —Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6*s.* per 100, 50*s.* per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, for 8*s.* Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

SYMPHYTUM ASPERRIMUM, or CAUCASIAN PRICKLY COMFREY. — Whole Roots and Crowns PURCHASED after Examination. Send full particulars to
THOMAS CHRISTY AND CO., 155, Fenchurch Street, London, E.C.

Australian Plants and Seeds.

EUCALYPTUS GLOBULUS, PALMS, CYCADS, FERNS, and all kinds of PLANTS and SEEDS indigenous to Australia, Fiji, &c., supplied on the most reasonable terms. Priced CATALOGUES and Special Quotations on application.
SHEPHERD AND CO., Nurserymen and Seedsmen, Darling Nursery, Sydney, New South Wales. (Established 1827.)
Agents: Messrs. C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

H. AND F. SHARPE'S Wholesale Spring CATALOGUE of HOME-GROWN AGRICULTURAL and GARDEN SEEDS is now ready, and may be had on application. The prices will be found very moderate.
Seed Growing Establishment, Wisbech.

STATICE PROFUSA.—Clean, healthy, and vigorous, in single pots, at 1*s.* 6*d.* each, 12*s.* per dozen, 75*s.* per 100. Also best Competition FLORISTS' FLOWERS, STOVE, GREENHOUSE, and BEDDING PLANTS of all sorts, cheap. CATALOGUES on application.
JOHN FORBES, Dove Mount Nurseries, Hawick, N.B.

ASPARAGUS PLANTS.—Giant, 2-yr. old, 2*s.* 6*d.* per 100, 22*s.* 6*d.* per 1000; 3-yr. old, 3*s.* 6*d.* per 100, 30*s.* per 1000. Connover's Colossal, 2-yr. old, 3*s.* 6*d.* per 100, 30*s.* per 1000; 4-yr. old, 7*s.* 6*d.* per 100, 63*s.* per 1000. Price to the Trade on application.
JAMES BACKHOUSE AND SON, York.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2*s.* 6*d.* per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LIST for 1877.
Extra Strong SEAKALE, 2*s.* per dozen.
RICHARD SMITH, Nurseryman, Worcester.

To the Trade.—Mangel Wurzel Seeds, 1876 Growth.

H. AND F. SHARPE invite the attention of the Trade to their fine selected stocks of home-grown MANGEL SEEDS, raised from fine picked bulbs. Special offers and samples may be had on application.
Seed Growing Establishment, Wisbech.

W. F. BOFF offers easy growing, free-blooming ORCHIDS, 21*s.*, 30*s.*, and 42*s.* per dozen.
TUBEROSES, 2*s.* per dozen, 12*s.* per 100.
LILY of the VALLEY, imported clumps, 9*s.* per dozen.
CALCEOLARIAS, yellow, rooted cuttings, 5*s.* per 100.
203, Upper Street, Islington, N.

GLADIOLI for EXHIBITION, carriage free.—50, in 25 superb varieties, 70*s.*; 25, in 25 superb varieties, 37*s.* 6*d.*; 24, in 12 choice varieties, 35*s.*; 12, in 12 extra fine sorts, 20*s.*
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

GLADIOLI for GENERAL DECORATION.—100, in 50 choice sorts, 100*s.*; 50, in 50 fine varieties, 55*s.*; 50, in 25 fine sorts, 50*s.*; 25, in 25 choice varieties, 30*s.*; 24, in 12 fine varieties, 21*s.*; 12, in 12 fine sorts, 12*s.*; 12, in 12 good varieties, 9*s.*; 12, in 12 popular sorts, 6*s.*
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

GLADIOLI in MIXTURE.—White ground varieties, splendid, 4*s.* per dozen; brilliant scarlet and dark red varieties, 4*s.* per dozen; yellow ground varieties, 5*s.* per dozen; choicest mixed, all colours, 3*s.* per dozen.
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

GLADIOLUS BRENCHLEYENSIS.—Extra fine flowering roots of this splendid scarlet, 1*s.* per dozen, or 6*s.* per 100.
DANIELS BROS., The Royal Norfolk Seed Establishment, Norwich.

Herbaceous and Alpine Plants (Illustrated).

THOMAS S. WARE'S CATALOGUE of the above for the present year is Now Ready, and includes New, Rare, and Choice Perennials, Bamboos, and Ornamental Grasses, Bog Plants, and Aquatics; also, a few Bulbs. Post-free on application.
Hale Farm Nurseries, Tottenham, London.

THE NEW PLANT and BULB COMPANY beg to call special attention to their NEW LIST (No 31), just published. Contents :—New Hardy Bulbs, New and Rare Lilies, New Hardy Cypripedium, New Ferns, Seeds of New Hardy Flowering Plants, &c. All of sterling merit, and at low prices. Post-free on application.
Lion Walk, Colchester.

WOOD AND INGRAM beg to offer :—
PELARGONIUMS, Show, Spotted, and Fancy, fine plants in 5-inch pots, good named sorts, 50*s* per 100, 8*s*. per dozen.
CALCEOLARIA, Herbaceous, finest exhibition strain, fine plants in 5-inch pots, 9*s*. per dozen, 1*s*. each.
CARNATIONS, Border, in variety, to name, fine plants, 9*s*. per dozen pairs.
The Nurseries, Huntingdon.

To the Trade.—Seed Potatos.

H. AND F. SHARPE can still supply the following varieties of SEED POTATOS, raised from choice selected Stocks, viz. :—

Rivers' Royal Ashleaf,	Early Foxe's Seedling,
Myatt's Prolific Ashleaf,	Robson's Challenge,
Alma Kidney,	Walker's Improved Regent,
Model,	Paterson's Victoria,
Hundredfold Fluke,	Red-skin Flourball,
King of the Flukes,	Paterson's Alpha,
Fluke Kidney,	Early American Rose,
Early Dalmahoy,	Extra Early Vermont,
Early Oxford,	Eureka,
Bresee's King of the Earlies,	American Wonder,
Bresee's Dwarf Prolific,	Climax.

Seed Growing Establishment Wisbech.

ALTERNANTHERAS, and other CARPET BEDDING PLANTS.—At 1*s*. 6*d*. per dozen, 8*s*. per 100, 70*s*. per 1000 :—Alternantheras of all the varieties, Antennaria tomentosa, Arenaria balearica, Iresine Lindeni, Lamium aurea var. Lobelia pumila magnifica (true), from cuttings, the best bedding Lobelia in cultivation ; Mentha pulegium gibraltaricum, Sagina procumbens, At 2*s*. per dozen, 10*s*. per 100, 80*s*. per 1000:—Achillea umbellata, Coleus Verschaffeltii, Kleinia repens, Leucophyton Browni, Santolina incana. At 1*s*. per dozen, 5*s*. per 100, 40*s* per 1000 :—Cerastium arvensis (green), tomentosum (white), Lobelia pumila grandiflora (true), from cuttings ; Sedums of all varieties best suited for Carpet Bedding.
For cash with order, packing included.
WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

PICEA NOBILIS, 10,000, fine, healthy, well furnished plants, will carry balls of earth :—
1½ to 2 feet, 8*s*. per dozen, 60*s*. per 100.
2 to 2½ feet, 22*s*. per dozen, £8 10*s*. per 100.
2½ to 3 feet, 36*s*. per dozen, £14 per 100.
3 to 3½ feet, 60*s*. per dozen.
PICEA NORDMANNIANA, 5000, fine. For sizes and prices see Catalogue.
PINUS CEMBRA, 10,000, very fine, well-rooted :—
2 to 3 feet, 5*s*. per dozen, 20*s*. per 100.
2½ to 3½ feet, 6*s*. per dozen, 25*s*. per 100.
3 to 4 feet, 10*s*. per dozen, 70*s*. per 100.
4 to 5 feet, 30*s*. per dozen, 200*s* per 100.
PINUS STROBUS (Weymouth Pine), various sizes.
PICEA BALSAMEA (Balm of Gilead), fine healthy plants, various sizes.
RETINOSPORAS, fine.
CRYPTOMERIA ELEGANS and others, in perfect health.
LIBOCEDRUS DECURRENS (Thuja gigantea), very good.
See CATALOGUE.
JAMES SMITH, Darley Dale Nurseries, Matlock.

Cheap Plants.—Special Offer.

WILLIAM BADMAN offers, as under, all healthy strong stuff :—
VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 10*s*. per 100 ; well-rooted cuttings, 6*s*. per 100, 50*s*. per 1000 ; 12 choice named sorts, 8*s*. per 100.
CALCEOLARIA, Golden Gem, 5*s*. per 100, 40*s*. per 1000.
LOBELIA, speciosa (true), 3*s* per 100, 20*s*. per 1000 ; Bluestone and pumila grandiflora, all from cuttings, 5*s*. per 100, 40*s*. per 1000.
PELARGONIUMS, Vesuvius, from stores, 8*s*. per 100, 75*s*. per 1000 ; Jean Sisley, 10*s*. per 100 ; Madame Vaucher, 10*s*, per 100, 85*s*. per 1000 ; Master Christine, 12*s*. per 100 : all from single pots.
,, Tricolor, Mrs. Pollock, 20*s*. per 100 ; Crystal Palace Gem, 12*s*. per 100 ; Flower of Spring, 12*s*. per 100 ; May Queen (Turner's), 15*s*. per 100.
HELIOTROPE, finest dark, good bushy plants, 12*s*. per 100 ; rooted cuttings, 6*s* per 100.
Packing included. Terms, cash.
Cemetery Nursery, Gravesend, S E.

CHARLES NOBLE, Bagshot, offers the following :—
RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1½ to 2 feet, 21*s*. per dozen, 150*s*. per 100.
,, ,, ,, ,, for immediate effect, 2½ to 4 feet, and same through, 42*s*. per dozen, 300*s*. per 100.
,, Seedling, 1½ to 3½ feet, 24*s*. per dozen, 200*s*. per 100.
,, PONTICUM, 1½ to 2 feet, bushy, 6*s*. per dozen, 35*s*. per 100.
KALMIA LATIFOLIA, 1 to 1½ foot, buds, for potting, 75*s*. and 100*s*. per 100.
ANDROMEDA FLORIBUNDA, buds, for potting, 75*s*. and 100*s* per 100.
ERICA CARNEA, very fine, 21*s*. per 100.

MESSRS. JNO. STANDISH AND CO.'S CATALOGUE for Autumn, 1876, and Spring, 1877, is now ready, and may be had, post-free, on application.
It contains the following :—

Plants of Recent Introduction.	Coniferæ.
Stove and Greenhouse Plants.	Hardy Climbers, Clematis, &c.
Plants for Winter Forcing.	Rhododendrons, Azaleas,
Azalea indica and Camellias.	Kalmias, &c.
Tree Carnations and Ericas.	Roses, Standards and Dwarfs,
Ferns and Lycopods.	also in pots.
Hardy Trees and Shrubs.	Fruit Trees.
Transplanted Forest Trees.	Grape Vines.

Dutch Bulbs, Flower Roots, &c.
Royal Nurseries, Ascot, Berks.

B. S. WILLIAMS'

CHOICE

FLOWER AND VEGETABLE SEEDS FOR 1877.

	Per packet	*s.*	*d.*
BALSAM, Williams' Superb Strain	2*s*. 6*d*. and	1	6
BEGONIA FROEBELII		2	6
BEGONIA SEDENI SEMI-PLENA		2	6
BEGONIA, Hybrid, finest mixed		2	6
CYCLAMEN PERSICUM GIGANTEUM.—This is a great improvement on the old type, the flowers being thrown well above the foliage, each flower measuring from 2 to 2½ inches in length ; pure white, with a fine bold violet-purple eye	5*s*. and	2	6
CYCLAMEN PERSICUM, Williams' Superb Strain, 5*s*., 3*s*. 6*d*., 2*s*, 6*d*., and		1	6
CELOSIA PYRAMIDALIS PLUMOSA		1	0
CALCEOLARIA, Williams' Superb Strain, 5*s*., 3*s* 6*d*., 2*s*. 6*d*., and		1	6
CINERARIA, Weatherill's Extra Choice Strain, 5*s*., 3*s*. 6*d*., 2*s*. 6*d*., and		1	6
GLOXINIA, Finest Drooping Varieties		1	6
,, Finest Erect Varieties		1	6
PRIMULA, Williams' Superb Strain, Red, White, or Mixed	5*s*., 3*s*. 6*d*., 2*s*. 6*d*., and	1	6
PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance		5	0
PYRETHRUM GOLDEN GEM		1	0
SOLANUM, Williams' Improved Hybrids		1	6
STOCK, Williams' Improved Giant Scarlet Brompton		1	6
WALLFLOWER, Harbinger, Autumn and Winter flowering		1	0

Packets of Flower Seeds, excepting heavy kinds, Free by Post.



VEGETABLE SEEDS.

	Per packet.—*s.*	*d.*
BEANS, Williams' Early Prolific Dwarf French—per qt.	3	0
BRUSSELS SPROUTS, Welch's Giant, one of the finest in cultivation	per packet 1	0
CUCUMBER, Walker's Hero (New)	2	6
,, Osmaston Manor	2	6
ENDIVE, Williams' Gloria Mundi	1	0
MELON, Osmaston Manor Hybrid	2	6
,, Laura's Beauty, (New)	2	6
,, Surprise (New)	2	6
ONION, Williams' Magnum Bonum	1	6
PEA, Williams' Emperor of the Marrows	per quart 2	6
TOMATO, The 100 Days	per packet 1	6

*** *All seeds amounting to 20*s *will be delivered free carriage to any Railway Station in England.*

☞ ILLUSTRATED SEED CATALOGUE gratis and post-free to all applicants.

VICTORIA & PARADISE NURSERIES UPPER HOLLOWAY, LONDON, N.

All the Best Selected

NEW CONTINENTAL ROSES for 1877.
Fine plants of the above now ready.
Descriptive CATALOGUES on application.
WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

LYE'S FAVOURITE.—The handsomest and best Potato ever offered. Indispensable for Exhibition. This variety will be the greatest Prize Winner of the season. We have purchased the entire Stock of Mr. James Lye, Clyffe Hall, Market Lavington, and parties wishing to grow this remarkably handsome and beautiful variety should order at once, as the stock is getting very limited. It can only be obtained direct from us. Price 5*s*. per lb. Orders of 20*s*. and upwards carriage free.
DANIELS BROS., The Royal Seedsmen, Norwich.

Shallot Seed.

DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild ; with ordinary treatment bulbs have been grown 10 and even 12 inches in circumference—by far the best method of growing the Shallot. Treatment same as Onions. Price 1*s*. per packet. May be had of all Seedsmen in sealed packets, and Wholesale of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C., or
B. R. DAVIS, Nursery and Seed Warehouse, Yeovil.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Extra strong plants, 18*s*. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application
RICHARD SMITH, Nurseryman, Worcester.

Cheap Bedding Geraniums.

ALFRED FRYER offers the following good Bedders at per dozen for cash :—Golden Tricolors : Peter Grieve, 12*s*. ; Prince of Wales, 6*s*. ; Lady Cullum, 3*s*. 6*d*. ; Sir Robert Napier, 3*s*. 6*d*. ; Mrs. Pollock, 3*s*. ; Sophia Dumaresque, 3*s*. ; Silver Tricolors : Lass o' Gowrie, 4*s*. 6*d*. ; Queen of Hearts, 4*s*. 6*d*. ; Miss Burdett Coutts, 3*s*. 6*d*. ; Mrs. John Clutton, 3*s*. 6*d*. ; Prince Silverwings, 3*s*. Double flowered : Marie Lemoine, 3*s*. ; or one of each for 5*s*. No charge for packing, if empties are returned at once ; also post-free for 6*d*. per dozen extra. For Priced LISTS apply to
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

AZALEA INDICA, Splendid New.
EMPEREUR DU BRESIL (J. Verschaffelt).—Good plants, 12*s*. each ; strong plants, with buds, 20*s*. each.
TRIOMPHE DES DOUBLES BLANCH (J. Verschaffelt). —Good Plants, 12*s*. each ; larger size, no more to hand.
Four for three to the Trade
For full description *vide* CATALOGUE No. 19, sent free on application.
N.B.—A few fine plants, well set with buds, of the beautiful AZALEA, IMPERATRICE CHARLOTTE, are still disposable, at 5*s*. each, or six plants for 25*s*.
JEAN VERCHAFFELT'S Nurseries, Ledeberg, Ghent, Belgium.

New Bedding Tropæolum, "Hunteri."

DOWNIE AND LAIRD have much pleasure in offering for Spring delivery the above Tropæolum, which has been raised by Mr. Andrew Hunter, gardener to Lord Shand, New Hailes House, near Edinburgh. This is an excellent Bedding Tropæolum, surpassing its parent Cooperi, being of a dwarfer habit, and we can with perfect confidence recommend it. The Editors of the *Gardeners' Chronicle* say, "It grows about 6 inches high, is very neat and compact in habit, and a most profuse bloomer, the flowers being of medium size, nice form, and of a bright scarlet colour." Price, per dozen plants, 12*s*. ; each, 1*s*. 6*s*. Usual discount to the Trade.
West Coates Nursery, Edinburgh.

HARDY HEATHS, 100,000 :—
12 plants in 12 varieties, 6*s*.
24 plants in 24 varieties, 12*s*.
50 plants in 25 varieties, £1.
100 plants in 40 varieties, £2.
For varieties see CATALOGUE.
ANDROMEDAS, various.
LEDUMS, various.
JAMES SMITH, Darley Dale Nurseries, Matlock.

VINES, VINES, VINES.
Strong planting Canes of the following sorts :—

Black Alicante.	Muscat Hamburgh.
Bowood Muscat.	Mrs. Pince.
Golden Champion.	West's St. Peter's.

Price 3*s*. each.
W. G. CALDWELL AND SONS, The Nurseries, Knutsford, Cheshire.

FIFTY THOUSAND MAGNIFICENT DWARF ROSES, in POTS.
ROSES for BEDDING, at 12*s* to 18*s*. per dozen, 100*s* per 100.
TEA-SCENTED ROSES, superb, established in 6-in. pots, adapted for greenhouse or conservatory, 30*s* per dozen, 200*s*. per 100 Descriptive CATALOGUES on application.
WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

SAMUEL SHEPPERSON, FLORIST and SEEDSMAN, Prospect House, Belper, offer the following :—
PANSIES, PENTSTEMONS, ANTIRRHINUMS and PHLOX, the newest and very finest varieties out, 1*s* per dozen, post-free, with Descriptive List all correctly named.
POLYANTHUS, fancy, in flower, for immediate effect, 7*s*. per 100, 6*s* per 1000 ; sample, 12 sorts, 1*s*. 3*d*., post-free.
BEDDING PANSIES and VIOLAS, finest sorts, blue, white and yellow, 12*s*. per 100 ; sample dozen, in 6 sorts, 2*s*., post-free.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden.—"Gee's superior Bedfordshire-grown Plants and Seeds have attained much celebrity."—*Vide Bedford Mercury*, July 29, 1876. "The soils of the district offer facilities enjoyed at few places for bringing away plants, &c., and under the skill and perseverance of Mr F. Gee they are turned to good account."—*Vide Agricultural Gazette*, July 31, 1876 See other opinions of the Press, also a Treatise on the Cabbage CATALOGUES, lowest prices, &c., on application to FREDERICK GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

NOVELTIES FOR 1877.

JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THEY ARE NOW SENDING OUT

THE UNDERMENTIONED SPLENDID NOVELTIES.

ADIANTUM LUDDEMANNIANUM.

A remarkable novelty, quite unlike any other Maidenhair Fern in cultivation, obtained by us from M. Luddemann, of Paris, who was the raiser.

The peculiarity which distinguishes this Adiantum from all others consists in the pinnules being crested or agglomerated at the extremities of the stipes and their rachides; they are also much crisped and curled.

The other leading characters are—rhizome not creeping; fronds erect, from 8 to 12 inches high, stipes slender, smooth, at first deep crimson, changing to ebony-black when mature, branched either near the base or higher up, pinnules on short petioles, generally fan-shaped, and deep green in colour.

It thrives well in a warm greenhouse, where it will prove one of the most attractive as well as one of the most distinct of Ferns.

It received a First-class Certificate from the Royal Horticultural Society, August 18, 1875, and a Certificate of Merit from the Royal Botanic Society, May 29, 1876.

Price 15*s. each.*

ADIANTUM PALMATUM.

A Maidenhair Fern, one of the most beautiful and attractive of the tribe, found at a high elevation on Chimborazo, South America. From the following description given by Mr. Moore in the *Gardeners' Chronicle* of January 13, 1877, page 41, where it is also figured, it will be seen that it is quite distinct:—

"The rhizome is creeping, and the fronds are of an indefinitely elongated form. A very noticeable feature in the plant is the flexuose or zigzag character of the rachides, most marked near the apex of the fronds, and in the rachides of the primary pinnæ. The pinnules are herbaceous in texture, smooth, large, from 1 to 1¼ inches in breadth, distant and very distinctly stalked; the terminal ones are mostly wedge-shaped, while the lateral ones are usually truncate at the base, so as to become semicircular in outline; they are deeply cut down into from three to five large lobes, which are again more or less parted, an oblong sorus terminating each of the divisions in the fertile portions. The fronds are deciduous."

This elegant Fern should be cultivated in an intermediate or warm house, where it attains a considerable size.

It received a Certificate of Merit, under the name of Adiantum digitatum, from the Royal Botanic Society, March 29, and a First-class Certificate, under the same name, from the Royal Horticultural Society, April 5, 1876. *Price* 21*s. each.*

BEGONIA EMPEROR.

A magnificent hybrid of the tuberous-rooted section, of vigorous habit, and free-flowering; raised by our foreman, Mr. Seden, at our Chelsea Nurseries.

The flowers are large and of a brilliant orange-scarlet, with the petals distinctly veined, and in clusters of from three to seven, according to the age and strength of the plant; the pedicels being of the same brilliant colour as the corolla.

It is figured in the *Florist and Pomologist* for 1875, at p. 265, where it is mentioned by Mr. Moore as being "one of the finest of the tuberous-rooted Begonias, and is most highly to be commended as a decorative plant."

It is also figured in the *Floral Magazine* for January, 1876, and described "as not only likely to prove a gorgeous ornament to the greenhouse, but also suitable for the summer flower bed."

It received the award of a First-class Certificate from the Royal Horticultural Society, and a Certificate of Merit from the Royal Botanic Society, June 16, 1875.

Price 10*s.* 6*d. each.*

CROTON EARL OF DERBY.

A splendid novelty, with leaves of the C. Disraeli form, very highly coloured, and quite distinct from every other Croton of its class. It was received from A. H. C. Macafee, Esq., of Sydney, N.S.W.

The stem during its earlier growth is of a remarkably bright yellow, the petioles and midribs of the three-lobed leaves springing from it are of the same rich colour, which also spreads over the greater part of the lamina or blades, the extremity of each lobe being green. As the plant increases in age the colour deepens, and finally becomes suffused with red.

Thus the *ensemble* of the plant presents a centre of bright yellow of almost golden hue, with the later growth of a little lighter shade, and the older growth changing to red, relieved by the cheerful green tint of the extremities of the leaves.

The habit of the plant is erect; the foliage is of even growth, and gives a symmetrical outline to the whole.

We confidently recommend this Croton for decorative and for exhibition purposes as one of the best yet offered.

It received a First-class Certificate from the Royal Horticultural Society, March 21 of the present year, and a Certificate of Merit from the Royal Botanic Society on the same day.

Price 63*s. each.*

CROTON NOBILIS.

A beautiful variety, with long pendulous lanceolate leaves, richly coloured with many tints.

The colours are crimson, yellow, and green in many shades, the crimson being predominant in the stem, the foot-stalks of the leaves, and in many of the midribs, where it is bordered by bands of deep golden-yellow. In the latest growth the prevailing colour is light sulphur-yellow, while the green portion of the plant, at first a bright glossy hue, subsides by age to the deepest olive-green.

The gracefully-weeping habit of the plant, together with its showy colours, cannot fail to secure for it a large share of favour. It is altogether a noble Croton, which we consider a decided improvement on C. majesticus, and worthy of a place in every collection.

Price 21*s. each.*

CROTON MACARTHURI.

We have dedicated this fine and distinct new Croton to Sir William Macarthur, the eminent amateur horticulturist of Camden Park, near Sydney, from whom we received it. It presents indefinite diversity in the form and markings of the leaves.

The leaves are of many forms, and the varieties of them numerous and remarkable; some are dilated at the base and much narrowed at the opposite end; many have the midrib and blade twisted like a spiral, in others the edges are undulated, in others again the extremities are incurved, while there are others in which two or more of these peculiarities are present.

The colour is more constant, but the markings on the different leaves are as varied as the forms assumed by the leaves themselves. The great charm and recommendation of the plant are its excellent habit, and its pleasing and very striking variegation, fully one half of which is yellow. The midribs are yellow, and the bright green ground of the blades are spotted, blotched, flaked, and barred in infinite variety.

A First-class Certificate was awarded to this Croton by the Royal Horticultural Society, March 21 of the present year. *Price* 21*s. each.*

CROTON TORTILIS.

A remarkably interesting variety with twisted foliage, very ornamental and distinct.

The midrib of each leaf grows in a spiral from the base to the point, the extent of the spiral twist varying in the different leaves from a slight deviation from the plain form to more than one complete turn.

The ground colour of the foliage is a deep olive-green; the midribs of the mature leaves are bright crimson, bordered on each side with a line of deep yellow; the blades are blotched and spotted with yellow. Owing to its varied colours and large foliage it is superior to C. spiralis.

Price 10*s.* 6*d. each.*

CROTON VARIABILIS.

A robust variety, sent to us by A. H. C. Macafee, Esq., of Sydney, N.S.W. It has long leaves, marbled and blotched with different shades of yellow, orange, and crimson.

The leaves, both in colour and shape, are very variable; some are straight, others are recurved, falcate, or often distorted, their surface either smooth or undulated. Some of the shades of colour are peculiar to this variety, and are seen in every tint, from deep orange-red to light sulphur-yellow.

It is quite unlike any other Croton in cultivation.

Price 21*s. each.*

DENNSTÆDTIA DAVALLIOIDES YOUNGI.

For this splendid Fern we are indebted to the kindness of J. R. Young, Esq., of Sydney, N.S.W., with whose name it is associated. It is a native of the New Hebrides, of very robust habit and vigorous growth.

The rhizome is creeping; the fronds are of noble proportions, attaining a length of 10 feet and upwards, and have stout erect or sub-erect stipes, quite smooth, rounded on one side, and flattened on the opposite or upper side, with a furrow running along the entire length; the leafy portion of the frond is arching, bi- and tripinnate, broadly lanceolate and acuminate; the pinnæ are sessile or sub-sessile, spreading; the rachides furrowed on the upper side like the stipe; the pinnules are finely cut, and of a light cheerful green; the aspect of the whole frond is very airy and graceful.

It is a grand Fern for a warm conservatory. For a central subject in grouping, where bold and spreading foliage is required, it will be found a great acquisition to our decorative resources, and, as an exhibition Fern, it will be invaluable.

Price 10*s. 6d. and* 21*s. each.*

DRACÆNA MACARTHURI.

A Dracæna of very dwarf compact growth and bright coloured foliage, sent to us by Sir William Macarthur, after whom it is named.

The leaves, including their petioles, scarcely reach a foot in length, with a breadth of 3 inches; they are very elegant both in form and colouring, the latter being especially brilliant and attractive, rendering this variety one of the most distinct in cultivation.

In many leaves almost the entire upper surface is coloured with a vivid rosy carmine, interrupted by a few lines of deep olive-green; in others the bright colouring is confined to the margins; they are slightly undulated. It is a distinct variety, which we can confidently recommend for the many useful purposes to which this numerous family of plants is applied.

Price 10*s. 6d. each.*

DRACÆNA ROSEO-PICTA.

A plant of robust habit and bold aspect.

The leaves are sub-erect or slightly spreading, from 18 to 20 inches long including the footstalk, with a width of 4 inches. They are beautifully coloured with a delicate rose tint, which deepens by age to a bright carmine, finely contrasting with the ground-colour, which is a deep olive-green. It appears to have a very hardy constitution, which enhances its value as a fine decorative plant. It is also useful for exhibition.

Price 10*s. 6d. each.*

DRACÆNA SPECIOSA.

This variety certainly rivals, if it is not superior to the well-known D. amabilis, and is of spreading habit, free growth, and showy appearance.

The leaves are broadly striped or margined with a yellowish creamy white, stained and edged with light rosy pink; the ground-colour is a rather light but pleasing olive-green; it is, therefore, a tricoloured plant, distinct and attractive.

It is a fine exhibition plant, and most useful for decorative purposes generally.

Price 21*s. each.*

HABROTHAMNUS NEWELLI.

A seedling of great merit, raised by Mr. Newell, of Ryston Hall Gardens, Downham Market. It is a robust growing plant, with neat, smooth foliage, very free flowering, even in its young state, bearing dense terminal clusters of bright crimson flowers larger and more brilliant than those of the well-known H. elegans or H. fascicularis, whose habit it much resembles. As an ornamental conservatory and greenhouse climber it will be found one of the most useful of subjects.

It received a Certificate of Merit from the Royal Botanic Society, May 24, and a First-class Certificate from the Royal Horticultural Society, June 7, 1876.

Price 7*s. 6d. each.*

HYMENANTHERA CRASSIFOLIA.

A beautiful hardy evergreen shrub, a native of New Zealand, very distinct in all its leading characteristics.

It is described by Dr. Masters in the *Gardeners' Chronicle* for 1875, p. 237 (Feb. 20), as "a striking shrub." He adds, "the shrub is erect or partially procumbent, with stiff cylindrical branches ramifying at acute angles, and covered with an ash-coloured wrinkled coat, thinly beset with whitish strigose hairs. The leaves are alternate or tufted, small, leathery, with a few minute whitish scales on both sides, rounded or slightly emarginate at the apex, tapering at the base into a very short stalk."

The flowers are small and inconspicuous, but they are succeeded by pure white berries, which render the plant particularly attractive and ornamental during the autumn months; it then affords a fine contrast with the Cotoneasters and other berry-bearing shrubs.¶

Dr. Master further adds:—"It is a welcome addition to our lists of hardy shrubs, among which its habit, neat foliage, and white berries give it a distinctive character. Botanically, it is interesting as a shrubby violaceous plant, having in superficial glance nothing of the Violet about it. The structure of the flower and seed is, however, quite that of the Violet."

Price 7*s. 6d. each.*

VEITCH & SONS' NOVELTIES FOR 1877—(*Continued*).

PANAX LACINIATUS.

An Araliaceous shrub from the South Sea Islands, sent to us by A. H. C. Macafee, Esq., of Sydney, N.S.W. It is a foliage plant of great merit, and possesses very attractive features in the form and colour of its leaves, which are much subdivided in the most elegant manner, the ultimate segments being filiform and Fern-like, and of an unlimited variety of shapes, all irregularly serrate, the teeth being terminated by a short white bristle.

The soft light green tint of the beautifully-cut foliage is strikingly distinct and attractive. It will prove a valuable addition to our plants used for the decoration of the dinner-table.

It received a Certificate of Merit from the Royal Botanic Society, March 21 of the present year.

Price 10*s.* 6*d. each.*

PHYLLANTHUS ROSEO-PICTUM.

An Euphorbiaceous shrubby plant of free growth and good habit, with beautifully variegated foliage, and of such easy culture as to be especially valuable for decorative purposes.

The variegation is exceedingly rich and varied, both in colour and form, no two coloured leaves showing precisely the same markings with like tints. Many of the leaves are bright crimson, which is also the colour of the stems during the early stage of growth; some are a light cream colour, tinged with a delicate blush, others, again, have a dark bronzy hue, shaded with crimson; some are dark green, with blotches and spots of rose, while others are tricoloured, white, with different shades of rose and green.

The blending and intermixture of these pleasing tints render this plant very ornamental and distinct; it will be found invaluable for cutting sprigs for bouquets. It grows well in an intermediate stove or warm greenhouse.

"This slender growing, gracefully branching shrub well deserves culture, being one of the most elegant of new fine-foliaged plants."—*The Garden*, vol. x., p. 261.

It received a First-class Certificate from the Royal Horticultural Society, April 19, and a Certificate of Merit from the Royal Botanic Society, May 24, 1876.

Price 10*s.* 6*d. and* 21*s. each.*

PLATYCERIUM WILLINCKII.

We reproduce, in an abbreviated form, from the *Gardeners' Chronicle* of March 6, 1875, Mr. Moore's description of this new Fern :—

"This fine and very distinct species of Stag's-horn Fern is a native of Java, whence it was introduced by M. Willinck, of Amsterdam.

"Like its congeners it is epiphytal, and protects its rootstalk by the broad roundish imbricating bases of its sterile fronds, which in good specimens are 6 inches across. The sterile fronds are erect and slightly spreading, the fertile ones, which are produced in threes, fall straight down to a length of 2½ feet, are quite narrow in all their parts, and forked. The fronds appear to be less coriaceous than those of the other species known in gardens.

"As a species this plant is thoroughly distinct from any of those at present known. With regard to its general habit, it groups with P. grande, P. Willichii, and P. biforme, in having long pendent fertile fronds cut into many narrow furcate divisions, and very broad erect sessile barren fronds, with a lobate margin; but it differs entirely in its fructification. This novelty will prove a welcome addition to the few well-marked and very ornamental species of Stag's-horn Fern already familiar in our hothouses."

It received a Certificate of Merit from the Royal Botanic Society, June 16, 1875, and a First-class Certificate from the Royal Horticultural Society on August 4 following.

Price 10*s.* 6*d. and* 21*s. each.*

RHODODENDRON DUCHESS OF EDINBURGH.

We have much pleasure in offering this season the first Rhododendrons of a splendid progeny of hybrids raised by our foreman Mr. Taylor, and obtained by the intercrossing of R. javanicum, R. Lobbi, R. Brookii, and R. Princess Royal, and in which the gorgeous and pleasing colours of these kinds are blended into a great variety of brilliant and distinct tints.

These hybrids are of far better habit than the parents, and far more floriferous; they produce their magnificent trusses of bloom while the plant is still young, and as they increase in age and strength yield splendid masses of colour; there is scarcely any season of the year in which there is not more or less bloom.

They require the same temperature as R. Princess Royal, and are very suitable for a warm conservatory or greenhouse, where their brilliant flowers will be found an invaluable addition to the decorative resources.

Rhododendron Duchess of Edinburgh has brilliant scarlet flowers with a perceptible shading of crimson; the flowers are of great substance, and the colouring uniform throughout.

It is figured in the *Floral Magazine* for 1874, and was awarded a First-class Certificate by the Royal Horticultural Society in March of the same year.

Price 42*s. and* 84*s. each.*

RHODODENDRON TAYLORI.

We have named this variety after our foreman, Mr. Taylor, "to whose skill as a hybridist no better testimony is needed than this lovely race of greenhouse Rhododendrons" (*Floral Magazine*, January, 1877, in which this beautiful kind is figured).

Rhododendron Taylori has pink flowers of a particularly rich and brilliant hue; the tube of the corolla is white both in the interior and on the exterior; the form is perfect and the texture firm.

This variety is one of the most robust of the group, of excellent habit and very free flowering.

A First-class Certificate was awarded to it by the Royal Horticultural Society, March 7 of the present year.

Price 42*s. and* 84*s. each.*

SARRACENIA MOOREANA.

A hybrid plant of no ordinary interest, and exhibited for the first time at the International Exhibition held at Florence in May, 1874, by Dr. Moore, the Director of the Botanic Garden at Glasnevin, by whom it was raised.

In a paper read before the Congress held during the Exhibition, Dr. Moore thus referred to this hybrid :—"It is supposed to be the first hybrid Sarracenia which has ever yet flowered. It is the offspring of S. flava fertilised with pollen of S. Drummondi. The plant is as nearly intermediate with these two noble species of this curious genus as it well can be; and no hybrid which has hitherto come under my notice proves more decidedly the marked influence of the polleh of one plant applied to the stigma of another than this does. It makes its winter growth of pitchers similarly as S. Drummondi, and they are nearly as well marked with purple and white colours, but they decay much sooner in spring, and in this way they resemble those of the female parent, S. flava.

Price 105*s. each.*

A NEW ILLUSTRATED DESCRIPTIVE CATALOGUE will be forwarded free on application.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, LONDON, S.W.

SPECIAL NOTICE.

APRIL and MAY the best Season for Transplanting HOLLIES.

WM. CUTBUSH & SON

POSSESS MANY THOUSANDS OF

VARIEGATED AND OTHER CHOICE HOLLIES,

varying from 2 to 6 feet, bushy, all transplanted in 1874, and will move with splendid roots.

An Inspection invited, or Prices, &c., sent on application.

EXTRA STRONG IRISH and OTHER IVIES.

WM. CUTBUSH & SON have a very large Stock of IVIES in Pots, which they are offering at low prices, which can be had on application—specially low to the Trade.

HIGHGATE NURSERIES, N., OR BARNET, HERTS.

IMPORTED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 16, at half-past 12 o'Clock precisely, a large importation of some hundreds of plants of CYMBIDIUM EBURNEUM, just arrived in splendid condition, several of the plants with flowers on them that have expanded in the cases while in transit; many of the plants are large and fine masses, with from six, eight, ten, to twelve growths each. At the same time will be sold immense quantities of many other choice ORCHIDS, such as VANDA STRIATA, CYMBIDIUM GIGANTEUM, VANDA CŒRULEA, V. CATHCARTI; some hundreds of good plants of AERIDES FIELDINGII (FOXBRUSH), DENDROBIUM FORMOSUM, D. NOBILE WALLICHII, hundreds of plants of the rare CŒLOGYNE BARBATA, various PLEIONES, and some good plants, just imported, of ONCIDIUM VARICOSUM varieties, O. ROGERSII type, and some healthy plants of ODONTOGLOSSUM VEXILLARIUM.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

AVENUE TREES.

PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 8 inches at 4 feet from the ground.

LIMES, 12 to 20 feet high, and girthing 6 to 10 inches at 4 feet from the ground.

POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 6 inches at 4 feet from the ground.

ANTHONY WATERER

Has to offer many thousands of the above. They may be seen growing at Knap Hill. They are straight, handsome, and well rooted, and altogether the finest Trees of the kind to be found in any nursery in Europe.

KNAP HILL NURSERY, WOKING, SURREY.

RICHARD SMITH WORCESTER

RICHARD SMITH'S LIST of Evergreen and Deciduous Shrubs, Rhododendrons, Standard Ornamental Trees, Climbing and Twining Plants, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and General Remarks.

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Offer the following in Seed, of quality the best that can be had, at per packet :—

CALCEOLARIA—the variety of colours, size, and shape of the flowers is the result of many years' continual improvement : *2s. 6d.* and *5s.*

CINERARIA—the shape and brilliancy of colour in these flowers is of great importance : *2s. 6d.* and *5s.*

,, double-flowered, *2s. 6d.* and *5s.*

PRIMULA SINENSIS, crimson, scarlet, and white (better cannot be had), separate or mixed, *2s. 6d.* and *5s.*

,, double-flowered, true from seed, *2s. 6d.* and *5s.*

CYCLAMEN PERSICUM GRANDIFLORUM—brilliant colours, with large-size petals and perfumed flowers, is the quality here offered ; *1s.* and *2s. 6d.*

BEGONIA, tuberous-rooted (our collection is unequalled), *1s.* and *2s. 6d.*

,, tuberous-rooted, double-flowered, mixed colours, *2s. 6d.*

BALSAM—we trust to none but our own saving—mixed, *1s.* ; nine colours, *2s. 6d.*

PINK, from named collection, *1s.* and *2s. 6d.*

CARNATION, mixed, *2s. 6d.* See Catalogue for separate sections.

MIMULUS, superb strain, same as exhibited every year at the Royal Horticultural Society, *1s. 6d.*

LOBELIA, Brilliant Improved, White Brilliant, Mazarine Gem, speciosa—from pot plants, pumila grandiflora, Lustre Improved, Defiance—the best red, Bluestone, and Magnifica, *1s.* each.

PANSY, English, show flowers, *1s. 6d.*

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PETUNIAS, very beautiful, saved in pots, in separate sections at their Wellington Road Nursery, *1s.*

,, double flowered, *1s.* and *2s. 6d.*

SWEET WILLIAM, extra fine, *1s.*

,, in named flowers, *1s.* and *2s. 6d.* [each.

STOCK, East Lothian, scarlet, white, and purple, *6d.* and *1s.*

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AURICULA, extra choice alpine varieties, *2s. 6d.*

SOLANUM, Improved Hybrid, as grown for the London Markets, *1s.*

,, HENDERSONI, conical-shaped berries, *1s.*

GLOXINIA, drooping and erect, *1s. 6d.* each ; mixed, *2s. 6d.*

HOLLYHOCK, from named collection, *1s.* and *2s. 6d.*

PRIMROSE, POLYANTHUS, and OXLIP, best quality, mixed colours of each, *1s.*

WALLFLOWER, double German, mixed colours, *6d.* and *1s.*

NOVELTIES in FLOWER SEEDS.

ALONSOA ABBIFLORA.—New distinct species from Mexico, introduced by Mr. Roezl, the distinguished collector. Grows freely, from 12 inches up to 2 feet in height, producing long terminal spikes of pure white flowers with yellow eye. It is recommended for pot-culture, as in the conservatory it will produce a succession of its flowers throughout the autumn and winter when most acceptable for bouquets and table-decoration. It will be found a desirable and useful substitute for Lily of the Valley, as used in our bouquets with so charming an effect when arranged so as to overtop the other flowers by 1 or 2 inches. *1s.*

BROWALLIA ROEZLI, *1s.* COBŒA HIRSUTA, *2s. 6d.*

HUMEA ELEGANS ALBA, *1s.* AGERATUM SNOWFLAKE, *1s.*

MIMULUS BRILLIANTISSIMA, scarlet self, *1s.*

MENTZELIA ORNATA, fine plant (see description in Catalogue), *1s.*

TROPÆOLUM FOURNIERI, new annual form of this beautiful combination of colouring, *1s.*

ERYNGIUM LEAVENWORTHII, ornamental plant, *1s.*

PYRETHRUM ROSEUM ACUTIATUM, fringed-leaved Golden Feather, *1s.*

ASTER, Firelight, most beautiful and brilliant new quilled variety, *1s.*

SAXIFRAGA NEPALENSIS, fine ornamental species for pot culture, *1s.*

PAPAVER UMBROSA, showy flowers, *1s.*

LIATRIS PYCNOSTACHYA, *1s.*

CANTERBURY BELLS, double frilled flowers, beautiful variety of colours, *1s.*

CUPHEA ROEZLI, *1s.* BAMBUSA GRACILIS, *1s.*

PINE-APPLE NURSERY, MAIDA VALE, LONDON, W.

GODETIA, LADY ALBEMARLE.

First-class Certificate Royal Horticultural Society, August 2, 1876.



A magnificent new variety, growing 1 foot high. Flowers 3½ to 4 inches across, and of the most intense glowing carmine-crimson colour, which, being produced in wonderful profusion give the plants the most charming appearance. This is the finest annual ever sent out, and being extremely hardy and easy of cultivation, should be in every garden.

Seed, with full cultural directions, per packet, *1s. 6d.* ; post-free.

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May be had of all Seedsmen, and Wholesale and Retail of

DANIELS BROS.,

THE ROYAL NORFOLK SEED ESTABLISHMENT, Norwich.

Presented (by post) on application,

NEW CATALOGUE for 1877.

MESSRS. CLIBRAN AND SON will have great pleasure in sending their PRICED DESCRIPTIVE LIST for this Spring, free by post on application. Their stock of Florist Flowers, Bedding and Softwooded Plants generally, are surpassed by few, if any, either in extent or quality, all the newest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to Purchasers is that none of the plants offered are taken directly from a warm propagating house and sent off, but are all carefully hardened and most of them potted off singly, and are thereby fitted to travel either by rail or post without the slightest injury. A great proportion are autumn-struck plants, and of the undermentioned can be had by post :—

Abutilons, in variety, *3s. 6d.* per dozen.

Achimenes, in variety, *3s* per dozen.

Ageratums, in variety, *8s.* per 100, *2s.* per dozen.

Begonias, tuberous, *2s. 6d.* and *9s.* per dozen.

,, tuberous, *4s.* per doz.

Caladiums, *12s.* per dozen.

Calceolarias, Golden Gem, &c , *6s.* per dozen.

Camellias, *30s.* and *42s.* per dozen.

Carnations and Picotees, 12 plants, *6s.* ; 12 pairs, *10s. 6d.*

Carnations, tree, in variety, *9s.* per dozen.

Centaurea ragusina, *3s.* per dozen.

Chrysanthemums, near 10,000 now ready, *20s.* per 100, *3s.* per dozen.

Cinerarias, *40s.* per 100, *6s.* per dozen.

,, to name, *9s.* per dozen.

Clematis, in variety, *60s.* per 100, *7s.* per dozen.

Coleus, in variety, *20s.* per 100, *3s.* per dozen.

Cyclamens, in variety, *6s.* and *9s.* per dozen.

Dacrydium elegantissima, *5s.* per 100, *1s.* per dozen.

Dahlias, *25s.* per 100, *4s.* per dozen.

Delphiniums, splendid sorts, *9s.* to *12s.* per dozen.

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Gardenia florida, *6s.* to *12s.* per dozen.

Greenhouse Plants, *9s.* to *18s.* per dozen.

Geranium, Tricolor, *3s. 6d.* per dozen.

,, Bicolor, *20s.* per 100, *3s.* per dozen.

,, Silver-edged, *3s. 6d.* per dozen.

,, Double, *20s* per 100, *3s.* per dozen.

,, Zonals, for bedding, *15s.* per 100, *3s.* per dozen.

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,, splendid seedlings, *20s* per 100, *3s.* per dozen.

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Herbaceous Plants, *20s.* per 100, *3s.* per dozen.

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Iresine Lindeni, *12s.* per 100, *2s.* per dozen.

Iris, German, *3s.* per dozen.

Ivies, in variety, *6s.* per dozen.

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Lantanas, *3s.* per dozen.

Lobelias, *8s.* per 100, *2s.* per dozen.

Mesembryanthemum cordifolium fol. var., *10s.* per 100, *2s.* per dozen.

Mimulus, in variety, *3s.* per dozen.

Myosotis, *6s.* per 100, *1s.* per dozen.

Pæonies, white, blush, crimson, and other splendid shades, *6s.* to *9s.* per doz.

Pansies, Show, *25s.* per 100, *4s.* per dozen.

,, bedding (about 20,000 to select from), *12s.* per 100, *2s.* per dozen.

Pentstemons, *25s.* per 100, *3s. 6d.* per dozen.

Phloxes, *25s.* per 100, *3s. 6d.* per dozen.

Pelargoniums, Show, Fancy, and French, *6s.* to *9s.* per dozen.

Pinks, *25s.* per 100, *4s.* per doz.

Potentillas, double, *9s.* per doz.

Polyanthus seedlings, *5s.* per 100, *1s.* per dozen.

,, to name, *1s. 6d.* each.

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,, old double velvet, *1s. 6d.* each.

,, single assorted colours, *2s.* per dozen.

Pyrethrums, double, *6s.* to *9s.* per dozen.

Roses, H P., from ground, *6s.* to *9s.* per dozen.

,, in pots, established, *12s* per dozen.

Rock Plants, *15s.* per 100, *3s.* per dozen.

Salvias, in variety, *3s.* per doz.

Saxifragas, in variety, *3s.* per dozen.

Sedums, in variety, *3s.* per doz.

,, acre aurea, elegans, glaucum, &c., *8s.* per 100, *2s.* per dozen.

Stove Plants, *9s.* to *18s.* per dozen.

Succulents, *4s.* to *6s.* per dozen

Tropæolums, *3s.* per dozen.

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Violas (an immense stock of all the best sort), *8s* to *12s* per 100, *2s.* per dozen.

Vines, all the leading kinds for planting and fruiting, *3s.* to *60s.* per dozen.

Strawberry runners : our collection contains sixty-five sorts : *2s. 6d.* per 100.

Apples, Pears, Plums, and Cherries, pyramids, *12s.* to *36s.* per dozen ; dwarf trained, *24s.* to *30s.* per doz.

The Oldfield Nurseries, Altrincham.



RHODODENDRON PONTICUM, 500,000,

all twice or thrice transplanted, bushy plants :—
4 to 6 inches, 12s. per 100, £4 per 1000.
6 to 9 inches, 15s. per 100, £5 per 1000.
9 to 12 inches, 25s. per 100, £7 per 2000.
12 to 15 inches, 18s. per 100, £9 per 1000.
15 to 18 inches, 20s. per 100, £10 per 1000.

RHODODENDRON HYBRIDUM, 300,000, bushy plants:—
4 to 6 inches, 15s. per 100, £7 per 1000.
6 to 9 inches, 18s. per 100, £9 per 1000.
9 to 12 inches, 25s. per 100, £11 per 1000.
12 to 15 inches, 27s. 6d. per 100, £13 per 1000.
15 to 18 inches 30s. per 100, £14 per 1000.
18 to 24 inches, 35s. per 100, £16 per 1000.
See CATALOGUE.

JAMES SMITH, Darley Dale Nurseries, near Matlock.

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18s. to 30s. per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or £5 per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded £5 to £7 10s. per 100, or 18s. per dozen.

ANTHONY WATERER,

KNAP HILL NURSERY, WOKING, SURREY.

Vines.



E. G. HENDERSON AND SON offer splendid Fruiting Canes of all leading kinds. Planting Canes, 3s. 6d., 5s., and 7s. 6d. each ; Gros Colman Queen, Vena's Black Muscat, and Waltham Cross, 42s. and 60s. per dozen. Trade supplied.

Pine-apple Nursery, Maida Vale, W.

THREE BUNCHES OF GRAPES, 3 stones 3 lb. 6 oz. !

GROS GUILLAUME,

ROBERTS' VARIETY.

This extraordinary variety is the largest bunch-producing Black Grape in the world.

Three bunches from one Vine weighed 3 st. 3 lb. 6 oz. They were exhibited in Dublin last November, and in addition to First Prize were awarded a SPECIAL MEDAL. This variety is quite distinct from the ordinary varieties bearing its name, or that of Barbarossa. It is a good grower, and has a good constitution ; never shanks or scalds.

A few Eyes or Scions of this remarkable Grape still to be had.

Price, strongest, 10s. 6d. each ; second size, 7s. 6d. each.

W. TAIT & CO.,

SEED and NURSERY ESTABLISHMENT, 45, CAPEL STREET, DUBLIN.

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ESTABLISHED 1785.

SPECIALITIES.

ROSES, FRUIT TREES, CONIFERS.

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WM. PAUL & SON,



(Successors to the late A. Paul & Son, Established 1806.)

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TREE, PLANT, BULB, AND SEED MERCHANTS,

WALTHAM CROSS,

HERTS,

Adjoining the "Waltham" Station, Great Eastern Railway.

Inspection of Stock invited.

Priced Descriptive Catalogues free by post.

SPRING PLANTING.

SPECIAL OFFER.

AUCUBA JAPONICA, 9 to 12 inches, *12s. 6d.* per 100.
" " 2-yr. seedlings, 50*s.* per 1000.
" " seedlings, transplanted, 9 to 12 inches, *21s.* per 100; 12 to 18 inches, 30*s.* per 100.
" " " extra fine, 18 to 24 inches, 84*s.* per 100.
" " male plants, showing bloom, 50*s.* to 100*s.* per 100.
" " " larger, in variety, *12s.* to 30*s.* per dozen.
" " *YOUNGII (mas. and form.), strong plants, in pots, £10 per 100, 30*s.* per dozen.

* Awarded a first-Class Certificate Royal Horticultural Society, for its robust habit and large richly coloured berries.

ARBOR-VITÆ (American), transplanted Spring, 1875, 2 to 3 feet, 12*s.* 6*d.* per 100; 3 to 6 feet, 30*s.* to 42*s.* per 100.

ALTHÆA FRUTEX, bushy, 1½ foot, 25*s.* per 100.

ARALIA SIEBOLDII, single pots, 12 to 15 inches, *21s.* per 100.

BOX, gold-edged, silver variegated and Handsworth, 1½ to 2 feet, 10*s.* 6*d.* per 100; 2 to 3 feet, 21*s.* per 100.

BIRCH, YOUNG'S NEW WEEPING, 4 to 5 feet stems and pyramid heads, £7 10*s.* per 100.

DIMORPHANTHUS MANDSCHURICUS, 1 to 1½ foot, 21*s.* per 100; 2 to 6 feet, 3*s.* to 9*s.* per dozen.

HOLLIES, Variegated, in variety, on own roots, 9 to 12 inches, 35*s.* per 100; 12 to 15 inches, 30*s.* per 100.

THUJOPSIS DOLABRATA, 12 to 15 inches, 50*s.* per 100.

VERONICA TRAVERSII, good plants, in pots, 25*s.* per 100.

YEWS, English, bushy plants, 1½ to 2 feet, 15*s.* per 100; 2 to 2½ feet, 25*s.* per 100.

" Irish, 1 to 1½ foot, 21*s.* per 100.

ASPARAGUS, strong, 3-yr., 20*s.* per 1000.

MAURICE YOUNG,
MILFORD NURSERIES, near GODALMING, SURREY.

New Azalea.—Azalea amœna Caldwellii.

SENT OUT BY

W. G. CALDWELL AND SONS, The Nurseries, Knutsford, Cheshire. This is a striking improvement of the old and well-known Azalea amœna, obtained by crossing that variety with Azalea Magnifica. The flower is four times the size of the original, of a bright rosy purple colour, very free blooming; especially adapted for forcing (coming in as early as November), and very suitable for buttonhole bouquets.

W. G. CALDWELL AND SONS are now sending out the above (which was originally distributed in August last). Strong Plants, 3*s.* 6*d.* each, 36*s.* per dozen.

TO THE TRADE and Large Buyers.

FUCHSIAS, CHRYSANTHEMUMS, COLEUS, HELIOTROPES, SALVIAS, HELIANTHEMUMS, in all the best sorts, 15*s.* per 100.

PINKS, PENTSTEMONS, PHLOXES, PANSIES, 20*s.* per 100.

PYRETHRUMS, PÆONIES, CARNATIONS, PICOTEES, 35*s.* per 100.

IRESINE, AGERATUMS, LOBELIAS (from cuttings), CALCEOLARIAS, MESEMBERYANTHEMUMS, 5*s.* per 100.

GERANIUMS, Zonal and Nosegay, in great variety, 15*s.* to 20*s.* per 100; Bicolor, 20*s.* per 100.

† WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

To Parties Furnishing New Houses.

H. WALTON begs to intimate to the above that he has for sale an unrivalled collection of FLOWERING and FOLIAGE PLANTS of extra size suitable for immediate effect, which must be cleared out to make room. Also an immense stock of STOVE and GREENHOUSE PLANTS of all the newest and most approved varieties.

H. W.'s CATALOGUE is now ready, and will be forwarded post-free on application to

H. WALTON, Edge End Nurseries, Brierfield, near Burnley, Lancashire. Edge End is distant from Burnley, 3 miles; Accrington, 9 miles; Skipton, 14 miles; Bradford, 30 miles; Manchester, 30 miles; Huddersfield, 30 miles; Leeds, 35 miles; Wakefield, 40 miles.

VERBENAS.—Strong, spring-struck Plants, beautifully clean and free from disease, are now being sent out by S. Bide, at 6*s.* per 100, or in pots, at 8*s.* per 100, consisting of Purple, White, Scarlet, Pink, and many other shades of colour. All true to name.

CALCEOLARIA, Golden Gem and other varieties, good sturdy plants, 8*s.* per 100, 60*s.* per 1000.

HELIOTROPE (light and dark), 6*s.* per 100.

COLEUS VERSCHAFFELTII, 10*s.* per 100.

BEDDING and other GERANIUMS, Plain and Zonal, in good variety, 10*s.* per 100.

MRS. POLLOCK GERANIUMS, established in single pots, 20*s.* per 100.

CRYSTAL PALACE GEM, established in single pots, 15*s.* per 100.

All the above package-free for Cash.

S. BIDE, Alma Nursery, Farnham, Surrey.

COCOA-NUT FIBRE REFUSE, newly made.—Reduced price, 20 bushels, 6*s.* 8*d.*; 100, 20*s.*; or Truck-load, 40*s.* Delivered free to any rail in London.

J. SIMONS AND CO., Fibre Works, Greyhound Yard, 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand testimonials. Bushel bag, 1*s.*, bag included; truck-load, loose, free to any Rail, 35*s.*

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COCOA-NUT FIBRE REFUSE, as supplied to Veitch, Wills, Carter, Bull, Ewing, Laing, Henderson, Daniels, Dickson, &c., 30*s.* per bushel, 100 bushels for 20*s.*; truck, 35*s.*, free to rail, bags included.

M. H. BENTOTE, Nunhead, S.E., near Junction.

BLOOD and BONE MANURE.—Used by upwards of 1000 Farmers, Nurserymen, and Florists. 11*s.* per cwt., 5*s.* per ton. FEAT, SILVER SAND, YELLOW LOAM, per bushel, sack, ton, or truck. SPHAGNUM MOSS from Peat, 8*s.* 6*d.* per sack.

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PEAT.—A few hundred Tons of superior Peat, delivered at the Faraborough Stations on the South-Western or South-Eastern Railway, at 17*s.* per ton.

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Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 4*s.* 6*d.* per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17*s.* per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5*s.* 6*d.* each.

Fresh SPHAGNUM, 10*s.* 6*d.* per sack.

WALKER AND CO., Farnborough Station, Hants.

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6*s.*; per pint, 3*s.* 6*d.* Supplied to Nurserymen and Chemists. Strongly recommended in the *Gardener*, and by many first-class Gardeners.

Prepared by JOHN KILNER, Wortley, near Sheffield.



TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.



WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above; also of his

MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

THE NEW ROSE,

QUEEN OF BEDDERS (NOBLE).

Perhaps the Finest Rose for Bedding ever sent out.

COLOUR OF "CHARLES LEFEBVRE."

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that flowers were cut daily from June to November 20, 1876.

Good Plants will be sent out, in strict rotation, at 10*s.* 6*d.* each,

COMMENCING FIRST WEEK IN MAY.

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MILLER AND JOHNSON
(ESTABLISHED 1859)
Manufacture the highest quality of
ARTIFICIAL MANURES
For ROOT, CORN, and GRASS CROPS.
36, Mark Lane, London, E.C.

FENTON'S Specially Prepared and Guaranteed SHODDY MANURE, for POTATOS, HOPS, VINES, &c. :—
No. 1, concentrated, 22 to 28 per cent. ammonia.
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(Dr. Sibson's analysis.) Free on rail in Yorkshire, bags included. Also
BONE-SCENTED GREY and BLACK SHODDIES,
ROUGH BEDDING SHODDIES, &c.
Sold by all respectable Agricultural Merchants; manufactured by FERRAR FENTON, Dewsbury, Yorkshire.

ODAMS' MANURES,
FOR ALL CROPS.
Manufactured by the NITRO-PHOSPHATE and ODAMS' CHEMICAL MANURE COMPANY (LIMITED), consisting of Tenant-Farmers occupying upwards of 150,000 acres of Land.
Chairman—ROBERT LEEDS, Keswick Old Hall, Norwich.
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Particulars will be forwarded on application to the Secretary, Or may be had of the Local Agents.

GISHURST COMPOUND.—
Used by many of the leading Gardeners since 1859 against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in BOXES, 1*s.*, 2*s.*, and 10*s.* 6*d.* Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

BEST & CHEAPEST INSECTICIDES

Duty Free, under permission of the Hon. Board of Customs.

THE "LONDON" TOBACCO POWDER,
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TOBACCO PAPER, CLOTH and CORD.

Particulars on application,

CORRY & SOPER,
BONDED TOBACCO STORES, SHAD THAMES, LONDON, S.E.
All Proprietary Insecticides and Manures kept in stock.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60*s.* to 100*s.* per 100; superior close-cover, 90*s.* and 95*s.* per 100. Packing Mats at 20*s.*, 30*s.*, and 35*s.* per 100; and all other descriptions of Mats at equally low rates, at

J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

Wholesale Russia Mat Merchants.

MARENDAZ AND FISHER, James Street, Covent Garden, W.C., Importers of RUSSIA MATS, RAFFIA FIBRE, &c. Large stock of TANNED GARDEN NETTING, RABBIT NETTING, TIFFANY, &c., at wholesale prices for a quantity.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post-free on application.

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RUSSIA MATS, for Covering from Frost, from 90*s.* per 100: packing from 20*s.* GUNNY BAGS, from 3*d.* each, delivered free to any Station in London.

SUTHERLAND, SON AND CO., 121, Fenchurch Buildings, Fenchurch Street, London, E.C.

ROLL TOBACCO RAG, for Fumigating Greenhouses, genuine and very strong, strongly recommended, 10*s.* per lb., 4*d.* 4*s.* per cwt. PAPER, 7*s.* per cwt.
ARTHUR JAMES, 40, Hampton Street, Walworth Road, S.E.

WILLIAM S. BURTON,
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TABLE CUTLERY.
The Blades are all of the finest Steel.

	Table.		Dessert.		Carvers, per pair.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
3½-inch ivory handles ....per doz.	14	0	11	6	10	6
3¾ " " ..... "	18	0	14	0	7	0
4 " " to balance "	20	0	15	0	7	0
4¼ " " "	26	0	20	0	8	0
4 " " "	30	0	22	0	8	0
4 " fine "	34	0	24	0	9	6
4 " extra large "	36	0	28	0	10	6
4 " " African .. "	42	0	35	0	13	6
4 " silver ferrules .. "	42	0	35	0	15	0
4 " silvered blades "	48	0	35	0	—	
Do. electro-silvered handles "	23	0	19	0	7	6

WILLIAM S. BURTON,
GENERAL FURNISHING IRONMONGER, by appointment to H.R.H. the Prince of Wales, sends a Catalogue gratis and post-paid. It contains upwards of 850 Illustrations of his unrivalled Stock, with Lists of Prices and Plans of the Thirty Large Show-rooms, at 39, Oxford Street, W.; 1, 1A, 2, 3, and 4, Newman Street; 4, 5, and 6, Perry's Place; and 1, Newman Yard. Manufactories, 84, Newman Street, and Newman Mews, London, W.

BY SPECIAL APPOINTMENT TO HER MAJESTY AND HIS ROYAL HIGHNESS THE PRINCE OF WALES.

JOHN WILLS, F.R.H.S.,

Nurseryman, Florist, and Bouquetist to Her Majesty and the Royal Family,

ROYAL EXOTIC NURSERY and WINTER GARDEN,

ONSLOW CRESCENT, SOUTH KENSINGTON, LONDON, S.W.

The most extensive Floral Decorations in London for many years have been arranged under J. W.'s personal superintendence.

J. W. is extensively engaged in the Arranging and Planting of Conservatories, the Construction of Waterfalls, Rockeries, &c., in all parts of this country and on the Continent, and may be consulted in any part of the world. References are kindly permitted to many large and important Works already carried out. A large Staff of most reliable Workmen are kept.

Choice Cut Flowers, &c., carefully packed and sent to any part of the country on the shortest notice.

NURSERIES FOR ORCHIDS, NEW PLANTS, &c., FULHAM, S.W.,
AND ANERLEY, NEAR THE CRYSTAL PALACE.

WILLS' NEW HYBRID DRACÆNAS.

The following Six splendid Novelties will be ready for sending out on and after April 1, 1877.

For descriptions see various articles in the *Gardeners' Chronicle, Journal of Horticulture, The Garden, Gardeners' Magazine,* &c.

D. ELIZABETHÆ (Cooperii, × regina).
Fine established plants, price 31*s.* 6*d.* each.
Large specimen plants in full character. Prices on application.

D. GLADSTONEI (excelsa, × ferrea).
Fine established plants, price 31*s.* 6*d.* each.
Large specimen plants in full character. Prices on application.

D. REBECCÆ (Cooperii, × regina).
Fine established plants, price 31*s.* 6*d.* each.
Large specimen plants in full character. Prices on application.

D. SALMONEA (concinna, × regina).
Fine established plants, price 42*s.* each.
Large specimen plants in full character. Prices on application.

D. SYDNEYI (concinna, × regina).
Fine established plants, price 21*s.* each.
Large specimen plants in full character. Prices on application.

D. TERMINALIS ALBA (nigrescens, × regina).
Fine established plants, price 42*s.* each.
Large specimen plants in full character. Prices on application.

☞ Three Medals were awarded to the above Novelties, including the Grand State Medal, at the Brussels International Exhibition, on April 30, 1876.

The First Prize for the three best Dracænas in cultivation was also awarded to Mr. Wills at the same Exhibition.

WEDDING AND OTHER BOUQUETS.

ROYAL EXOTIC NURSERY AND WINTER GARDEN,
ONSLOW CRESCENT, SOUTH KENSINGTON, LONDON, S.W.

NEW PLANTS, 1877.

CHARLES LEE & SON,

successors to

MESSRS. JOHN AND CHARLES LEE,

of the

Royal Vineyard Nursery,

HAMMERSMITH, near LONDON,

Have the pleasure to offer the following very beautiful and interesting

NOVELTIES,

now offered by them for the first time:—

BEGONIA COLTONI.

This distinct and beautiful Begonia was raised at the Royal Vineyard Nursery. The colour of the flowers is quite new in Begonias, being of an orange-crimson. It is a most abundant bloomer, and the flowers are of the largest size. It received a First-class Certificate from the Floral Committee of the Royal Horticultural Society in 1875. Good plants, price 10*s.* 6*d.* each.

BEGONIA RODWELLII.

This lovely Begonia was also raised at the Royal Vineyard Nursery. The flowers are of a bright vermilion-scarlet, and of the largest size; and the plant is a very abundant bloomer. It received a First-class Certificate from the Committee of the Royal Horticultural Society. Good plants, price 10*s.* 6*d.* each.

CORNUS MASCULA AUREA ELEGANTISSIMA (J. & C. Lee).

This elegant and lovely hardy shrub was raised from seed in our Isleworth Nursery, and has been proved to be perfectly constant in its beautiful variegation. A broad margin of pure gold surrounding a bright green centre is of itself a sufficient attraction, but when in July the tips of the leaves become suffused with the brightest carmine it is impossible to give an idea of the beauty and elegance of the plant, which will bear a favourable comparison with the best variegated stove or greenhouse exotics. Suffice it to say, that it has been seen and admired by many amateurs and nurserymen, and has been awarded a First-class Certificate at South Kensington. The habit of the plant is semi-pendulous, and very graceful. Price of maiden plants, 7*s.* 6*d.* each; larger specimens, 21*s.* each. A Coloured Plate may be had on application for 1*s.*

JUNIPERUS VIRGINIANA ELEGANS (J. & C. Lee).

This very elegant variety of the Red Cedar was raised from seed in our own grounds in 1865. It is scarcely necessary to remark upon the hardiness of this plant, that is due to its character to state that the elegant cream-coloured variegation with which the whole plant is suffused is perfectly constant, and has never been injured by frost or burned in the least degree by the hottest sunshine, although fully exposed in the open air. The plant is of neat and free growth, and received the honour of a First-class Certificate from the Floral Committee at South Kensington, in July, 1875. Price 15*s.* each; larger specimens, 21*s.* each. A Photograph of the plant may be had on application for 1*s.*

POPULUS CANADENSIS AUREA VAN GEERTI (1876).

The golden variety of this noble Poplar sent out in February last by Mr. Charles Van Geert, of Antwerp, has fully borne out in our Nurseries the description he gave of it, and has retained its golden colour much better than either the Golden Catalpa or the Golden Oak during the late tropical summer.

Extract from Mr. Van Geert's Description.

"We have the pleasure of offering an extremely remarkable variety of the Canadian Poplar, with a foliage which presents during the whole summer the finest hue of golden-yellow. It is in our opinion a most valuable acquisition, and has been pronounced so by every connoisseur who has admired it in our nursery, for the coloured foliage now so frequently met with among low shrubs fails almost entirely among the larger trees. The Catalpa aurea and the Quercus Robur concordia are the only trees known as possessing the same golden foliage; but the former is only a second-sized tree, and the latter has not the vigour of the common Oak. Our golden Poplar, on the contrary, is a first-sized tree, of rapid and vigorous growth. Its leaves are quite as large as those of the common Canadian Poplar, and the yellow hue, instead of looking sickly, has a warm and vigorous tint. The better nourished the tree is, and the more it is exposed to the sun, the more vivid is the golden hue."

Having received in February last a large consignment of this magnificent novelty from Mr. Van Geert, we are enabled to offer nice plants at 7*s.* 6*d.* each.

ABIES EXCELSA AUREA (J. & C. Lee, 1875).

This is decidedly the finest golden Conifer of large growth yet introduced. It is of free growth, and requires to be planted in the full sunshine. In such a position the whole tree is suffused with the richest gold. A First-class Certificate has been awarded to this valuable tree at South Kensington. Price of nice plants, 15*s.* each; larger specimens, 21*s.* each.

LAURUS CAMELLIÆFOLIA (Wood, 1875).

We can still supply a few hundreds of this extraordinary and elegant Laurel. Price 2*s.* 6*d.* each; per dozen, 18*s.*

CHARLES LEE & SON,

HAMMERSMITH, W.

SUTTON'S CHOICE FLOWER SEEDS,

FREE BY POST OR RAIL.



Sutton's Improved Miniature Aster.

A profuse flowering variety, of dwarf compact habit, remaining in bloom for a considerable period, hence it is invaluable for growing in pots for conservatory or drawing-room decoration. We have this season succeeded in saving six distinct colours, which greatly increases the value of this beautiful Aster for bedding purposes.

Price per Packet, mixed, 2*s.* 6*d.*
Six varieties, separate, 5*s.*

SUTTON'S COLLECTIONS of CHOICE FLOWER SEEDS,

To produce a beautiful and continuous display during Summer and Autumn.

		Free by Post or Rail.	£	*s.*	*d.*
No. 1	Collection of Flower Seeds	.. ..	2	2	0
No. 2	Collection Ditto	.. ..	1	11	6
No. 3	Collection Ditto	.. ..	1	1	0
No. 4	Collection Ditto	.. ..	0	15	0
No. 5	Collection Ditto	.. ..	0	10	6

Small and useful Collections can also be had, from 2*s.* 6*d.* to 7*s.* 6*d.*, free by post.

Full particulars may be had, gratis and post-free, on application.

TO OBTAIN THE

Best Garden Lawns and Croquet Grounds

SOW

SUTTON'S LAWN GRASS MIXTURE,

Which forms a close velvety turf in a very short time.

For making New Lawns or Croquet Grounds 3 bushels, or 60 lb., is required per acre, or 1 gallon to every six rods (or perches) of ground.

For improving those already in turf, 20 lb. should be sown per acre.

March, April, and May are the best months for sowing.

Price, 1*s.* 3*d.* per lb., 22*s.* 6*d.* per bushel, carriage free.

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds Gratis and post-free.

Sutton & Sons

THE QUEEN'S SEEDSMEN,

READING, BERKS.



SATURDAY, APRIL 7, 1877.

THE IVY.

"In days when Arthur ruled the land,
As ancient legends tell,
The Ivy was a gardener lad,
And loved a lady well."

THE Ivy may be regarded as a classical as well as a decorative plant; poets in all ages, and in various moods, have sung of it: and as illustrating its early adaptation to decorative purposes, it is said that—

"The Roman on his battle plains,
Where kings before his eagles bent,
Entwined it with exulting strains
Around the victor's tent."

Another, in strains less complimentary, says that—

"No flower can bear the Ivy's shade,
No tree support its cold embrace.
The Oak which rears it from the ground,
And bears its tendrils to the skies,
Feels in his heart the rankling wound,
Till in its pois'nous arms he dies."

Another, in writing about this plant, has said truly enough—

"Thou that will climb the loftiest height
Or deck the lowliest grave."

Among the various genera, however, of perfectly hardy ornamental plants, there are few more useful than the Hedera. The genus does not contain many species, but there are now many varieties, many of them being possessed of variegated and exceedingly ornamental foliage. One of the best known sorts, however, and one of the most useful, is the Hedera canariensis, better known as the Irish Ivy, although I am unable to say why it receives the latter appellation, as, according to Loudon, it is, as its specific name implies, a native of the Canary Isles. It is, however, perfectly hardy, and under favourable circumstances is of very rapid development, and has been known to clothe or cover a wall 12 feet high in the short space of three seasons. Wherever it is desired to speedily cover an unsightly wall or other object with this plant, a preparation of tolerably rich soil should be made in which to plant the roots, and the shoots should at the same time be pegged to the surface of the soil (close to the object intended to be covered), into which they will very quickly root, and the young shoots as they are produced will at once adhere to the surface of the wall or other object without the assistance of nails, or any other attempt to secure its adherence. Where abundance of rooted portions of the plant can be had they may be planted pretty close together, and the shoots may be cut off to within an inch or two of the surface of the soil, and the young shoots as produced will at once cling to the object intended to be covered.

As regards the after-treatment of the plants, much will, of course, depend upon the nature or character of the objects they are intended to clothe. If this should be a ruin, artificial or otherwise, a dead or decaying tree or any similar object, it is then advisable to allow the plants to assume their natural character, modified to whatever extent may be found desirable. The power of adaptation possessed by this plant is one of its most striking peculiarities, and the aërial roots by which it adheres so tenaciously to walls or other objects, cease to be

produced as soon as the plant has outgrown the same, or whenever there is no longer any object to which it can cling. And it then assumes a tree or bush-like form, and generally flowers and bears fruits or berries in abundance, which add very considerably to its ornamental appearance.

In preparing a site for planting a collection of hardy Ferns many years since it was found necessary to uproot many shrubs and trees, and the roots of these were piled up in rough pyramidal forms, in some instances to a considerable height, surrounding and to some extent enclosing the prepared space. Around these rather unsightly piles of tree-roots, plants of some of the various kinds of strong-growing Ivies were planted, and in the course of a very few years the piles were entirely hidden, being densely clothed by the luxuriant and rich dark green foliage of the plants, which soon commenced to flower and fruit freely, presenting a very remarkable appearance, but they are nevertheless well suited to the situation they occupy.

It is found that when cuttings are taken from those parts of the plants which have assumed the tree or bush-like form, they continue to retain that habit when they become rooted, and are found to make useful decorative plants for pot culture or otherwise in the form of dwarf bushes, pyramids, or standards.

Most of the varieties of the Ivy are also very suitable for the purpose of forming margins to flower-beds of considerable dimensions, and as edgings to walks in shrubberies, to coach roads, &c.

The surface of the ground under large and ornamental trees in pleasure-grounds, where grass as well as most other plants will refuse to grow, may be carpeted with the common Irish Ivy, and margined with a band of some of the variegated kinds, so as to produce a very pleasing effect, and the beauty of the trees may by this means be very considerably enhanced by being made to stand in the centre of a circle of the richest verdure.

In cases where it is merely desired to clothe the surface of a wall or a portion of a building, so as to present the more cheerful aspect of rich green foliage, in preference to the dreary appearance of bare brick or stone walls, if the common Irish variety, or any of the strong-growing, green-leaved kinds be used for the purpose, as soon as the plants have fairly covered the surface of the wall, they should be annually clipped or cut in as closely as possible. The best time to perform this operation is early during the month of April, when danger from injury by severe frost may be supposed to have passed; for although the several varieties are all perfectly hardy, still injury from frost is not unlikely to be sustained when the plants are in a somewhat mutilated condition, yet after this period no danger from this cause need be apprehended. It will be found that the plants will, in a very short space of time after cutting, put forth abundance of fresh green leaves, all of which they will retain throughout the season; so that there will be no litter from the gradual shedding of leaves during the summer, which would be the case if the old leaves were allowed to remain upon the plants. I have now in view a high wall which has been treated in this manner for more than twenty years, and the plants are still perfectly healthy. This annual clipping in as closely as possible to the wall is absolutely necessary where the strong-growing sorts are used, otherwise the increasing weight of the plants, acted upon by strong wind, would be almost sure to cause them to separate from the comparatively smooth surface of a wall. But in cases where the more delicate and slower growing sorts, with very beautifully variegated foliage, are used, they will generally be found to cling more closely to the surface of walls or other objects, and less clipping will in their case be required.

By the judicious use of a selection of Ivies, what may be very unsightly or an eyesore may be easily and quickly converted into an object of considerable beauty and interest, considerable diversity existing in the form as well as in the shade of colour in the foliage of some of the varieties, which varies also to some extent at different periods of the year. But in making a selection care should be taken to avoid mixing the delicate growing kinds with those of more rapid and vigorous growth. If this should not be done, the former will be speedily smothered or overgrown by the latter. Considerable taste may, however, be displayed and pleasing effects produced upon the surface of walls, and on buildings which it may be desired to clothe with this plant, by using the variegated and more ornamental-leaved kinds to form fringes or borders to archways, doors, windows, &c.; panels or other appropriate designs may also be formed upon the surface of walls, &c., and a little occasional care is only required to keep such designs properly defined by preventing the sorts used from mixing with each other, and by confining each variety to its place in the design.

As regards the different varieties of this plant, among the strong-growing kinds Hedera canariensis, or the common Irish Ivy, is, as has already been said, one of the best; but there are at the same time several other varieties which are exceedingly useful and ornamental as decorative plants, such as H. Rœgneriana, or heart-leaved, a very fine, free-growing, hardy, and distinct variety; H. dentata, with large dentate leaves, distinct and fine; H. algeriensis, with large foliage of a light green colour, with its variegated variety, H. algeriensis variegata, together with the gold-striped and maculated varieties of H. canariensis. The variegation, however, of the three last-named sorts is somewhat irregular, and the plants frequently run into the green condition. In addition to those mentioned, there are several other free-growing, large-leaved kinds well worthy of cultivation; and among the best of the smaller green-leaved kinds, which as a rule cling closer to the wall or other object they may be placed in contact with, and are consequently less likely to be torn off by the action of the wind, are H. caenwoodiana, H. conglomerata, H. digitata, H. chrysocarpa, bearing yellow berries; H. Glymei, H. palmata, &c.

The best of the variegated kinds belong to the small-leaved section, and all of them are very beautiful, the variegation being permanent, very neat, and effective, such as:—H. aurea elegantissima, H. alba lutescens, H. marmorata elegans, the old and new silver-striped varieties, and H. tricolor, with small, white-margined foliage, beautifully tinged with pink during its young condition. *P. Grieve.*

EASTER FLOWERS.

These are now almost as much in demand as Christmas decorations. Every season the demand for both increases, until one begins to fear that the Holly will be cut down and all the Mistleto gathered every Christmas, and all the flowers used up at Easter. But the more of either used one year the more come again to the front the next, and so on and on "for ever," for it is not likely that either decorations or flowers for the winter or vernal festival will ever be wanting. It is perhaps one of the most pleasing signs of the times, horticulturally considered, that flowers are daily becoming more indispensable to the enjoyment of all our secular feasts and even our religious observances. Who can calculate the tons of flowers that have been used in the decoration of churches alone this Eastertide? And society seems to catch the flower decorating mania with their prayers; for hardly have the services of Easter Sunday closed when the season of the fashionable decorators opens, and runs on until the partridge arises on the brown heath and the pheasant in his shaggy wood, and puts an end to the season—to open up an infinity of "little goes" in private families throughout the country.



Fig. 66.—STAPELIA BAYFIELDII.

Primroses, Lilies of the Valley, Camellias, Azaleas, Deutzias, Spiræas, Hollies, Roses, Narcissus, Hyacinths, Tulips, Cyclamens, Arums, Eucharis, Gardenias, &c., have all played a very important part in the Easter decorations of the year, and these and many more are sweet, beautiful, and suitable—a trio of

adjectives not found in all flowers, such, for instance, as the golden Broom-like Cytisus. But there is a class of plants, cheap, easily grown, and most effective, that are second to none for Eastertide or other decorations, and yet they are seldom or ever seen in London or other large towns, and are, in fact, almost as rare in the provinces. These are the different varieties of Thorn—pink, scarlet, white, red, single and double. These are chaste, simple, sweet, freshness itself, as if bathed in the very spirit of spring or early summer; and dripping with the dew of a lovely May morning, I know no flowers that can speak in more persuasive tone of the certainty of a resurrection to a newer and higher life than bunches of May blossoms, forming the most exquisite rosettes, set round with their own tender and delicate leaves. They are a perfect symbol of spring or early summer, set free for good from the binding influence of wintry frosts, and blasting, biting winds.

Every one also loves the blossom of the May—old and young, rich and poor, high and low, delight in its pleasing fragrance, and rejoice in its simple beauty. The plants are so cheap and so plentiful as to bring them within reach of all. Plants of flowering size of most varieties of the Thorns may be purchased for a few pence, and might be as cheap again as they are were more of them only asked for; the May may also be readily moulded into any desired size or shape. The most striking shape for flowering-pots is that of dwarf, medium, or tall standards or pyramids. It assumes either of there forms readily, and may be made to keep them within case. The plants need little training, and almost less pruning, and enjoy under fair treatment an entire immunity from insect pests; they will grow in any soil, and force with the utmost ease provided no attempt is made to hurry them by an excess of heat. From 55° to 60°, or at the most 65°, is the utmost degree of forcing that Thorns should be subjected to. The plants, however, enjoy a moist atmosphere, and frequent overhead sprinklings, even when in flower, taking care, however, that the water used is at once soft and clean.

Neither does the May like early forcing. I once tried to have it flower at Chistmas, and it almost ruined the plants, and the flowers produced were small and puny. But from February to April the May is easily forced or brought on with, in fact, but little forcing. The first batches of plants take nearly two months to come fully into flower, the second may be forced in about a month or six weeks, and the last under a month. It does well either with or without bottom-heat in excess of the top, so long as the heat is not excessive. After flowering the plants will stand for a month or six weeks in the conservatory as fresh as when first placed in a cooler temperature, provided they are occasionally soused overhead with clean soft water. As soon as the flowers fade the plants should be removed to an open place in the open air, and plunged 2 inches below the rims of the pots. Next season they may be forced again, and so on for many years, flowering more freely every year; in fact, unless they are potted carefully, as well as rather early the first season, they will flower more sparsely that year than any other. They should be potted up as early in October as possible, to force fairly well or flower freely the first season from the open air.

May plants covered with bloom form some of the richest and most spring-like decorations we have for churches, rooms, window gardens, corridors, halls, staircases, and conservatories at Easter. The cut flowers, especially of the double varieties, are also invaluable for bouquets, wreaths, dwarf designs on dinner-tables, lettering, &c. The chief charm of the early May blossoms arises from their simple beauty, fragrance, and freshness; they are also distinguished by a great richness and diversity of colouring. Double and single whites without flaw or spot, the brightest scarlets, reds, and the softest pinks, give a delicacy and a finish to May decorations that few other flowers can equal—none rival. *D. T. Fish.*

New Garden Plants.

Stapelia Bayfieldii, *N. E. Br.* (Fig. 66)

Stems erect, branching at the base, 6—8 inches high, 7—9 lines thick, puberulous, four-angled, sides concave, angles obtuse, toothed, teeth short, stout, acute, nearly horizontal. Peduncle from near the base of young branches, 2 lines long, stout, 3—5 flowered. Pedicels short, 5—10 lines long, puberulous. Calyx lobes lanceolate-acute, ⅓ lines long, puberulous. Corolla fœtid, 2½—2¾ inches in diameter, with the lobes expanded; back puberulous, green tinged with purplish, the nerves darker; face glabrous, with a few short scattered hairs inside the very short tube, *i.e.*, immediately around the corona, smooth, or nearly so, purple-red, darker towards the tips, the centre to half way up the lobes marked with numerous, narrow, undulated, pale yellow, transverse lines; the lobes 1—1½ inch long, 9—10 lines broad, ovate-acuminate, revolute, fringed with rather short, simple, pale purple hairs. Ligulæ erectly spreading, apex a little recurved, 2 lines long, slightly concave in the upper part, linear, truncate, with a central projecting tooth, dull brownish red or dark purple-brown, the edges minutely mottled with dirty yellowish. Rostra subulate, erect, with diverging apices, 3 lines long, dark purple-brown, minutely mottled with dirty yellowish. Alæ deltoid, subulate, obtuse, entire, 1 line long, coloured like the rostra.

This species has been in cultivation for several years under the name I have adopted, but has hitherto remained undescribed. The stems have a considerable resemblance to those of S. mutabilis; and indeed, I have seen in other collections, and grown in my own, the latter species as S. Bayfieldii, and at one time I thought that S. Bayfieldii was simply S. mutabilis under another name; Mr. Justus Corderoy, of Blewbury, was the first to send me the true plant, and from his specimen my drawing was made. I have since seen it elsewhere. Besides the very distinct flowers, the present species may always be distinguished from S. mutabilis by its puberulous stems (in S. mutabilis they are glabrous), and more erect habit. The woodcut (fig. 66) represents but a small portion of the plant. *N. E. Brown.*

Pultenæa rosea, *F. Muell.**

This very distinct and pretty greenhouse plant (fig. 67) will be quite an acquisition on account of its neat and novel habit of growth, and its bright and cheerful coloured blossoms. It comes from Mount William in the Grampians of Victoria, where it grows



Fig. 67.—Pultenæa rosea.

at an elevation of 5000 feet, and has quite the aspect of the small Pea-flowered shrubs which used formerly to abound in collections, but which have too generally been allowed to die out amongst us. The flowers are produced at the tip of all the numerous twiggy branchlets, and impart quite a gay appearance to the plant; they are of a bright rosy-lilac colour, and grow in small roundish heads. The following is Mr. Bentham's description:—

"An erect heath-like shrub, the branches virgate, glabrous, or sprinkled with a few hairs. Leaves linear-terete, obtuse, or with short callous points, under ¼ inch long, channelled above by the involute margins, slightly scabrous. Stipules subulate-pointed. Flowers pink, in terminal heads, sessile within the last leaves. Bracts few, narrow, trifid. Bracteoles inserted under the calyx, linear-lanceolate. Calyx silky pubescent, 2½ lines long; lobes lanceolate, as long as the tube, the two upper ones more united. Petals nearly of equal length, not twice as long as the calyx. Ovary villous; style subulate. Pod two lines long, acuminate."

Mr. Bentham remarks that this species is chiefly distinguished from P. hibbertioides by the unusual colour of the flowers—the very feature which will give it especial interest for our plant-growers and exhibitors of hard-wooded plants, since it will, in degree, though imperfectly, represent and replace the fine Burtonias which used to be so effectively exhibited some quarter of a century ago. It has been exhibited lately both at Regent's Park and South Kensington, by Messrs. William Rollisson & Sons, to whom we are indebted for the opportunity of illustrating it.

* *P. rosea*, F. Mueller, Fragm. ii. 15; Bentham, Flora Australiensis, ii. 128. *Burtonia subalpina*, F. Muell., in Trans. Phil. Inst. Vict. i. 39; Id. Hook. Kew. Miscell. viii. 41.

HOLLAND.

(Continued from p. 400.)

We have passed the frontier station of Rozendaal, and have had no misunderstanding with the Customs' gentlemen; but, before proceeding further, the geographically-inclined tourist ought to be informed that this is not the only, nor the most noteworthy, Rozendaal in Holland. Close to Dunkerque there is also a Rozendaal, famous for Asparagus and nightingales, where the rich Dunkerquois have their country villas, and where there are quite as many Potatos as Roses. That, however, does not concern us now. What does is that a portion of Gelderland (whence Guelder Roses) is called "the Dutch Switzerland"—an ambitious title not wholly unjustified. There are tall woods and broken ground, fresh springs and waterfalls, which attracted the patricians of the neighbouring provinces, causing the erection first of large hostelries, and then of *chateaux*, with their surrounding gardens and parks, amongst them of Rozendaal, which was a favourite residence of our William III. They still show a *souvenir* of his last visit, or rather of Queen Mary's—namely, an embroidered screen presented to the Mistress of Rozendaal by the ladies in waiting of the Queen of England. Due note being taken of this we proceed.

Immediately the eye lights on black and white cows—the race which takes the lead of all others in Holland. We are rolling across an interminable bowling-green, divided only by rows of trees, marking lines of roads which serve also as dykes. What a charming landscape, were it not always the same—an endless plain. Everything is so neat, so fresh, so green, so well-kept. Even the sky to-day is swept clean by the good old woman who clears it of cobwebs on the happy occasion of our visit. One would like to guess what lies beyond that level horizon. Is it still flat pasture, with more and more bowling-greens of rich meadow-land?

Fully to appreciate Holland, I fancy that one ought to look down upon it from a balloon, thence we should see what might appear like a desert of green prairies, without trees, bushes, or hedges to break their wearisome sameness, in which towns and villages are the welcome oases; Holland, in fact, was once a country of deserts, which have been inhabited in spite of their natural peculiarities and resistance—deserts of water, deserts of marsh, deserts of sand, deserts of tangled weeds and bushes. The dwellers therein are bold intruders, who keep up a constant fight with the nature of the land, which would repel them, but cannot. It may drown them now and then by hundreds and thousands, but can neither make them loose their hold nor break their spirit. Truly, the old doggrel is right—the Dutch *have* taken Holland.

But what is that in the distance, like a row of grey beehives? We near it, and find at Moerdyk, or Moerdijk, an arm of the sea called Hollandisch Diep, which, till recently, was crossed in ferry-boats, weather and ice permitting, but is now spanned unbroken by those grey arches which help to sustain the line of railway. There is a waste of waters, a wilderness of swamps, seeming to deny all further progress, yet conquered by Dutch enterprise in an admirable work. This is the only way, if any, in which I would consent to cross the English Channel by rail. In the tunnel, if ever finished, there will be a choice of deaths—suffocation, drowning, collision, caving in, besides others which will be revealed by experience.

Gliding past Dordrecht, with its tall and solid steeple—what big substantial churches and steeples they do build in Holland!—and its busy much-frequented canal or river—here it is hard to say which is which, often they are both in one—you reach without change the left or south bank of the Meuse, where a steamer takes you across to Rotterdam. The bridge over the Meuse being not yet finished, there is a break in the railway.

Rotterdam.

Rotterdam at first sight makes a favourable impression, which closer inspection does not weaken. Trees, shipping, buildings, and water combine together in admirable groups. Streets, canals, quays, and sailing vessels or barges form an inexhaustible kaleidoscope of picturesque views. The place is wealthy, and makes no secret of its wealth. Plate-glass windows in abundance, gay streets, plenty of promenades, well-dressed ladies and children, working-women with gold screws or vine tendrils in their caps, are symptoms sufficiently significant. The conformation of the city,

through its intersection by canals, puts a check on idle driving about; consequently more trucks for merchandise—many drawn by dogs—than private carriages are seen in the streets. Dogs, indeed, are much used as beasts of draught both in Holland and in Belgium.

Strangers who are not over hard to please may safely go to the Hotel St. Lucas, in the Hoog Straat, or High Street, which is excellent as well as central. The new Bath Hotel, on the Quai des Boompjes (the little trees), facing the river, is perhaps more pretentious and may be first-rate, but is less central. No apology is made for offering this advice, because it is disinterested and may prove useful. On arriving in a strange town one is often thankful to know to what inn one may betake one's-self in confidence. Hotels in Holland are somewhat more expensive than those of the corresponding class in France; but then they are good and comfortable. Wine throughout is an imported article; its quality is satisfactory, and its price not excessive; and in towns, as Rotterdam, where the drinking water has got a bad name, everybody takes Seltzer or other aërated water at meals. The bills of fare are sometimes tinged with local colouring. A sweet tooth is one inheritance of northern nations. Accordingly they give you red currant jam with roast chicken, and stewed pears with roast wildfowl. Smoke-dried eels, like brown walking-sticks that have lost their handles, hang in shops awaiting purchasers. They might reward their discoverer and prove worth a trial, but I had no opportunity of testing their merits.

Amongst Rotterdam's most striking objects are its colossal mills; not the small shadowy phantoms of Rembrandt's pictures, but Towers of Babel built with solid brick. Mills, however, are a specially Dutch institution, and are almost the only things in Holland that make a fuss. They intrude their whirligigs everywhere. A landscape without a mill, or a concourse of mills, would not be a Dutch landscape. They serve all sorts of purposes, from the high function of rendering the country habitable by draining it, and grinding bread for those who venture to inhabit it, to the humble offices of extracting oil and making snuff. Water-power being very limited, in consequence of the almost uniform level of the land, the Dutch wisely turn air-power to the best account. When insufficient, they help it with steam. The living forces of the atmosphere are made the most of—a breath of air can hardly stir without putting some useful machine in motion.

In taking a drive round and about Rotterdam, the difficulties which its founders and embellishers have had to contend with must not be forgotten. The park is laid out with frequent and close shrubberies and underwood, purposely preventing distant views—of which they have only too much in the open country—and giving the shade and shelter of a natural wood. A labyrinth of winding waters is only a matter of course in Holland. Suburban country boxes, although not small, give the idea of toy houses stuck into bouquets of flowers and foliage. Each is the pet of some wealthy burgess, "who in trim gardens takes his pleasure." Here, as in Ghent, the eye rests with approval on balconies successfully festooned with Tropæolums, Virginian Creepers, Petunias, and other common things, showing how much may be done by good taste aided by regular tendings and waterings, and affording a pleasing instance of workmanship surpassing the materials.

In the Zoological Gardens (whose tigers and white bears are unsurpassed), and elsewhere, there is a good deal of carpet bedding, public and private, as befits rich individuals and well-to-do societies, some specimens of which we may presume to be experimental merely. Conical and pyramidal attempts at plant-embroidery, a sugar-loaf of Pelargoniums, in sorts stretching from top to bottom, surmounted by a Yucca, and bordered at foot by starlike rays of Alternanthera and the rest, may be praiseworthy as essays but are failures as results. The Zoological presents the apparent miracle of a basket filled with heavy flowering plants pretending to float in the middle of a piece of water—doubtfully pretty, and certainly incongruous. But every effort after novelty cannot end in a success, and to rail at the changes of fashion is useless, if indeed it be not absurd. "Something new" is no fresh object of human wishes. We accept the unchanging forms of oriental costume simply because, to us, they are new. Some fashions last longer than others; some are laid aside, and then re-adopted; but in every case there is continued change. Now, if there are variations in the style of dress or personal decoration, of furniture or house decoration, why should there not be changes in the style of planting and bedding-out, *i.e.*, of garden decoration?

Instead of smiling too critically, let us listen to the chimes of those sweet-voiced bells; although, as to any tune they may be singing, being unable to catch the accent or the measure, it may be as unintelligible to us as spoken Dutch itself. That, however, is often as much the fault of the chimes themselves as of the listener's ear. And, look! the storks in the garden are pinioned, and cannot perform their autumnal migration. Nevertheless, the free domesticated and protected storks of the neighbourhood have come hovering and circling round them, clattering their long bills—for the stork is absolutely voiceless; the most he can utter is a faint sigh—to tell them that the time for starting is drawing near. †

THE SPECIES OF HELLEBORUS.

I HAVE had so many inquiries lately about the genus Helleborus, and so many specimens sent to name, that I am led to think that a brief account of the known species and forms would be useful, especially as the best recent information about them is scattered in publications that are accessible but to few. The genus consists of four well-marked and little-variable species; and, in addition to these, of two what may be called either groups of closely allied species, or single species which have several strongly-marked varieties. Treating these latter as single species, the following key will give an idea of the characters in which the principal differences which exist if the genus are to be found:—

Group I. CAULESCENTES.—Flower-stems furnished with leaves below the inflorescence.

Leaves thin and deciduous. Follicles flat, 2—2½ inches long.	1. H. VESICARIUS.
Leaves coriaceous and persistent. Follicles turgid, under an inch long.	
Leaflets 3, broad, not arranged pedately.	2. H. LIVIDUS.
Leaflets many, narrow, arranged pedately.	3. H. FOETIDUS.

Group II. ACAULES.—Flower-stems without any leaves below the inflorescence.

Flowers 1—2. Bracts pale green, simple.	4. H. NIGER.
Flowers usually many. Bracts leaf-like, compound.	
Leaves thin, deciduous; segments ½—1½ inch broad. Root-leaves very rarely more than one to a flower-stem.	5. H. VIRIDIS.
Leaves coriaceous, persistent; segments 2—3 inches broad. Root-leaves 1—2 or more to a flower-stem.	6. H. ORIENTALIS.

1. *H. vesicarius*, Aucher-Eloy, MSS.; Boiss. in Ann. Sc. Nat., ser. 2, vol. xvi. (1841), p. 347; Fl. Orient., vol. i., p. 60.—Stems annual, erect, reaching a height of a couple of feet, bearing one or two leaves below the inflorescence, the radical rosette faded by the time it flowers. Petiole reaching a length of nearly 1 foot; blade membranous, glabrous, composed of three distinct divisions, each furnished with a short stalk and palmately cut into very numerous linear segments, ½—¾ inch broad. Petioles of the reduced stem-leaves broad and channelled. Flower-stem forked about half a foot from the top, with about three branches, bearing each 1—3 cernuous flowers, the bracts leafy in texture and copiously palmately cleft. Sepals green, obtuse, obovate or oblong, ¾—1 inch long, conniving in a cup. Stamens as long as the sepals; anthers oblong, ½ line long. Follicles 2—4, hemispherical, united by their inner edges for the lower half, 2—2½ inches long, 1—1½ inch broad, flattened laterally, with fine cross anastomosing veins. Style incurved horizontally, ½—¾ inch long.

A native of mountain woods in Syria at Mount Cassius, near Antioch and Aintab, in the upper part of the Euphrates valley. The leaves resemble those of a Trollius in cutting and texture, and it differs totally from all the other species in its enormously large laterally-flattened fruit-carpels. It flowers in January and February, and has not yet been introduced into cultivation.

2. *H. lividus*, Soland. in Ait. Hort. Kew., vol. ii., p. 272; Bot. Mag., tab. 72; Bot. Reg., vol. xxiv., t. 54; Sweet, Flower Gard., ser. 2, t. 150; Gren. Fl. France, vol. i., p. 42; *H. argutifolius*, Visiani, Fl. Cors., p. 8; *H. trifolius*, Miller, Gard. Dict., edit. vi.; *H. triphyllus*, Lam. Encycl., vol. iii., p. 97; *H. corsicus*, Willd. Enum. Suppl., p. 40.—Stems erect, perennial, 1—1½ foot high, bearing eight or ten leaves crowded near the base below the inflorescence. Petioles ½—½ foot long; blade glabrous, coriaceous in texture, persistent, always trifid, the segments oblong-lanceolate, acute, sharply toothed to a depth of ½—⅔ inch, the central one 6—9 inches long, 1½—2 inches broad at the middle, the side ones oblique at the base, broadly rounded on the lower side. Flowers 10—20 in a deltoid corymb; bracts copious, oblong, oblong, acute, pale green, sharply toothed. Sepals pale green, nearly flat and spreading, round, ¾—1 inch long and broad. Petals ½ inch long, cylindrical, stipitate. Stamens about half as long as the sepals; anthers pale yellow, oblong, ½ line long. Follicles 4—5, oblong, as long as the sepals, with an incurved style ⅝ inch long.

A native of Corsica, Sardinia, and the Balearic Isles. A very old inhabitant of our gardens, introduced at the beginning of the 18th century. It resembles fœtidus a good deal in habit, bracts and inflorescence, but the leaves are extremely different. This is the only Hellebore with a trifoliolate leaf. There is a variety integrilobus, D.C., in which the characteristic sharp toothing nearly or quite disappears.

3. *H. fœtidus*, Linn. Sp. Plant., p. 784; Engl. Bot., t. 613; 3 edit., t. 45; Reich. Ic. Fl. Germ., tab. 108; Hayne, Arzng., t. 10; Woodv. Med. Bot., vol. iii., t. 170.—Flower-stem perennial, about 1 foot high, naked near the base, marked with the scars of fallen leaves, bearing ten or a dozen leaves below the inflorescence. Petioles ½—½ foot long; blade glabrous, coriaceous, persistent, very distinctly pedate; segments linear, shallowly incise-serrate, 4—5 inches long when fully developed, ½—⅝ inch broad at the middle, one central and 4—5 lateral on each side on a recurved axis about ½ inch long. Flowering stem branched low down; inflorescence an ample deltoid corymbose panicle, like that of the last species, with copious simple pale green bracts, which, like the branches, are furnished with the fine glands which yield the odour from which the plant takes its name. Sepals obovate-oblong, green or sometimes bordered with bright purple, under 1 inch long and broad, connivent permanently in a cup. Stamens nearly or quite as long as the sepals; anthers oblong, pale yellow, ½ line long. Follicles 3—4, oblong, about as long as the sepals, strongly ribbed transversely, terminated by a persistent stout rather incurved style ⅝—1 inch long.

Spread through the western half of Europe from England to Austria, Italy, Spain, and Portugal. Flowers from February to May. A very little-variable species, well marked by its caulescent habit, strongly pedate leaves, and copious cup-shaped green flowers.

4. *H. niger*, Linn. Sp. Plant., p. 783; Jacq. Fl. Austr., t. 201; Woodv. Med. Bot., vol. iii., t. 169 Bot. Mag., t. 8; Reich. Ic. Fl. Germ., t. 111; Gren. Fl. France, vol. i., p. 41; Boiss. Fl. Orient., vol. i., p. 61.—Acaulescent, producing a single leaf and a simple or once-forked peduncle in a tuft, the tufts crowded on a short rootstock. Petiole in the typical form about ½ a foot long; blade coriaceous, persistent, very distinctly pedate, the segments oblanceolate-rhomboid, 3—6 inches long, 1—2 inches broad above the middle, shallowly incised in the upper half or third, entire and narrowed gradually in the rest, the central one distinctly stalked, with three or four leaflets on each side of it springing from a recurved axis nearly 1 inch long. Scape rather shorter than the petiole, rarely forked; bracts small, simple, ovate, pale green. Sepals the largest in the genus, nearly round, white-rhomboid, with purple, spreading, 15—18 lines long and broad. Stamens less than half as long as the sepals; anthers pale yellow, oblong, ½ line long. Petals cylindrical, shorter than the stamens. Follicles much shorter than the sepals; style stout, suberect, ½ inch long.

Spread through Central and Southern Europe, from France to Greece, Turkey, and the South of Russia. It is the earliest to flower of any of the species, and well known to every one. The very decidedly pedate-coriaceous leaf, and usually single flower, with only a small bract on the short peduncle, mark it at a glance from all the forms of viridis and orientalis. *H. atrifolius*, Reich. Fl. Excurs., No. 4727, Ic. Fl. Germ., tab. 112, is a large-flowered variety, with a petiole reaching 1 foot in length, and mottled with green and purple. It is often grown in gardens as *H. niger* var. *major*, and is figured as a variety of *niger* by Hayne, Arzng., vol. i., tab. 8. *J. G. Baker.*

(*To be continued.*)

NOVELTIES.

PRINTING ON WOOD.—We have on one or two previous occasions alluded to a new process showing the connection between economic botany and art, devised by Mr. Whitburn, and we are now in a position to illustrate it by the accompanying illustrations (fig. 68). The process is, as we have said, nothing more in essential than printing on wood. A design is drawn on the wood, as in the ordinary process of wood engraving; the block is then cut away, leaving the

design in relief. A cast is taken in metal from the wood-block, and from this cast impressions are taken, as in an ordinary printing-press, but on soft wood, instead of on paper, in one or more colours, as may be desired. The process is thus exceedingly well adapted for the decoration of houses, panels, skirting-boards, dados, cabinets, and thousands of other articles. Cheapness, cleanliness, durability, and effectiveness are thus secured. Given a good and artistic design suitable for the purpose intended, to begin with, and all the rest is a matter of mechanical detail, and as such is inexpensive in proportion to the quantity required. Mr. Whitburn is well known as a master of design in his particular style, but the process, of course, admits of any design being employed consistent with the nature of the material. Our illustrations are taken direct from the blocks designed and drawn by Mr. Whitburn, but printed on paper, instead of on wood. Those who are interested in this ready and inexpensive mode of embellishing a house should pay a visit to the show-room of Messrs. Whitburn & Young, at 4, Ludgate Circus Buildings, E.C.

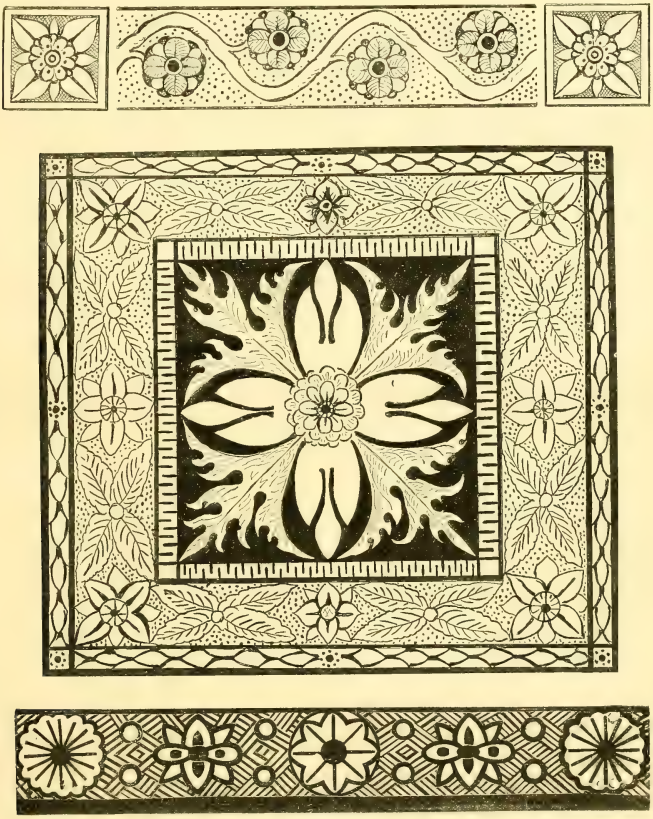


Fig. 68.—Examples of Mr. Whitburn's wood-printing as applied to house decoration, etc.

JAPANESE HOUSE GARDENS.

Some time since you figured two specimens of these from a work brought home by Mr. Moseley. It so happens that I have a Japanese pupil attending my lectures, and who has been a frequent visitor at my house for the last five years. With the help of this gentleman—Mr. Nagai—I have inspected two of the volumes which Mr. Moseley has been so good as to send me. These books were described as a *Treatise on Miniature Gardens*, but they are descriptive of aquaria which are introduced from China. According to Mr. Nagai, the Japanese (at least at this time) are inferior in their art to the Chinese. Pekin is to the Japanese what Paris is to the Germans, and, indeed, to the other nations of Europe. As we look to Paris for the height of good taste and fashion, so the ladies of Japan dress themselves after the fashion of the Chinese nobility.

These Japanese aquaria differ from ours in many particulars. Ours are for the most part formed of curiously-shaped limestone or slag, under water, or with only the upper part above the surface, and they are placed under a glass frame or in a large glass jar; but in Japan a hard stone in rock-form is used and placed in an earthen vessel full of sand. We use delicate water plants, lizards, molluscs, &c., which live in the water, while other people plant gay leaves, Begonias, &c., on the top of the rock above water. The Japanese use, as already said, dry rocks; on the sand around the rocks lie cleverly made boats, as the sand is intended to represent water. The miniature plants which are placed in various parts of the rocks are planted by the Japanese very skilfully. Many Conifers, especially Sciadopitys verticillata, Pinus Massoniana, and certain Thujas, play a prominent part. The rocks, which are scarcely 1—1½ foot high, are often like large barren rocks, for they are generally formed according to one regular rule, pierced with holes, and filled up with water, as if they were mountain lakes. In the large aquaria rocks are used, and water also flows at their feet, as the rocks repre-

sent islands. Little ships sail on the water, and various tall plants, such as Bamboos, Palms, and the like, or small plants are planted at the water's edge. Sometimes the rock is done away with, and an old rugged tree, often a Conifer, occupies most of the space, or the aquarium represents a whole landscape, with rocks, trees, and little houses. The rock may also represent a landscape, with houses and little villages placed at the foot or at a certain height on it, and planted with groves or single large trees. It will also be understood that, all things being on a small scale, little figures of men are also used. A great variety is to be seen on these rockworks, as the form of natural rocks is exactly imitated. As we recognise in Nature the form of the rocks, so also is it in these clever miniatures. The various limestones, slates, stones are easily recognised as tufa, stalactites, and rocks full of water.

In the beginning of one of these books I find a plate with Chinese in various attitudes, stags, &c., to be imitated in clay. This shows that not only the Japanese but the Chinese are reproduced in these aquariums. The next plate gives various designs of buildings and temples, bridges with men on them, boats and ships in the distance. These also are Chinese, not Japanese, so that the Chinese origin may be easily observed.

Finally, I must state that I have given the name of aquaria to these rockworks only in consequence of the custom of placing them in rooms; they are not aquaria, according to the generally recognised sense of the word. The Japanese term is untranslatable, the nearest approach to it is "miniature rock gardens for rooms." They are just at present so much the fashion in Japan that they are to be found in the dwellings even of the poorest classes. *Karl Koch, Berlin, March 15.*

FLORISTS' FLOWERS.

THE NATIONAL AURICULA SOCIETY'S SOUTHERN SHOW.—Will you kindly permit me to say to all interested, that in addition to the legible naming of exhibits, as required by the fifth condition of the schedule of prizes, it has been determined that the name of the exhibitor shall be attached to the respective specimens. By this requirement necessary information will be supplied to the public, the secretarial work will be simplified, and confusion, and possibly loss, at the close of the exhibition obviated.

Exhibitors from the North will find the earliest morning trains to the Crystal Palace by the high level route convenient, and Mr. Thompson, the garden superintendent, has kindly promised to have men in readiness to aid in the removal of the cherished specimens to the exhibition tables.

At an early day I shall be glad to hear from those who may propose to partake of the cold collation which will be provided for the judges, in order that suitable arrangements may be made.

This is, I believe, all I have necessity to say, and I should not have occasion to ask your permission to say it in your pages, but that my long exile from floriculture, and the ravages wrought by death in the ranks of old and valued friends, have so broken my connection, that though I have addressed privately all known to me, or of whom I could obtain account, I am persuaded there are many to whom otherwise I could not have access.

But, having the pen in hand, I should like to say a word as to the paragraph in the fifth condition of the schedule of prizes, in which the committee "recommend that the trusses be supported with a neat stick." This paragraph has so far been misunderstood apparently by my valued friend Mr. Horner, and possibly some other friends in the North, as to lead to the supposition that here in the South we approve "forced attitudes and stiffnesses" to the elegance and grace properly belonging to a plant able by its "possession of a firm, elastic, self-supporting stem," to carry its head erect. And "D., Deal," who takes care to inform us he was not present when this, to him, objectionable recommendation was adopted, suggests a very grave latitude indeed, when he tells us he has been "brought up in the straightest sect of the old school," and this is a "practice" he has "invariably condemned." Really I must take the liberty to say, much has been assumed of a very small matter. The delinquents involved are: Mr. C. Turner, Mr. James Douglas, and myself; and I humbly presume to think either of us can afford to smile at the assumption that we favour stiffnesses or forced attitudes. But we have had some experience in the management of exhibitions, and what is effective as a display; and with this recommendation we hope to do what the drill-sergeant does for the country lout, turn him out a smart man, and diminish the numbers of the "awkward squad." Let it be borne in mind, it is a "recommendation" only; that no plant possessed "of a firm, elastic, self-supporting stem" will be compelled to be crutched or forced into stiffnesses or ungraceful attitudes; only it will go hard with any specimens, if with this concession on the part of the committee they be shown with dependent, I had almost said despondent, drooping heads. But I augur we shall find neither dependent drooping heads nor despondent hearts on the 24th.

One parting word with "D.," of Deal. It is quite true he was not at the meeting at which this recommendation was adopted—that he has attended no meeting since the first, but it is equally true that he was furnished with a draft proof of the recommendation, and that he favoured his colleagues with no expression of his opinion: a fact surely somewhat suggestive of a lack of candour, or of courage, since now he tells us it involved a "practice" he has "invariably condemned." As to the "straightest sect" of the old school, in which he claims to have been brought up, "D.'s" memory has betrayed him; and, as I turn to a discussion which may be found in the volume of *Gossip of the Garden* for 1859, in which "D." was sharply castigated by the late Rev. George Jeans and J. Bramhall for his proposal to drop the classification, greens, greys, or whites, then, as now existing, I cannot but feel surprised at his delusion. But "D.'s" fault then was passed over, almost condoned, because of a suggestion of a meeting of Northern and Southern Auricula growers he made, and the good to be derived from it, as Mr. Jeans explained. And now we are to have another meeting of North and South, and I have little doubt, whatever may be our assumed differences, they will vanish into thin air on the eventful 24th. And so, thanking you in advance for your consideration, and wishing the meeting may have the attention and success I believe it deserves, I remain, &c., *E. S. Dodwell*, 11, *Chatham Terrace, Larkhall Rise, Clapham, S.W.*

Apiary.

HOW AND WHEN TO BECOME A BEE-KEEPER.—So many inquiries come to me for the information the above heading indicates that I am led to believe the reply would be useful to many besides my correspondents. Taking it for granted that the would-be bee-keeper is quite a novice, I would advise that he commences with a swarm as early in May as he can get it, although to the middle of June will be in very good time. Two momentous questions now arise: English or Ligurian bees?—straw skep or frame hive? As to the bees let the pocket decide; Ligurian bees cost twice as much as English. I believe them to be the superior variety, but I do not go so far as to say one hive of Ligurians will be as profitable as two of the English; therefore, unless the cost is of no consequence, for a time cultivate the natives. For the hive let it at all events be new, nothing old about it, or it may perhaps harbour the infectious germs of the bee plague, "foul brood," which defies the skilled bee-master to eradicate it from his apiary, and to the novice could bring nothing but trouble, expense, and disappointment.

Bee-keeping is not all sunshine, and we must be content to accept losses as well as profits. But to return to our hives: the choice should mainly depend on the kind of attention the bees are destined to receive. If their owner is likely to be too busy or too faint-hearted to make intimate acquaintance with his little labourers, does not wish to investigate their domestic matters, cannot be troubled to watch for all their wants and ailments, but simply desires some honey, and is not particular as to the appearance of the same dainty article, then adopt a large flat-topped straw skep, having a 2-inch hole in the centre of the crown—such a hive as is known as "the Pettigrew skep," well made and roomy, say 16 inches or 18 inches in diameter. The common hives of the South of England are far too small, and do not give the bees a fair chance to do their duty to their master. To the hive add a stout floor-board, a transverse section of a log of timber makes a very serviceable floor. Surmount with a good watertight roof. The common country covering is an inverted milk-pan, such as is used to set the cream in, but a well-made straw huckle is perhaps better. Remember, a straw hive, being porous, requires shelter from drifting storms, as well as ordinary rain. Nothing is more injurious to bees than damp, and with a cold, reeking domicile in winter, no stock can thrive.

To those who intend to devote a greater share of attention to the bees, by all means let me recommend a frame hive—it need not be costly. In the summer of 1875, in the columns of the *Gardeners' Chronicle*, I gave full instructions how to make a serviceable hive at a cost of about 6*s*. Moreover, a drawing was given of every piece of wood required, which has enabled many men to set up bee-keeping in frame hives. The British Bee-keepers' Association, at their annual shows, by their offer of medals and money prizes, stimulated the hive-makers to work for the poor man as well as the rich, and now frame hives may be bought at any price, indeed quite as cheaply as well-made skeps with their floor-boards and covers. The adoption of a frame hive gives numerous facilities of observing the bees as a scientific study, as well as a means of obtaining a honey harvest in the best possible condition, and when it is hoped to send the surplus to market the difference in value will be found as great as the produce of a hothouse Vine, gathered, packed and delivered by a skilful gardener, and the same Grapes sent to market by an ignorant labourer. There is no best hive; the man who often obtains an abundant honey harvest has the best hive for him, alter his system and probably his gains would diminish.

The hive, therefore, being procured, next requires stocking. If the straw skep should be the hive of our choice it should be ready and furnished to the bee-keeper who is to supply the swarm, which will doubtless be delivered hived in it, only requiring to be taken home, set down on the stand they are to occupy, and left to their own devices; but if the frame-hive is to be adopted, let the bees be first hived in an ordinary skep, and so brought home to the hive, which, before being ready for its inhabitants, requires some preparation. The object of having frames in the hive is, that the bees will build straight combs within the prescribed limits; but if the bees were placed in the hive without some guidance, they would be quite as likely to build their combs across the frames as along them: this may be obviated by giving them a straight wax foundation to start their building on. Where a piece of clean old comb can be obtained (the seller of the bees could probably supply it), it is easy to cut it into strips half an inch or more deep, and cement with wax or common glue one all along the under-side of the top bar of the frames. Where the comb cannot be had, a straight line of melted wax poured from a spoon on the same place will answer every purpose—the bees will adopt the guide, and build straight.

The Americans take much more trouble than we do in this particular, for they in many instances fill the whole frame with a thin sheet of wax beautifully impressed with the foundations of worker cells, thus insuring a minimum of drone comb being built in the hive. If the skilful bee-keeper could insure that every cell in his hives should be of worker construction he would do well, for he may rest satisfied his more careless neighbour will rear drones in their hives to answer all the purposes of his bees. The absence of drones may be likened to a commonwealth—all workers and no idlers. The great burly drones consume a lot of honey, which would otherwise go to fill the cells. Having safely housed the bees there is one thing should never be lost sight of—that is, to feed them if bad weather should immediately ensue, for remember the bees have no stores, and if they are unable to gather any they must starve. *John Hunter, Eaton Rise, Ealing.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—Since fine-leaved plants became fashionable they are grown more or less by all who have the means. With some few exceptions they are very much more easily managed than flowering subjects, nevertheless there is very great difference in their appearance, and the use that can be made of them for decorative purposes, when they receive the treatment they require from that which they present when indifferently managed. Especially is this the case amongst the softer-growing kinds, such as Cala-

diums, Dieffenbachias, Alocasias, and Marantas. These frequently are so treated in the stove as to render them quite unfit for placing during the summer months in a conservatory, even when the temperature is kept a little warmer than an ordinary greenhouse; and when used for exhibition nothing is more common than to see them flag in a manner which renders them anything but taking objects to look upon, which condition is usually caused by the unsuitable and indiscriminate treatment they receive at this time of the year in growing all alike in a high temperature too far from the glass to get sufficient light. The majority of fine-leaved plants will not bear the sun's rays directly upon them when powerful, yet never, and more particularly in the spring, when their principal leaf-growth is being made, should the blinds be down for a single hour when there is absolutely required. Over-potting, and the excessive use of manure-water, which soft spongy growth is produced, also contribute to make this class of plants unable to bear removal from the situation in which they have been grown; but the cause above all others to which is attributable the soft tender condition, with drawn weak growth, is subjecting such plants as these to bottom-heat, necessitating their being too far away from the roof. In the case of small or moderate sized plant, grown for table and room decoration, of Draceenas, Palms, Crotons, others, Caladiums, &c., it is indispensable that they be treated so as to insure sturdy growth, otherwise they are of little use. Quick-growing plants, as a natural consequence, are more liable to suffer than such as make slower progress, and, therefore, so far as possible should be kept at the coolest end of the house where the most air is admitted, and have a place on the side tables, where, in addition to the light they receive from the roof, they get that also from the upright side-lights. Where large quantities of fine-leaved subjects are in demand for table decoration there should be quite as at command a thoroughly light, low, span-roofed pit, where the plants will necessarily stand close to the glass. From such a structure they will do three times the service they would if grown in an ordinary stove, especially where any climbers are allowed on the roof. The useful Isolepis gracilis, indispensable for using as the front row to hide the pots of other things, will grow apace if at the present time a few large plants are divided into small pieces, put singly in 4 or 5-inch pots, and accommodated with stove treatment. Lycopodiums of the stoloniferum section, cesium and Kingii (denticulatum), are also very serviceable for the above purpose—treat them similarly to the Isolepis. Fine-leaved more than blooming plants suffer if allowed to become infested with insects; if thrips or red-spider get a footing on them during the spring, before the leaves get to maturity, they become disfigured worse than further on in the season. If these insects are detected as soon as they first make their appearance they may easily be destroyed by sponging with clean water, going over the plants again two or three times at intervals of a week, when any that may have escaped the first cleansing will be killed. The blinds will now need to be drawn down over most fine-leaved plants for some six or seven hours during the middle of the day, but do not let them down in the morning before there is absolute necessity, as a little indirect sun upon their leaves will be an advantage rather than otherwise. Draw up the shading early in the afternoon; there is little fear in the shape of scorching in the after part of the day, when the house is closed, as the moisture, which immediately condenses upon the glass, will prevent it. Be careful not to admit air in such quantities as to dry up the atmosphere of the house too much, or to come in direct contact with the young tender leaves. Syringe the plants freely now once a day, and this should be done sufficiently early in the afternoons, that the leaves may get dry before darkness sets in. Another batch of cuttings of all the most useful winter-flowering plants should be put in now. Those who have got the double Poinsettia, and are anxious to get as large a stock as possible of this finest of winter bloomers, will do well to encourage plants that have flowered to at once make growth, taking the young shoots (which the plants if kept in a brisk heat will soon produce) off with a heel when about 4 inches long. This may be repeated till every eye of last year's growth has made a shoot, after which the stools will push enough to form large plants, if desired, for the coming winter. *T. Baines.*

FLOWER GARDEN, ETC.

As the season is now getting on, and, notwithstanding the sunless weather, the grass is making progress and requires attention, let it be carefully swept and rolled before the mowing-machine is set to work, which in many places where the lawns are kept in good order will be already gone over. So much rain having fallen during winter and spring the ground is unusually wet and cold, and the grass spongy; it will be greatly improved by an extra rolling, which will render the ground firm and leave it in better condition for the mowing-machine to act to advantage. Where the trimming and pruning of evergreens has been delayed this had better be done at once, and all cleared off as quickly as possible. Late planted trees that are much exposed to the winds will require to be securely staked and mulched over with short litter or the sweepings of the lawns. This will prevent the drought from acting on their roots, and when hot weather sets in they will do with less watering. The houses and pits will now be all crowded with bedding plants, and the present is about the most trying time of the year to find standing-room for plants that are too tender to be trusted without protection. The more hardy plants can be weeded out, and set in temporarily prepared places out-of-doors, where they can be protected until the planting-out time arrives; their places may then be occupied by potted-off cuttings and young plants, which will all be required to do duty during the coming season. As soon as the recently propagated stock are sufficiently rooted and fit, they had better be potted and put together so as to be more conveniently watered, shaded, and attended to. The beds and borders, where spring-flowering and other plants are growing, will be much improved where the surface is hard by having a good break-up with the hoe, and any blanks may be filled up from the reserve ground, and all left neat and orderly. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

Strawberries in Pots.—To secure a good supply of runners of the best description, and at the earliest period available, is a most important matter connected with the cultivation and forcing of these plants in this way. Where large numbers of these are required, or even where the subject is made a prominent one in the ordinary routine of operations, and the annual plantations which are made are not calculated to produce a commensurate supply for the requirements in this way, other means should be adopted for the purpose, whereby the precariousness involved in depending on the ordinary fruiting plants alone may be avoided. The plan of picking-out runners especially for this object, in the autumn, beside the margin of walks or other suitable places, and removing the flower-stems when they appear in the spring is to be commended, as is also that of planting out now selected plants from amongst those which have already borne fruit this year. These plants, if the hardening off of which, referred to in this Calendar for March 10, has been attended to, will be inured sufficiently to withstand uninjured the effects of such weather as usually prevails at this season. Let such plants be carefully planted, in a firm manner, in a suitable spot, "where sunshine well abounds," in well enriched soil, and they will not only give a supply of runners early this spring, but most probably a supply of ripe fruit likewise next autumn. Continue to introduce successional plants as soon as the fruit is gathered off those preceding them, and they can be removed. Also cold frames will often be spared for this purpose should likewise be filled at once. *G. T. Miles, Wycombe Abbey.*

Melons.—Do not allow the daily operations now pressing in other departments to interfere with the usual routine in the management of Cucumbers and Melons, as few plants more speedily show the ill-effects of neglect. In the early house all female blossoms should be carefully fertilised, to ensure a good set; and as soon as the fruit shows signs of swelling the point may be pinched out of the leaf on which it is placed. If the laterals are crowded on the main stem one-half of them may be removed, to give room to the foliage. During the time the fruit is setting, the top and bottom-heat may be increased and atmospheric moisture reduced; but when the fruits show signs of swelling freely and kindly, and have passed the size of Walnuts, feeding may be followed up by giving tepid liquid-manure at every watering. Fly the syringe freely on fine afternoons about 3 P.M.; close at 80°, and run up to 90° with sun-heat. It frequently happens that one fruit takes the lead of the others after the first watering; when this is the case it should be removed, as it is always best to have the fruits on individual plants swelling off evenly together. Continue the usual treatment to successions, always bearing in mind that Melons must be grown quickly if the fruit is to be of first-rate quality. Pits and frames must not be neglected at this changeable season; it will therefore be well to follow up the weekly turning and renovating of the linings, taking the back and front alternately, to prevent the bottom-heat from falling below 80°. Let the lights be well covered at night, and leave a little air on, to prevent injury from steam. Make good sowings for succession. Watch closely for insects, particularly if the pits have been used for propagating purposes. If smoking is resorted to, great care will be required in the preparation and after-management of the plants, otherwise serious injury will follow. We now give preference to the use of tobacco-powder for the destruction of aphis, and a very weak solution of Gishurst Compound for red-spider. *W. Coleman.*

The Cherry House.—Defer any thinning of the fruit which may be necessary until such time as the stoning process is perfectly accomplished, and it is evident that the colouring and ripening of the fruit is proceeding in a satisfactory manner. Until this is the case let the conditions as before advised in regard to ventilation and general treatment remain in force. Syringing, however, must be discontinued overhead immediately the colouring process commences. This is indispensable to insure sound fruit. As growth proceeds attend to stopping in and tying, also to keeping the foliage free of the pests which usually infest the trees which are placed under these conditions. Plentifully supply trees in pots with weak manure-water on every occasion. To accelerate the finishing off of the fruit after it has commenced its second swelling, more heat may be given, jointly with a little air on the house constantly. *G. T. Miles.*

HARDY FRUIT GARDEN.

Among hardy fruits the Strawberry is one of the most useful and important, and yet in many gardens it does not receive anything like the amount of attention its merits deserve, as it is often relegated to some out-of-the-way spot under the shade of trees, and left in beds till the plants become so matted together as to starve each other. To obtain really fine fruit of first-class quality and flavour, the plants should be grown at wide distances apart, so as to let in plenty of sun and air, without which, to consume the crude juices into saccharine matter and dispel the watery particles the fruit is more or less charged with, it must of necessity be insipid and worthless as compared with such as ripen under more favourable conditions. Much as this solar influence has to do with the quality of most fruits, there are none on which it has a more benefical effect, or that shows it in a more striking and marked manner than the Strawberry, whether grown indoors or out. This being the case, the site chosen for the beds should be in an open situation, and one that is readily accessible for affording the requisite attention, such as mulching them down with litter, getting on nets, and giving a thorough good soaking of water should occasion require. Narrow borders affording room for three rows are the most convenient and manageable, as an ordinary hoeing-over will cover the whole, while they can be easily got at for the purpose of gathering, and being dwarf and of a more permanent character than most crops, they are the neatest and best to have next to walks, their close proximity to which is sure to be agreeable to visitors, both on account of the delicious perfume they exhale and their ease and facility for gathering. By making choice of such as have a southern aspect and are well sheltered for planting, a few Black Prince or Keens' Seedling, ripe Strawberries may be obtained much earlier than they otherwise could be outdoors, and where convenience exists it is a good plan to have a row close at the foot of a sunny wall or dead fence to forward and protect them, but in such a position that they will not interfere with the roots of choice fruit trees. Although the Strawberry is a surface-rooted plant, it likewise strikes deep down, and it is, therefore, useless attempting their cultivation in shallow soils or such as are not thoroughly broken up and prepared before planting, and this should now be done preparatory to getting in runners that were pricked out in the autumn. The present is the proper time for forming fresh beds, the plants in which will afford the finest and best runners for layering in pots for forcing. Previous to planting, trench the ground at least 2 feet deep, and if the subsoil is of a light sandy nature, work in a good dressing of clay with some well-decomposed cool manure, such as that from the cow, and keep both these well beneath the surface but thoroughly incorporated with the lower portion. This done, tread firmly and plant in rows 2 feet apart, and 18 or 20 inches asunder in the rows; but for Queens, that grow strong and want more light to colour them, it is better to allow a space of 2 feet 6 inches, and not less than 2 feet inches from each other. Beds so formed will allow room for a crop of Lettuce between during the first season, and thus the ground may be utilised. The Fig, unlike most deciduous trees, transplants best at this season of the year, and therefore in cases where it is desired to remove any of these it should be carried out at once, or any root-pruning they may require to restrict growth, as it is useless attacking the tops or to expect fruit if they make more than a few inches of wood, for should they do so it is sure to be of that soft pithy nature that is either barren or is killed by the frost. Chalk rammed under and around them, or fresh mixed lime and gravel to form a concrete, is the best means for keeping unruly Figs within bounds, and rendering them fruitful; and this, with a little attention by way of stopping a few of the leading shoots during the summer, is far better than making use of the knife at any time. Notwithstanding the distance their roots travel in search of food it is astonishing how little soil they will live on, and how fertile they become when they have only a limited larder containing calcareous matter to build up a firm woody growth. *J. Sheppard.*

THE
Gardeners' Chronicle.

SATURDAY, APRIL 7, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

THURSDAY, April 12 { Amsterdam International Horticultural Exhibition opens. Sale of Tree Ferns, Orchids, Plants, &c., at Stevens' Rooms.

FRIDAY, April 13 { Sale of Seedy Lilium auratum, Orchids, Araucarias, &c., at Stevens' Rooms.

WE have before us a pamphlet which we believe would be read with interest by Vine growers were it readily attainable in this country. It is a brief account of various EXPERIMENTS undertaken for the purpose of obtaining new and desirable GRAPES in the Eastern States of North America. Mr. HASKELL, of Ipswich, Massachusetts, the experimenter in question, set before him as the object to be attained, Vines hardy enough to bear the severe winters of the New England States, which should not be subject to mildew, and which should produce good fruit.

Mr. HASKELL began by selecting various wild species and cultivating them, but without good results. He then tried seeds of the best natives, and selected the offspring for three generations without obtaining a single fruit worth propagating; he grafted native varieties on foreign stocks, and planted the seeds of the native Vines, but without improvement. Inarching in various ways was tried, white Grapes were grown under the foliage of black Grapes, and black under the foliage of white, but the fruits retained each its proper colour, though the texture and quality of the fruit seemed to be changed by the alien foliage. Seeds of Grapes so treated were sown, but yielded no good results.

Cross-fertilisation was then adopted, and more than a thousand varieties were thus raised, the history and parentage of each being recorded. The results from cross-breeding have been much more encouraging than those obtained by other methods, so much so that the American Pomological Society considered several of them to be of excellent quality. Dr. HOGG, who examined some sent over to this country, reports on them as "very excellent." Mr. HASKELL is desirous of making these Vines better known, and to have them tried in various situations, as no doubt some would be much better suited for some situations than for others. It is further hoped that some of them may be of value in resisting the Phylloxera. "It will be observed," writes Mr. HASKELL, "that most of the Vines described are from crosses with what is popularly called the Fox Grape, but accurately it is Vitis riparia, a species which is found generally in a wild state only in swamps and on the banks of streams. The V. vulpina and V. Labrusca are only other names for varieties of the same species, and they do not accurately describe any species, as the pungency on the lips and the foxy odour are not uniformly found in the fruit of either of them. Recent experiments in France (first undertaken in Ireland) have shown that the most effectual eradication of the Phylloxera was by flooding the ground, and thus drowning the insects. As the V. riparia flourishes and does best in wet bogs and meadows, even when the roots are immersed in water all the winter, and the soil is saturated all the summer, may we not expect that this trait will prevail in some of these hybrids and make them almost proof against the Phylloxera, especially if planted in such wet soils?"

Mr. HASKELL'S perseverance, even though it may not have brought him the results he wished, is by no means thrown away. The general result of his experiments goes to illustrate once more the advantage of endeavouring to improve what we may call old-established varieties by cross-breeding and otherwise, rather than by attempting to educate wild forms *de novo*. Time and the gradual accumulation of inherited characteristics are thus all gained, though, on the contrary, it must not be overlooked that degeneracy of constitution may be induced by over-cultivation when a little infusion of the original stock may serve to restore vigour. The negative results of the various modes of grafting and inarching tried, are also by no means without value, however discouraging they may have been to Mr. HASKELL.

WE suppose, if there was not a "good deal to be said on the other side," that no one would venture to suggest that the ALBERT MEMORIAL in Hyde Park should be covered with glass. Still no one who has seen what effect London smoke has had upon the statuary portion in the comparatively short time it has been erected, will doubt the desirability of protection. Mr. WILLS has had the boldness of conception to devise, in association with Mr. BEDBOROUGH, the architect of the Westminster Aquarium, a plan for constructing a casket in iron, copper, and glass, to enclose the Memorial. As may be seen from our illustration (fig. 69), the design is strictly in harmony with the general architectural design of the Memorial. It consists of an octagonal dome raised on the central intersection of a four-armed cross—200 feet in diameter, and surmounted by a spire or lantern, the summit of which is 350 feet from the ground.

The principal entrance, which is 25 feet wide, is from Kensington Gore. The archway of this entrance, richly decorated, is carried into the gable, which is filled with elaborate Gothic tracery. The other principal faces of the octagon are similarly treated. Clusters of columns, forming the piers at the intersecting angles of the octagon, are carried up in stages to the springing of the dome, terminating in pinnacles and open-traceried spires. From these piers, at the base of the dome, spring the gables which terminate the faces of the octagon. These are also filled in with floriated Gothic tracery.

East and west of the central building it is proposed to erect wings 350 feet in length by 125 in width, to be devoted to the illustration of the vegetation of the various regions of the world, and of such plants as are specially serviceable to humanity, not only for decorative purposes, but also as supplying articles of food, timber, and the like. The PRINCE CONSORT'S idea of diffusing knowledge, and of binding different nationalities into one league by the bonds of peace and reciprocal interest, would thus be fittingly illustrated, while Horticulture, as the sister of Art, the handmaid of Science, and of ever-increasing commercial importance, would appropriately play its part. These are the ideas which prompted Mr. WILLS' letter on the subject to HER MAJESTY, who has, as have other members of the Royal Family, expressed satisfaction with the plan advocated by Mr. WILLS, and admiration of the manner in which it is proposed to be carried out. Whether the whole or any portion of the design be carried out or no, is a question of finance to a large extent. In any case the design is so novel and so striking that we have thought it desirable to bring it before the notice of our readers interested in horticultural structures.

—— WE are requested to announce that the Council of the Royal Horticultural Society have decided to change the days of meeting from Wednesdays to Tuesdays, on and after the 1st of May next. This step was taken by the Council, in accordance with a numerously signed requisition presented on Wednesday last, and a copy of which we annex:—

"To the Council of the Royal Horticultural Society.

"We, the undersigned exhibitors at the meetings of the Royal Horticultural Society, respectfully call the attention of the Council to the great inconvenience arising from the meetings of the Society being held on the same day as those of the Royal Botanic Society. This inconvenience has existed more or less ever since the Council altered the meetings from Tuesdays to Wednesdays; but this year the recurrence of simultaneous meetings and shows of the two Societies is so frequent that we suggest to the Council whether it would not be better for the interests of both the Societies and exhibitors if the Council of the Royal Horticultural Society were to revert to the former arrangements. So far as the exhibitors are concerned the earlier day in the week would best suit them, as it would interfere less with the ordinary routine of their establishments."

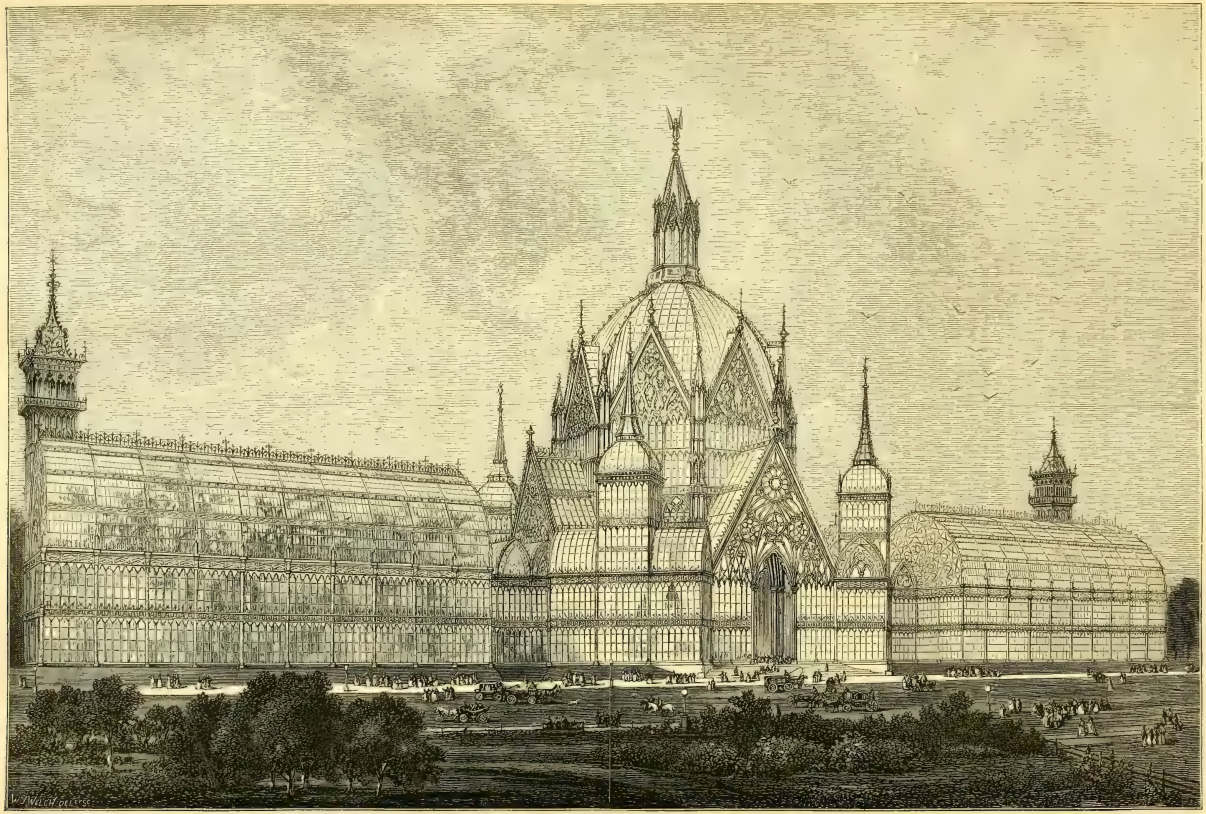
—— We heard at South Kensington on Wednesday that over 4600 persons visited the Royal Horticultural Society's gardens on Easter Monday. The price of admission was 2*d.*, and the amount taken at the gates was £38 18*s.* 8*d.*

—— It has now been definitely arranged that the exhibition of PLANTS, CUT FLOWERS, BOUQUETS, WINDOW BOXES, FRUITS, FORCED VEGETABLES, and SALADS, by the growers and salesmen of Covent Garden Market, shall be held on Wednesday, April 18, in the gardens of the Royal Horticultural Society at South Kensington. We understand that gold, silver, and bronze medals, with Certificates of Commendation, will be awarded by the Society to the most meritorious exhibits; and free tickets of admission will be given to all exhibitors. The exhibition will be a novel and interesting one, and it is believed that the whole of the growers and salesmen will accord to the Council their valuable assistance and co-operation; the determination being that, so far as Covent Garden is concerned, the show shall be a great success. Those who may be desirous of exhibiting should communicate with Mr. BARRON, Royal Horticultural Gardens, South Kensington, at once. We also hear that an attempt is being made to get the exhibitors to dine together the same evening at the "Criterion," when it is hoped that His Grace the Duke of BEDFORD will preside.

—— Messrs. DOWNIE & LAIRD, of Edinburgh, have lately taken on a long lease a piece of ground about 10 acres in extent, near to their Pinkhill nursery, which, instead of having trench-dug in the ordinary way, they have had very successfully steam-cultivated by the Scottish Steam Cultivation Company. The steam plough was first run over the ground at the depth of 10 inches, this operation being followed by a grubber set at 15 inches, and again by the same implement set at 20 inches, the whole being subsequently harrowed by steam at the rate of 5 miles an hour. This, we believe, is the first time the steam plough has been used for nursery purposes in Scotland.

—— BAROSMA SERRATIFOLIA is flowering in the Economic-house at Kew, to which an interest attaches from its probably being the only plant of the Buchu species now cultivated in this country. It is an erect, thinly branched shrub, with linear-lanceolate leaves about 1 inch long, and pretty pure white flowers. Buchu leaves are used in medicine as a slight tonic and aromatic stimulant. Several other plants of interest are also in bloom. The flowers of Osmanthus fragrans, used for scenting Tea, perfume the house with an exquisite fragrance. Erythroxylon Coca must be mentioned, from the great interest it has recently excited. Carefully conducted experiments on its medicinal action have given the most conflicting results, but a preparation is now advertised as "the greatest restorative in atrophical, blood, and exhaustive diseases"! Eight varieties of Tobacco are in bloom, and are considerably ornamental. Others in flower are Aloe vulgaris, Chamærops humilis (polygamus), and Peumus Boldus is about to open. Drimys Winteri is ripening fruit, which it rarely does.

—— As a useful, early, free flowering and handsome FUCHSIA we can strongly recommend Mr. JOHN LAING'S valuable hybrid, the EARL OF BEACONSFIELD. We saw in the Royal Horticultural Society's gardens at Chiswick, the other day, some plants which, after being cut back, broke into flower almost at once, while other varieties were, comparatively speaking, at a standstill. This is a valuable character, and should increase its popularity.



The Gardeners' Chronicle,] FIG. 69.—MR. WILLS' PROPOSED DESIGN FOR COVERING THE ALBERT MEMORIAL IN HYDE PARK. [April 7, 1877.

—— The MONTH OF MARCH, through which we have just passed, must have been influenced by the prevalent axioms in diplomacy, for it has powerfully sustained the *status quo* in Nature. Literally, as we were at the beginning so are we at the end, and this has indeed proved a remarkable and successful effort in counteracting the possibly disastrous influences that might arise from a comparatively mild winter. At the end of February things bore an unpleasantly premature aspect, and wise people shook their heads when they thought of the storms and frosts that might yet come. Since then five weeks have elapsed, and we see but the most trifling advance in Nature. The prevalent cold winds and occasional frosts of the month have kept the forces in subjection, but yet have most favourably influenced the land, and permitted a vast amount of sowing and planting to be done, so that in spite of the previous excessive rainfall the earth has now largely received her portion of spring cultivation and cropping. The present backward condition of vegetation adds immensely to the chances of a good fruit season. We have the trees of all kinds covered with fruit-buds on well ripened and seasoned wood; we have the humbler bush-fruits promising great yields; we have, indeed, all the material out of which a great fruit crop can be got, and we only need the favourable season, with its temperate atmosphere and occasional softening showers, to bring all things to a glorious and profitable fruitfulness. It has been often remarked that an early spring is by no means a natural result of a mild winter. To an ordinary observer such a result might invariably be anticipated to follow, but the present spring-time proves that the converse is not only possible but natural. The cold that will not come in severity at its expected time will come somewhat attenuated later on, and a late spring inevitably results.

—— It is but a short time since we had occasion to announce the death of ADOLPHE BRONGNIART, and now it is our sad duty to record the death, on the 29th ult., in his seventy-second year, of Dr. ALEXANDER BRAUN, Professor of Botany in the University of Berlin, one of the foremost botanists of his time, and a man of no common order of intellect. Professor BRAUN was perhaps better known as a morphologist than as a descriptive botanist, but his services to science have been of such importance, that it will be universally felt among botanists that a mighty leader has fallen. We shall hope shortly to be able to give some account of his career.

—— The first portion of Mr. ELWES' superb MONOGRAPH of the GENUS LILIUM has just been issued. To begin at the beginning, we may say that the titlepage, designed by FITCH and executed by WORTHINGTON SMITH, is very elegant and striking, giving good promise of what is to be found within. The work is in folio size, and contains eight coloured plates representing the following species and varieties: L. philippinense, Hansoni syn. avenaceum, pomponium, × Parkmanni, × Wittei, pyrenaicum, testaceum, Davidii—the latter a new species of M. DUCHARTRE, founded on an East Tibetan plant, discovered by the Abbé DAVID, and polyphyllum. Lastly, one of BOURNE'S beautiful Himalayan photographs is given, illustrating the locality where the last-mentioned plant is found. We shall speak more at length of this publication on another occasion, but we cannot delay thus briefly adverting to one of the finest botanical works of recent years. We are glad to learn that there is every probability of a speedy publication of the remaining parts, the drawings being all completed, with one or two exceptions only. As a small matter of detail, it is to be wished that the plates were numbered.

—— We learn from ANTWERP that the horticultural and agricultural society known by the name VAN MONS, intend to organise during the RUBENS' *fête* in August next, an horticultural exhibition on a large scale. The exhibition will be open alike to Belgian and foreign exhibitors. The general secretary is M. CHARLES DE BOSSCHERE, 57, Rue St. Thomas, Anvers.

—— The HEREFORD SOCIETY FOR AIDING THE INDUSTRIOUS has become the champion of a manure which it calls the MOULE and WITH compound. Mr. MOULE is well-known for his zealous advocacy of the dry-earth system, and Mr. WITH is a chemist who has devised a compound to be added to the dry earth to increase the manurial value of the earth used in closets, pig-styes, &c. The pamphlet before us details the method of employment of the compound, and speaks in high terms of its efficacy, but is silent as to the nature and composition of the "WITH" addition. The object of the Hereford Society seems to be a philanthropic one, and it carries out its object by supplying to the working classes manures, seeds, Potatos, &c., of the best quality at moderate prices.

—— The following notice is, says the *Bulletin d'Arboriculture*, conspicuously set up in the State forests of France, and it is to be desired that a similar plan were followed here also:—

"HEDGEHOG.

Feeds on mice, small rodents (*rongeurs*), slugs, and grubs.

Do not kill a hedgehog.

TOAD.

A farmer's friend; destroys twenty to thirty insects per hour.

Do not kill a toad.

MOLE.

Destroys incessantly grubs, mole-crickets, and insects injurious to agriculture. No trace of vegetable matter is ever found in its stomach. Does more good than harm.

Do not kill a mole.

COCKCHAFER (*Hanneton*) and its GRUB (*ver blanc*). Mortal enemy to the farmer. Each insect lays seventy to one hundred eggs.

Kill the cockchafers.

BIRDS.

Each department of France loses annually many thousands of francs by the injuries of insects. Birds are the only enemies capable of contending with them.

Children, do not rob birds' nests.

A reward of twenty-five centimes will be given to every child who brings 500 cockchafers to the *Garde Champêtre* (parish constable)."

—— A fine specimen of TESTUDINARIA ELEPHANTIPES is flowering in the Succulent-house at Kew. Its strange rootstock, combined with twining stems and graceful foliage of the most lively green, give it a most unique appearance. Bomarea Caldasi, growing against the end of the house, is extremely showy. It has about ten umbels, some having as many as thirty open flowers, similar to those of Alströmeria, and of bright orange colour.

—— Dr. TRAILL has been elected Professor of Botany in the University of Aberdeen, in the room of Professor DICKIE, resigned.

—— One of the most useful greenhouse plants is GERANIUM ANEMONIFOLIUM, a species which is in flower nearly all the year round. It has a caulescent stem a foot or so in height, from the top of which radiate several stalked palmately divided leaves, the divisions themselves twice pinnately cut. The flowers are of a reddish violet colour.

—— In spite of its abominably long name, ORYCHOPHRAGMUS SONCHIFOLIUS is a desirable plant for greenhouse decoration. It is a low-growing annual Crucifer, with large pale violet flowers. It is closely allied to Moricandia. Plants of it may now be seen in the cool greenhouse at Kew.

—— The business carried on by the late Mr. C. PFERSDORFF, of Paris, at 73, South Row, Kensal New Town, has passed into the hands of Messrs. CROUCHER & BOLLER, the former of whom is the well-known gardener to J. T. PEACOCK, Esq., Sudbury House, Hammersmith, Mr. BOLLER being an *employé* of the late proprietor.

Home Correspondence.

Lime for Chalk Soils.—On p. 413 a correspondent asks whether soils in which chalk is already present in considerable quantities are ever benefited by applications of lime. Under certain circumstances such soils may decidedly derive considerable advantage from dressings of quicklime, since the benefits arising from the liming of soils may be classed under two distinct heads. The first of these is the supply of the element calcium itself, which while absolutely essential to ordinary vegetation, is frequently deficient in land, the sterility of which may be traced by analysis to its poverty in this constituent. Chalky soils, it is scarcely necessary to say, abound in calcium, chalk being simply the carbonate of that metal. The benefits conferred by lime on such soils, therefore, are not due to the supply of calcium, but to the chemical action of caustic lime upon the substance of the soil, this chemical action being the second head above referred to. Quick-lime, when slaked, falls into a minutely powdery condition, ultimately absorbing carbonic acid from the air and becoming transformed into carbonate of lime, identical in composition with the chalk already in the soil, but in a much finer state of division and more readily soluble for the supply of plant food. It is, however, before assuming the carbonated state that the lime does the better part of its work, by aiding the destruction of organic matters in the soil and rendering part of their nitrogen available to the plants, reacting upon the silicates present in the form of clay, and setting free alkalies previously locked up from the rootlets by their peculiarly insoluble forms of combination. It may be added, that the mere fact that a soil is situated on a subsoil of chalk is no guarantee that the soil itself should contain even a fair proportion of lime. Lime, as farmers well know, shows a peculiar disposition to "settle," unless frequently brought up to the surface, and it thus not uncommonly happens that a soil gradually becames sterile, without any obvious cause, its situation on the very surface, perhaps, of a chalk hill being sufficient to avert from an inexperienced mind the idea of its being deficient in lime. In such cases a chemical examination in the laboratory will often show that the upper 6 or 8 inches of soil are almost destitute of lime, the rains having gradually caused that substance to settle in or on the subsoil. Such cases, of course, occur more frequently on pasture than on arable land, as the disturbing influences of the plough are absent. Such pasture land is benefited by a dressing of lime, while arable land that has fallen into this condition may be restored to fertility by ploughing a couple of inches deeper than usual, without any fresh application of lime. *Bernard Dyer, F.C.S., Laboratory, 17, Great Tower Street, London, E.C.*

Bananas.—It is said that Bananas are usually cut and hung up to ripen, or even in some cases buried for that purpose, but the fruit of Musa Cavendishii gets the fullest flavour when left till it will break off from the stalk with the gentlest twist. When the central fruit stem is cut across, it has a strong odour resembling that of a Cucumber. *T. T., Cullompton.*

Lilium giganteum.—Having seen a few remarks on the growing of this Lily, I beg to say that the bulbs I have were potted on January 3, 1877, in turfy loam, and in 12-inch pots, four bulbs, one in each, and they have flowering spikes now 18 or 20 inches long. They will flower in pots as well as where planted out, and make a fine show for a conservatory or greenhouse. *J. Mew, Gr., Bodlondeb, Bangor.*

Mandragora microcarpa.—I enclose an abnormal blossom (two united) from the plant of Mandragora microcarpa in my garden here, which still continues freely flowering, uninjured by any of the severe weather we have had since I sent you the notice of it printed in the *Gardeners' Chronicle* of February 17, p. 212, in which I find that by a misprint it is named "macrocarpa." I enclose also a blossom of M. officinalis, which did not come into flower until some weeks later than the other. Its leaves seem to be more sensitive to frost. All the parts of the plant are larger than the microcarpa, and the flowers and leaves have a light yellowish tint, very different to the darker purplish tint of that species. *W. C. Trevelyan, Wallington, Newcastle-on-Tyne, March 31.*

Watering Plants.—We hear a deal now-a-days about the cold-water system for watering hothouse plants, Vines, &c. I shall deem it a favour, and I think the horticultural community will be greatly benefited, if some of your numerous correspondents who are plant and Grape growers will kindly give their opinion and experience about the matter. It is said that our best nursery propagators use cold water for their most tender cuttings and plants. The late Mr. J. R. Pearson, Chilwell, one of the best Grape and Vine growers we ever had, and who well understood chemistry, told me he used quite cold water for his Vines and choice plants. Every one who saw the Grapes produced at Chilwell some eight or ten years since can testify to their excellence; also the pot Vines of later years. On the other hand, we read from the *Gardeners' Chronicle* of March 24 that Mr. Hunter, the grower and producer of the most prodigious and best Grapes of the day, waters his Vine borders with warm water. The system of cultivation pursued by Mr. Hunter with regard to the stopping of shoots, laterals, &c., is a counterpart of Mr. Pearson's, but one used cold water, the other uses warm water. Are we to say that one system is as good as the other? We know that if we boil water it is deprived of the

gases essential to sustain animal life, and that if live fish are put into it they soon die. Would Mr. Hunter be able to increase the weight of his fine productions by using cold water instead of warm? *B. Wadds, Gr. to Lord Middleton, Birdsall House, York.*

Hybrid Agaves.—Mr. J. G. Baker's interesting papers on the large and intricate genus Agave, like all his other monographic papers, must be of great service alike to botanist and cultivator. Observations on the seedling variations of the different species are, however, most desirable, as in some cases they are very variable. In A. (Littæa) geminiflora, for example, we get smooth and filiferous forms, and also loose-growing and dense-growing variations. A. perbella is said to be a hybrid raised by M. Kerchove, its parents being A. xylinacantha and A. univittata. A. Taylori is an English hybrid, its parents being A. densiflora and A. geminiflora. Appended is a list of hybrid varieties offered in the catalogue (1877) of MM. Nardy et Cie., Etablissement Horticole de Salvadour, Hyères, and these gentlemen may wisely add the parentage of their plants, instead of appending misleading names. If they would also give us a little account of the exact manner in which these varieties were obtained it would be interesting.

A. chiapensis × xylinacantha latissima.	A. Verschaffeltii × heterodon × heteracantha Tonneliana.
A. chiapensis × Dasylirion gracilis?	A. Verschaffeltii × micracantha.
A. heteracantha Tonneliana × Verschaffeltii.	A. Verschaffeltii × chidigera.
A. micracantha × Satori.	A. Verschaffeltii × xylinacantha longifolia.
A. micracantha × xylinacantha micracantha.	A. xylinacantha × densiflora.

In a state of Nature Agaves must nearly always be cross-fertilised and very often hybridised by the numerous insects which struggle among the flowers in their eagerness to obtain the honey-like fluid so copiously furnished by these plants when in flower. Even if no insects be present cross-fertilisation must be the rule in this genus, seeing that all the species I have yet examined are protandrous, the pollen being shed, and the anthers hanging down limp and lifeless, before the stigma is fully developed and receptive, as pointed out this fact in these columns in January, 1870; and Dr. Engelmann, of St. Louis, who has examined the plants in their native habitats, also alludes to the subject. —>

Stauntonia hexaphylla.—Mr. Bland, gr. to Graham Smith, Esq., Cranbourn Court, Windsor Forest, called my attention a few days ago to a plant of Stauntonia hexaphylla, which was blooming very freely on the back wall of an orchard-house there; it much resembles in its form of flowering Clematis Flammula, only that the flowers are larger. I think it would be very useful for bouquet work used in the bud, and an excellent conservatory climber, being a very rapid grower and free bloomer. *S. Johnson, Royal Nurseries, Ascot.*

The Lilies at Heatherbank, Weybridge Heath.—As some of my gardening friends foreboded all manner of evil to Lily bulbs from the continued rain of autumn and winter, and as the shoots of most Lilies are now above-ground to speak for themselves, will you allow me to say that in the garden here they are more than usually strong and healthy, and that blank spots are few and far between. Owing to a pressure of correspondence at the time, I could not superintend the repotting of many of the house Lilies; they, however, look perfectly well and happy in their last year's soil. *George F. Wilson, April 2.*

The Staying Qualities of the Flowers of the Poinsettia pulcherrima plenissima.—I have much pleasure in confirming your correspondent of last week on this matter. It is one of those valuable peculiarities that impressed me from the first. Most cultivators know that the fine specimen P. pulcherrima is somewhat evanescent at the best. No doubt the durability of all Poinsettia bracts turns a good deal on treatment, but finding under identical treatment a difference of months in the duration of this new variety, shows that it has far better staying powers than the old one; in fact, this flower is a gradual development, and building up, on, or over, of bract after bract. From this structural peculiarity alone, it must needs continue longer in flower than a variety which makes one spreading of bracts only. But independently of the addition of new parts the individual bracts last much longer. In addition to our strong plant we had several small ones, all of which flowered, while some of them were under 6 inches high. Observing the tenacity with which the single rows of bracts adhered to these small plants, I was called to order in a contemporary for venturing the assertion that, with a succession of plants, we might readily have Poinsettias from November to May. I confess that when that was written, I did not expect to be able to chronicle the fact that we have still a small plant of P. p. plenissima in flower (April 2), that was in bloom last November, and the bracts look as if they might continue fresh for some time longer. With such a fact before us, Poinsettias even all the year round hardly seem an impossibility. For these plants have another quality that has been little exercised as yet. If instead of cutting them back the bracts merely are cut off and the plants are subjected to a brisk heat (I am now writing of the old varieties) they will break into one or more secondary coloured bracts. Assuming that P. pulcherrima plenissima also has this quality, it might and will surely be possible, by taking advantage of the power of second flowering, and also by keeping up a brisk supply of succession plants, to have it in flower all the year round. So much at least is certain, that without any very special treatment a vision of Poinsettias may now be enjoyed from foggy November to balmy May, thanks to P. p. plenissima. *D. T. Fish.*

Dendrobium Pierardii.—I was much pleased on reading the account given in your paper about the above old-fashioned plant, which, like many other good things, are neglected and disregarded, not because they are unworthy of special care and attention, but because newer claimants are set up with such glowing characters that we forget the real merits of many of our old favourites. It is only now and then, when unusual care has been bestowed upon them, and that they attain such a size as will afford them the capacity to produce a profusion of flowers, that we can make a commanding position, and win honours and draw forth the admiration and praise of the floral connoisseurs who appreciate the beautiful wherever found. Like many others, D. Pierardii is not very striking when seen in small plants. The flower individually would not compare favourably with such lovely forms as D. Devonianum or D. Wardianum, or many others amongst the new or old, nor could Pierardii compare with plants of these and other varieties for effectively coloured flowers, taking size and number of blooms into account, but there is a distinctness of colour, a lightness of texture, an unobtrusive beauty in Pierardii which has been simply fascinating to me and to others, and so well worthy of a place in every stove or intermediate-house. Many years ago I grew a very large plant of this variety, which made growths quite 4 feet in length, and which produced a wonderful profusion of bloom. I had many plants of it, some in pots, some on logs with sphagnum, all of which grew well, with little care more than was required to grow any other stove plant, but the large plant alluded to, and which surpassed all the others, was grown on a piece of the common Male Fern (Aspidium Filix mas). To this large root in its living state I fastened six nice pieces with three to four leads, covering the roots in the usual way; whether the Fern afforded nourishment to the Orchid roots, I do not know, but I never saw anything grow so full, or flower like it. I have made some charming effects by placing a large pan of Gesnera cinnabarina, or G. refulgens, or G. ignea, full of their bright glowing colours, for a centre, and hanging some logs of Pierardii in bloom round them fringed with a ring of Maidenhair Fern, and would recommend my brother gardeners to try it. I once had a variety of Pierardii from Chatsworth—we called it latifolia; this I have grown 7 feet in length: and another miniature one called cucullatum, neither of which I have seen for some time; and there is yet one more lovely little Orchid, Dendrobium aphelium, which when well done is a perfect beauty. *William Payne, Covent Garden House, Taunton.*

The Potato Fungus.—Mr. Smith's proposal to microscopically examine guano to look for germs of the Potato fungus will create much diversion, and excite not a little sarcasm. It will probably be said that guano has been analysed and examined so many times by analytical chemists that if there had been any indications of fungus they would long since have been found. It is well, however, to observe that not only did not chemists look for such ingredients, but that, further, they were ignorant of the form and appearance of the Peronospora. The fact alluded to by Mr. Smith, that the introduction of Peruvian guano and the Potato disease were nearly, if not quite, coincident, lends much favour to his ideas; and although at the time there were not wanting those who ascribed the disease to the guano, it was only with the most vague ideas as to the nature of the disease, or more probably with none at all. The supposition expressed by Mr. Smith, that as Peru is the home of the fungus, it is possible that it might have been imported hither in the guano, is much more feasible than is the notion still so strongly entertained by some of our legislators that the Colorado Potato-beetle might be imported hither in a cargo of Potatos: indeed the one is as probable as the other is unlikely. It may be that when the first imports of guano took place the article was manurially of a much purer character than it now is, and did not undergo so much mixing or manipulation. Of course that would greatly favour the introduction of the pest, and assur ing that the guano was the agent of introduction, its use had already become sufficiently common in 1844 for the rainfall of that summer to bring about the great calamity which startled the entire community. Now supposing that Mr. Smith should succeed in finding in any samples of imported guano sent him evidences of the fungus spores it will afford most conclusive proof that the disease might have been introduced in that way. But further, it will show us that as long as the importation of Peruvian guano continues in its present form the disease can never be stamped out. It is doubtless in some such mysterious fashion as this that we have introduced the Hollyhock and other apparently exotic fungi. It will then remain for Mr. Smith to discover first whether the fungus-spores can be destroyed by heat, and at how low a temperature, and also to test whether, if such is the case, the guano can be exposed to the same degree of heat without losing any of its manurial properties. In this way only does it seem to me that imported guano can be rendered innocuous as far as this particular disease is concerned. Assuming that these spores are found—further, that it is deemed necessary to take some drastic measures to prevent the introduction of guano in its raw state, and that it can be shown that a subjection to a high temperature at once destroys the fungus germs and does not detract from the quality of the guano, it may prove profitable to the importer to have it subjected to a great heat as saving cost in transit and room for storage. It would be best perhaps in the long-run if Mr. Smith's surmises should be found baseless, as if shown otherwise an unfortunate panic would doubtless arise in relation to the guano; but, good or bad, it is best to know the truth, and in his efforts to find it in relation to this destructive disease Mr. Smith merits our heartiest thanks. *A. D.*

RELATIONS BETWEEN PLANTS AND INSECTS.

(*Concluded from page 408.*)

SITARIS.

THE genus Sitaris (a small beetle allied to Cantharis, the blister-fly, and to the oil-beetle) is parasitic to a kind of bee (Anthophora) which excavates subterranean galleries, each leading to a cell. The eggs of the Sitaris, which are deposited at the entrance of the galleries, are hatched at the end of September or beginning of October, and M. Fabre not unnaturally expected that the young larvæ, which are active little creatures with six serviceable legs, would at once eat their way into the cells of the Anthophora. No such thing: till the month of April following they remain without leaving their birthplace, and consequently without food; nor do they in this long time change either in form or size. M. Fabre ascertained this, not only by examining the burrow of the Anthophoras but also by direct observations of some young larvæ kept in captivity. In April, however, his captives at last awoke from their long lethargy, and hurried anxiously about their prisons. Naturally inferring that they were in search of food, M. Fabre supposed that this would consist either of the larvæ or pupæ of the Anthophora, or of the honey with which it stores its cell. All three were tried without success. The first two were neglected, and the larvæ, when placed on the latter, either hurried away or perished in the attempt, being evidently unable to deal with the sticky substance. M. Fabre was in despair: "*J'amais expérience,*" he says, "*n'a éprouvé pareille déconfiture. Larves, nymphes, cellules, miel, je vous ai tous offert; que voulez-vous, donc, bestioles maudites?*" The first ray of light came to him from our countryman, Newport, who ascertained that a small parasite found by Léon Dufour on one of the wild bees was in fact, the larva of the oil-beetle. The larvæ of Sitaris much resembled Dufour's larvæ; acting on this hint M. Fabre examined many specimens of Anthophora, and found on them at last the larvæ of his Sitaris. The males of Anthophora emerge from the pupæ sooner than the females, and M. Fabre ascertained that, as they come out of their galleries, the little Sitaris larvæ fasten upon them. Not, however, for long: instinct teaches them that they are not yet in the straight paths of development; and, watching their opportunity, they pass from the male to the female bee. Guided by these indications M. Fabre examined several cells of the Anthophora; in some, the egg of the Anthophora floated by itself on the surface of the honey, in others on the egg as on a raft sat the still more minute larva of the Sitaris. The mystery was solved. At the moment when the egg is laid the Sitaris larvæ springs upon it. Even while the poor mother is carefully fastening up her

cell her mortal enemy is beginning to devour her offspring; for the egg of the Anthophora serves not only as a raft, but as a repast. The honey which is enough for either, would be too little for both; and the Sitaris, therefore, at its first meal, relieves itself from its only rival. After eight days the egg is consumed, and on the empty shell the Sitaris undergoes its first transformation, and makes its appearance in a very different form.

The honey, which was fatal before, is now necessary; the activity, which before was necessary, is now useless; consequently, with the change of skin, the active, slim larvæ changes into a white fleshy grub, so organised as to float on the surface of the honey, with the mouth beneath and the spiracles above the surface: "*grâce à l'embonpoint du ventre*," says M. Fabre, "*la larve est à l'abre de l'asphyxie*." In this state it remains until the honey is consumed; then the animal contracts, and detaches itself from its skin within which the further transformations take place. In the next stage, which M. Fabre calls the pseudo-chrysalis, the larva has a solid corneous envelope and an oval shape, and in its colour, consistency, and immobility reminds one of a dipterous pupa. The time passed in this condition varies much. When it has elapsed the animal moults again, again changes its form; after this it becomes a pupa, without any remarkable peculiarities. Finally, after these wonderful changes and adventures, in the month of August August the perfect Sitaris makes its appearance.

In fact, whenever in any group we find differences in form, or colour, we shall always find them associated with differences in habit.

To return, however, to my principal subject, the sphinx caterpillars. For such an inquiry as this, the larvæ of Lepidoptera are particularly suitable, because they live an exposed life; the different species even of the same genus often feed on different plants, and are therefore exposed to different conditions; and last, not least, because we know more about the larvæ of the Lepidoptera than of any other insects. The larvæ of ants all live in the wet; they are fed by the perfect ants, and being therefore all subject to very similar conditions are all very much alike. It would puzzle even a good naturalist to determine the species of an ant larva, while, as we all know, the caterpillars of butterflies and moths are as easy to distinguish as the butterflies and moths; they differ from one another as much as, sometimes more than, the perfect insect.

There are five principal types of colouring among caterpillars. Those which live inside wood, or leaves, or underground, are generally of a uniform pale hue; the small leaf-eating caterpillars are green, like the leaves on which they feed. The other three types may, *si parva licet componere magnis*, be compared with the three types of colouring among cats. There are the ground cats, such as the lion or puma, which are brownish or sand colour, like the open places they frequent. So also caterpillars which conceal themselves by day at the roots of their food-plant feed, as we have seen, even if originally green, to assume the colour of earth. The spotted or eyed cats, such as the leopard, live among trees; and their peculiar colouring renders them less conspicuous by mimicking spots of light which penetrate through foliage. Lastly, there are the jungle cats, of which the tiger is the typical species, and which have stripes, rendering them very difficult to see among the brown grass which they frequent. It may, perhaps, be said that this comparison fails, because the stripes of tigers are perpendicular, while those of caterpillars are either longitudinal or oblique. This, however, so far from constituting a real difference, confirms the explanation, because in each case the direction of the lines follows those of the foliage. The tiger, that walks horizontally on the ground, has transverse bars; the caterpillar which clings to the grass in a vertical position, has longitudinal lines, while those which live on large veined leaves have oblique lines like the oblique ribs of the leaves.

Thus then, I think, we see reasons for many at any rate of the variations of colour and markings in caterpillars, which at first sight seems so fantastic and inexplicable. I should, however, produce an impression very different from that which I wish to convey, were I to lead you to suppose that all these varieties have been explained or are understood. Far from it, they still offer a large field for study; nevertheless I venture to think the evidence brought before you to-day, however imperfectly, is at least sufficient to justify the conclusion that there is not a hair, or a line, not a spot or a colour, for which there is not a reason, which has not a purpose and a function in the economy of Nature. *Sir J. Lubbock, in the Society of Arts Journal.*

AGRICULTURE AND GARDENING IN COSTA RICA.

Dr. POLAKOWSKY contributes the first of some articles on these subjects to the *Monatschrift des Vereines zur Beförderung des Gartenbaues* for February, from which we extract the following notes. The mineral wealth for which the country was formerly celebrated lies undeveloped, but the country fully deserves the name of "rich coast," from the fertility of its soil and the great productiveness of cultivated plants. In the value of the Coffee exports it surpasses the "Queen of the Antilles," the beautiful Cuba, where it amounts to 21 dollars annually per head of the population. In 1875 the amount for Costa Rica, with a population of 180,000, was 4,295,333 dollars, or 23 6 dollars per head. No other part of Spanish America can show such statistics, which furnish good evidence of the fertility of the soil and the industry of the people. The number of cultivated plants in the country is limited, only a few of the most profitable being grown on a large scale. Even Beans and Maize raised are not sufficient to supply the demand. Gardening proper cannot be said to exist, and the gorgeous Orchids and other floral treasures of the country scarcely receive a glance. Very rarely some of the Indian women bring wreaths of them to the market of Cartago. But if one exhibits any interest in such things, and employs a person to collect some, and bring them to the house, one must pay enormous prices, although they cost the collector absolutely nothing. On the other hand, the most varied and exquisitely flavoured wild fruits may be had for ridiculously small sums. The hedges enclosing the haciendas were found to be the richest in plant life, and furnished the collector with a large proportion of his treasures.

There is usually a ditch running parallel to it, and the weeds are allowed to grow undisturbed. The common hedge plant near San José is a species of Erythrina. Stout branches are stuck in the ground, and they quickly root, and form a dense fence. Other plants occasionally used are members of the genera Agave, Cereus, Datura, Yucca, Lantana, Anona, Euphorbiaceæ, of the Croton group, and very commonly a Rubiaceous shrub with small leaves, inconspicuous flowers, and large thorns. A few things are carefully cultivated in the gardens, such as various species of Capsicum, Tomatos, and, more rarely, the Egg plant. The former, under the name of Chile, is used as a condiment in nearly all dishes. Our common Watercress is very highly esteemed, and frequently cultivated. There are two German gardeners in the country, one of whom, Mr. J. Carmigol, has been in the country twenty-three years, and is well acquainted with the vegetable productions of this little-known country. He has a beautiful large garden near the capital, well stocked with various indigenous and exotic fruits and vegetables, as well as some ornamental plants. Varieties of the Cabbage tribe degenerate in a few years, and it is necessary to procure fresh seed from Europe.

The method of cultivating the Coffee tree here differs from that practised in any other country, and the results prove that it is a rational method. The ground consists of the great central mountain plains, the only regularly cultivated and inhabited part of the Republic; and the soil consists of the decomposed volcanic rock forming a clayey loam mixed with a large portion of decayed vegetable matter. The climate is the most regular and agreeable in the world; and the greatest difference between the temperature of the hottest and coldest day at San José, based upon ten years' observations, is less than 20° Fahr. The mean temperature for 1875 was about 69°. From the beginning of May until the end of October it rains almost daily, and from the middle of December to the middle of April only exceptionally.

It is the practice to raise the Coffee trees from seed, because the tap-root of the seedling penerates the soil to a considerable depth, and enables the tree to withstand the dry season without injury. They are planted in rows, interspersed with Bananas for shade during the first two years' growth. Between the rows are shallow ditches, and the greatest care is exercised in keeping the weeds under, and the removal of epiphytical and parasitical plants. Labour is very dear, and, therefore, the cost of production is rather high. Nevertheless, the clear profit, after all expenses have been paid, including tending the plants during the first three years, fluctuates between 20 and 25 per cent. This is in the most favourable localities, on the plateaus at an elevation of between 3000 and 4000 feet. The quality of the Coffee leaves nothing to be desired, and it is greatly in request in England and America for its fine aromatic flavour.

NORTH AMERICAN OAKS.

SOME months ago I contributed to the *Gardeners' Chronicle* some notes on hardy shrubs and trees at Kew, under the title of "Half-hours at Kew." By some mischance those relating to North American Oaks were lost, and not having time then to replace them the article on Oaks appeared shorn of this part. Quite recently the lost notes turned up. Perhaps they may still be worth publishing. Doubtless much more might be said about these very ornamental trees, but I prefer leaving the notes as they were originally written. In the spring I shall probably visit all the plantations again, for some additional notes on the same subject.

The next group bears the name of Willow Oaks in American books, and comprises three or four species and several hybrids or varieties. Q. Phellos has lanceolate smooth leaves, tapering towards both ends, and very much like those of a Willow, but in habit of growth this species more resembles our native Oaks, having very crooked branches and short shoots, with the leaves clustered near the ends. Introduced in 1723. A large tree of this species may be seen about midway on the left-hand side of the walk leading from the south end of the Succulent-house to the lake and No. 1 museum. Q. aquatica is an allied species, with obovate leaves. There are several small trees of this species in various parts of the grounds, one near the Temple of the Sun. Q. laurifolia, regarded as a variety of A. aquatica, has obovate leaves, 4 to 6 inches or more in length, rather thin in texture. It is a handsome and very distinct form. Q. nigra and Q. imbricaria belong to this group of species, which are not remarkable for ornamental character. Q. heterophylla, of which there are several large bushes in the plantation, is supposed to be a hybrid between Q. nigra and tinctoria. It has almost coriaceous, shining leaves of very irregular shape, being linear lanceolate or variously lobed; sometimes there is a single odd lobe on one side, sometimes one on each side, sometimes two on one side, and only one on the other, and so on. Q. falcata belongs to a small group in which the mature leaves are clothed with a short dense gray pubescence on the under surface. The leaves of Q. falcata taper towards the base, and are deeply three or five-lobed in the upper half, the lobes bristle-toothed, and more or less curved. This grows in dry or sandy soil, as also Q. Phellos; Q. palustris and aquatica in wet places, bordering streams and ponds; Q. coccinea inhabits rich woods; and Q. rubra is found in rocky woods. Another group is called the Chestnut Oaks, but although there is a general resemblance in their leaves to those of the Sweet Chestnut, it is not so marked as in the case mentioned above, and in some others not in cultivation. Q. Prinus and Q. Prinus discolor (bicolor) belong here. There are several trees in the Kew plantations bearing the latter names, and the same form, I believe, is also called Q. alba. Whatever may be its proper appellation, it is readily distinguished from all others. In the first place the trunk and tufts of short, dead twigs on the main branches bear a wonderful resemblance to old Hazel trees; but the leaves are very different, and larger than those of any other Oak in the plantations, being a foot long by 9 inches broad in some specimens. They are somewhat obovate in outline, and clothed with soft, white down on the under side. Passing by a great many other forms deserving of comment I must conclude with a mention of the hardiest of the North American evergreen species, Q. virens. This is the Live Oak of the Americans inhabiting the coast of Virginia and the States southward. It has oblong, coriaceous leaves, hoary beneath, and is one of the most valuable timber trees in the South, dwindling down to a shrub in its northern habitats. Though not so ornamental as many evergreens we have, it might be planted for variety on the south and west coasts. There is yet

one more species I ought to mention, but which I had almost forgotten, namely, Q. rugosa. It has obovate, wrinkled, and reticulated leaves, about 5 or 6 inches long, very woolly and prominently veined beneath, and furnished with a few bristly teeth in the upper half. I have seen only a small specimen at Kew, and am not certain as to its native country; but I suspect it is North American. *W. B. H.*

Reports of Societies.

Royal Horticultural : *April* 4.—The business transacted at the usual afternoon meeting consisted principally of the election of twenty-five new Fellows paying either two guineas or four guineas each, and of eighty-five members who came in under the guinea scheme.

SCIENTIFIC COMMITTEE.—Dr. Hooker, Pres. R.S., in the chair.

American Blight on Auricula.—With reference to this subject, mooted at the last meeting, it was now shown that, however close the resemblance to American blight, the appearance was due neither to insects nor to fungi.

Dr. M. C. Cooke presented the following report on the subject :—

"The Auricula left me for examination was at the base of the leaves, close to the soil, surrounded by a snow-white flocculent matter, which bore some remote resemblance to the American blight. Neither on the leaves nor on the root fibrils could I find the slightest trace of any insect. The white flocculent substance contained a few thin hyaline filaments which might belong to some common Penicillium. The mass of substance was partly crystalline and partly amorphous. Being of opinion that the greater portion of this white flocculence was inorganic, I removed as much as I could on the point of a knife, and placed it in a clean concave cell excavated in a slide of glass, and filled up the cell with alcohol. At once the whole mass disappeared to the naked eye, being dissolved in the spirit. I covered with thin glass, and in a few minutes examined with the microscope—a very few grains of sand and two or three fragments of hyaline tubes like those of Penicillium remained; but as the spirit evaporated stars of acicular crystals around the margin followed its retreat to the centre, until the whole field was covered with stellate crystals of great length and delicacy. I do not presume to draw any conclusions from this, which is clearly a chemical question. I found no insects, and no parasitic fungus, except a characteristic Cladosporium in olive patches on a decaying leaf."

Gladiolus Disease.—Specimens of this were forwarded by Rev. Mr. D'ombrain.

Fingered Citron.—Miss E. Ormerod sent a specimen of this curious malformation, due to dialysis of the carpels. Many similar cases are figured in that rare old book, Ferrari's *Hesperides*.

Strombocarpus pubescens.—Dr. Moore sent pods of this plant, used in parts of America for cattle food, under the name of Ketorquilla. The pods were perforated by a weevil like that of the Pea and Bean (Bruchus).

Narcissus calathinus.—Mr. Burbidge sent flowers of this exceedingly rare and interesting Narcissus, with the following letter :—

"I beg to lay before you for examination fresh specimens of Narcissus calathinus which have been grown by M. Blanchard, of the Botanical Garden, Brest. The plant is a native of the Isle Drénec—one of the Isles de Glenans, which lie southward off the coast of Finistère, and its natural conditions of growth being very peculiar, the plant can rarely be cultivated with success. It is found only on short grassy patches near to the sea, the soil in which it grows and the atmosphere being constantly moistened by spray from the sea carried inland by the winds. The climate is mild; it never freezes, and the soil in which it naturally luxuriates is one composed of heath mould and sea salts. Its nearest relation is N. triandrus figured in *Bot. Mag.*, vol. ii., t. 483, a much more variable and vigorous habited, but smaller flowered plant, from the Pyrenees, not uncommonly met with in English gardens. A yellow-flowered form of N. calathinus has also been found by Baron Favia on the mountains of Gerez and elsewhere in Portugal."

The curious history of this Narcissus is given at length in the *Gardeners' Chronicle*, 1874, vol. i., p. 176.

Narcissus rupicola, &c.—Mr. Elwes showed flowers of this, which is now in bloom at Kew, together with flowers of N. Graellsii, apparently a variety of monophylla; also flowers of Fritillaria obliqua, delphinensis, imperialis var. with a single flower, verticillata, and Tulipa precox.

Epigæa repens.—Mr. G. F. Wilson showed flowers of this sweet-scented Ericaceous plant, the May-flowers of the Americans.

Cocoon of Cetonia.—Mr. McLachlan showed cocoons of a species of Cetonia to which numerous oblong flattened bodies of considerable size were attached, which were supposed might be the excrement of some small animal.

Lilium Thomsoni.—Colonel Clarke showed a bulb of this plant from which he had removed the offsets when half grown, with a view to induce the plant to bloom, as recommended by M. Max Leichtlin. The effect was to ripen off the bulb in the space of a few days only, and there seemed reason to think that flowers would speedily be formed. Colonel Clarke also showed flowers of various Gladioli, &c.

Eucharis candida of gardens.—Mr. Moore showed flowers of Calliphruria subedentata, which is figured in *Bot. Mag.* for the present month.

Leaf Disease on Coffee and Other Trees.—Dr. M. C. Cooke read the following paper on this subject :—

"Specimens of diseased leaves received from Mysore were accompanied by the following note :—

"'I very much regret to report that this pest has reappeared on all the estates, denuding the trees of all the fresh leaves they were getting, and leaving them bare sticks. It is very bad in Goomenkhan, and worse in some parts of the estates than in others. In some parts the leaves are thickly covered with the spots over and among them are speckled with brown spots, and fall off prematurely. This season the disease is also affecting the leaves of forest trees. I am sending you a few pressed Coffee-leaves, some with the yellow dust, and some with only the brown specks, and also the affected leaves of some large forest trees which have the rust or yellow dust upon them. If this pest is to go on affecting Coffee trees year after year, we shall never get a crop worth raising from our trees; it is becoming a very serious matter to those interested in coffee.'

"It need hardly be said that the Coffee-leaves with the yellow dust are affected by the too well-known Hemileia, and that the leaves were thoroughly covered with this pest. As to the same fungus having extended itself to the forest trees, some observations are necessary. Before entering into the details, it may be friendly remarked that the plan adopted in this instance of sending the leaves with the information is one of considerable importance. The statement that the Coffee disease was extending to forest trees is just the sort of statement which would be greedily accepted, and no amount of description by unskilled or unpractised botanists would have sufficed to arouse any suspicion that the parasite of the Coffee-leaf was quite a different thing.

"The fungus on forest leaves very much resembles that of the Coffee-leaf, it occurs also on the under surface in roundish or confluent patches, is of the same orange colour, and certainly so closely resembles it that casually it might be mistaken for it. Received without microscopical investigation. There are, however, in the orange patches two kinds of bodies found mixed together, instead of one as in the Hemileia, one of these colourless, with a waved outline, and much smaller, smooth, and orange. It was some time before the structure could be clearly determined, and what the relation of the coloured to the uncoloured bodies. After many failures and some hours' examination I believe that I have succeeded in determining the structure, and submitted my results to the Rev. M. J. Berkeley, who coincides in the opinion that the structure correctly determined of an inch in diameter. These patches are composed of small tufts of short thick uncoloured sporophores, with a globose, unicellular head, studded on the surface with papillæ; the stem occupies about one to three, rarely four or five cells, a portion remaining attached to the globose head when that is detached. The entire length of this sporophore is about .05—.06 mm., and the diameter of the globose cells about .025 mm. All these sporophores are globose, smooth spores, containing a bright orange plasma, and about .0125 mm. in diameter. These spores appear to be generated on the papillæ which surround the sporophores, but have not been detected in any apiculus to the spores, although I have seen them clustered around the capitulum. This structure appears to be so closely that which characterises the genus Œdocephalum that I consider the propriety of using for the present, of instituting a new genus for its reception, hence I have applied the name of Œdocephalum auranticum, with the subjoined diagnosis.*

Onion Smut.—Dr. Cooke made the following communication :—

"Dr. Farlow, of Cambridge, U.S., has recently reported from Massachusetts to the Board of Agriculture on a disease prevalent on Onions in the United States. The disease has assumed considerable proportions during the past two or three years, and the injury to the Onion crop is estimated at several thousand dollars a year in the region of Southport and Wethersfield, Connecticut, and no application of sulphate of copper or similar substance to the seed has proved of any use where the disease has once got into the soil. The disease attacks the young Onions when not more than an inch high, and afterwards until the bulbs are from ½ to ¾ inch in diameter. The young bulbs are marked on the outside with black streaks, which are smaller than those on the leaves, and some of the inner coatings are streaked, while others are comparatively sound. Examination proved the disease to be due to a species of Urocystis consisting of one, and sometimes two dark central cells, surrounded by a number of smaller cells of lighter colour and thinner substance. Dr. Farlow was unable to induce the spores to germinate. This species he has called

* *Œdocephalum auranticum*, Cooke.—Cæspitulis orbicularibus, aurantiacis; floccis brevissimis, fasciculatis, septatis hyalinis, supra globosis, papillatis; sporis ex capitulis exemptis globosis; sporis globosis, aurantiacis, levis.

Urocystis cepulæ. He says, 'The species of Urocystis most nearly related to U. cepulæ is, perhaps, U. colchici of Europe. We cannot find any record of the Colchicum having been introduced into this country, and it is therefore futile to discuss the question of the connection between U. cepulæ and U. colchici.' With all due deference to Dr. Farlow, I consider that this is the weak point in his communication. It is undoubtedly the fact that his species is so closely allied to U. colchici, that there is nothing in his figure or description which does not apply equally to U. colchici; the only difference I can discover is, that one occurs on Allium and the other on Colchicum; one occurs in the New World, and the other in the Old. If no distinction can be drawn between the characters of the two forms, save habitat, and the minute differences are too subtle to be described, then undoubtedly the difference in the host goes for nothing; besides, U. colchici has not invariably confined itself to Colchicum, and there is not the slightest reason for supposing that it would not flourish on Allium, indeed it has been found in Europe on Scilla bifolia, Muscari racemosum, and Allium rotundum. Dr. Farlow, however, appeals by means of the question, 'Where can the Urocystis come from?' 'It is true,' he says, 'that the species of Urocystis on Rye and the Wood Anemone are as common, or more common, in Europe than in America, and yet no smut is found on the Onion in Europe, which comes from the same stock as our own.' It is nevertheless useless to combat the Onion smut or any other vegetable parasite with philosophy; they are no respecters of argument, and U. colchici is just as likely to be found in the United States on Onions without touching Colchicum, even if that were abundant, as to be found on Colchicum in Europe, and not touch the Onion. Smuts have an utter disregard for the fitness of things, and there may be other and far more important elements in the case we are ignorant than mere diversity of host, which influences the appearance and disappearance of these erratic pests. At present we are without this Urocystis on Onions, though it occurs on Allium rotundum, but the chief object which I have in view in bringing this subject before the committee is in the consciousness that it may appear at any time hereafter in Europe, even as the Phylloxera has appeared from Chili to Australia, and at length to Britain. It will, therefore, be important to watch the progress of this disease in the United States, and also to note any successful effort to check or control its progress. Dr. Farlow's observations on the growth and development of the spores in his species of Urocystis are so novel and notable that this portion of his paper more than compensates for any error into which he may have fallen."

FLORAL COMMITTEE.—W. B. Kellock, Esq., in the chair. The meeting was again held, in accordance with the modern innovation, in the large conservatory, and proved to be fairly interesting, though not quite up to the high standard of its immediate predecessors. The weather in the forenoon was all that could be desired, but the prospects of a good attendance in the afternoon were sadly marred by a heavy downpour of hail and rain, which took place between 2 and 3 P.M., and by subsequent fitful showers.

A silver medal was awarded to Messrs. Jas. Veitch & Sons for an interesting and effective display of plants, which included flowering examples of such Orchids as Phalænopsis Schilleriana and amabilis, Vanda cœrulea, Cattleya citrina, the singularly pretty new Epidendrum Wallisii, Vanda cristata, Odontoglossum Cervantesii, maculatum, Oncidium Cretcus, and various Odontoboes; some handsome-looking Gloxinias, erect-flowering varieties, remarkable for their fine bold forms and brilliant colours; several new Crotons, &c. A silver medal was also awarded to Mr. John Wills, Onslow Crescent, South Kensington, for a large and most effective group of plants, consisting principally of Palms and Ferns, Dracænas, and Anthuriums, and various choice Orchids, the whole being carpeted with Astilbe japonica, effectively mixed with very freely-flowered plants of the lovely Myosotis dissitiflora. A similar award was also voted to Messrs. John Standish & Co., of Ascot, for a group of exceedingly good Azaleas, Camellias, Lilies of the Valley, and Æschmea miniata splendens, together with some grand examples of that elegant new Fern, Adiantum gracillimum. To Messrs. H. Lane & Son, Berkamsted, a silver-gilt Banksian Medal was awarded, for a very fine group of mixed Rhododendrons, the plants being of good size, well flowered, and altogether remarkably effective. The same firm also sent a box of cut blooms of Roses. J. G. Hepburn, Esq., Sidcup Place, Kent (Mr. J. Loveland, gr.), received the award of a silver Banksian Medal for a small group of well-grown Orchids, which included a specimen of the fine Dendrobium infundibulum, with a dozen very fine blossoms; also a very healthy plant of Odontoglossum Roezlii with a similar number of blooms; and to both of which Cultural Commendations were awarded; also finely flowered examples of Galeandra Devoniana, Dendrobium lituiflorum, Arpophyllum giganteum, Trichopilia suavis, Lycæste aurantiaca, &c. To W. Terry, Esq., Peterborough House, Fulham (Mr. Roberts, gr.), a bronze medal was awarded for a small group of Orchids, which included nicely flowered examples of Dendrobium macrophyllum, D. chrysotis, Oncidium sarcodes, Brassavola venosa, and Phalænopsis Schilleriana, &c. Messrs. Rollisson & Sons, Tooting, also received a similar award for a miscel-

laneous but attractive group of plants, which included, besides various Orchids and Palms, some nicely flowered plants of the useful Erica ovata, and the new double white Azalea imbricata.

First-class Certificates were awarded to Messrs. Veitch & Sons for Anthurium Scherzeianum Wardii, the magnificent variety which was formerly in the possession of the late F. G. Wilkins, Esq., and which now bore half-a-dozen of its remarkably broad spathes. To the same firm for Nephrolepis Duffii. To Messrs. Rollisson & Son, for the beautiful Pultenea roseæ, more fully noticed in another column. To Mr. R. Clarke, Twickenham, for Cyclamen persicum var. Brilliant, an intense deep rosy crimson flower of great beauty. To Sir Trevor Lawrence, Bart., M.P. (Mr. Spyers, gr.), for Dendrobium sculptum, a very fine white-flowered species, with broad petals and sepals, and a distinct orange blotch on the lip. To Mr. R. Dean, Ranelagh Road, Ealing, for a Primrose named Brilliant, a large finely-formed flower of a rich deep maroon-crimson colour; and to Mr. C. Noble, Bagshot, for Clematis Aurora, a seedling semi-double-flowered variety of quite a new colour—pink shaded with purple. A Botanical Certificate was awarded to Sir Trevor Lawrence for a fine variety of the sweet-scented Dendrobium barbatulum, named grandiflorum; and Botanical Certificates were voted to Messrs. Veitch for Sarcochilus Fitzgeraldi, a pretty but diminutive Orchid from Australia, believed to be flowering now for the first time in England; and for Panax laciniatum, a beautifully cut-leaved plant.

Lady Dorothy Neville sent up from Dangstein a flowering plant of Darlingtonia californica, and received a Cultural Commendation. Mr. C. Green, the Botanical Nursery, Reigate, showed Prenanthes dissecta elegans, an elegant, narrow, cut-leaved form, raised from a cross between P. pinnata and Sonchus arboreus. From the Society's Garden at Chiswick came a flowering plant of Wigandia caracasana, whose flowers are of a pretty purple colour. Sir C. W. Strickland, Bart., Hildenley, Malton, exhibited Cattleya intermedia, to show how it will grow on a piece of Oak wood; and G. F. Wilson, Esq., received a vote of thanks for Cucumis himalayensis, which has very large deep-yellow flowers. A vote of thanks was also accorded to W. H. Michael, Esq., Cholmeley Park, Highgate, for fine varieties of Odontoglossum Alexandræ and O. Andersoni. A fine well-flowered specimen of Imantophyllum miniatum came from G. W. Chaplin, Esq., Roundfield House, Broxbourne; and Mr. Bennett, the Manor Farm Nursery, Stapleford, sent several beautifully-grown examples of the fine new pink H.P. Rose Duchesse de Vallombrosa, and of an English H.P. variety named Mabel Morrison, a very distinct white flower, which the committee requested to see again. Hardy spring flowers were numerously shown by Mr. R. Dean, and Messrs. F. & A. Smith, Dulwich, sent a fine variety of Imantophyllum called Dulwich Beauty.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair, Mr. H. F. Jones, The Gardens, Bentley Priory, Stanmore, showed forced samples of the common Seakale, and of a variety which proved to be the same as one named Lilywhite, shown some time ago by Messrs. Stuart & Mein, of Kelso. The latter is of a pale yellow colour, and shows no trace of the purplish tips peculiar to the common form; it was awarded a First-class Certificate. A Cultural Commendation was awarded to Mr. Rapley, gr. to R. Hudson, Esq., Clapham Common, for a fine brace of the Osmaston Manor Cucumber, a white-spined variety, which measured about 20 inches in length. A box of Mushrooms was contributed by Mr. J. Hudson, gr. to J. Atkinson, Esq., Gunnersbury House, Acton.

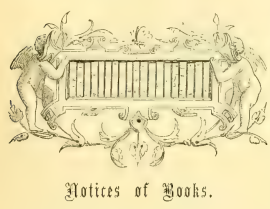
Glasgow and West of Scotland Horticultural: *March* 28.—The first exhibition of the season took place in the City Hall, but the wet weather marred the prospects of the show, which was in most respects an excellent one, an abundance of material being at hand in the shape of Palms, Ferns, and beautiful foliaged-plants, from the rich collections at Rawcliffe Lodge, and the Great Western Nurseries, and afforded an agreeable relief to what would otherwise have been an excessive display of colour. The Hyacinths were both numerous and good. Mr. Peter McKenzie, of Bellfield Nursery, Paisley, took first honours in the nurserymen's classes. Apart from the large collection of miscellaneous bulbous plants which contained some grand Hyacinths, those shown by him in the class for eighteen Hyacinths (distinct varieties) were an exceedingly good and well-balanced lot, well diversified as regards colour, and well-grown; Mr. John Sutherland, Victoria Nursery, Lenzie, being 2d with a collection scarcely less commendable as regards cultivation, but lacking the brilliancy of colour, &c., which lent such a charm to the first lot. The 1st prize in the class for twelve Hyacinths was gained by Mr. George Irvine, of Port Glasgow; the 2d by Mr. Neil Glass, of Carbrook, Larbert, both collections being very good. The same remark also applies to the other entries in this class, as also to the smaller collections of Hyacinths. Mr. Mathew Miller, of Bothwell, took the leading position in the class for six single and six double Hyacinths. Mr. Irvine, who carried off the prize for six Hyacinths, also secured the silver medal for the best single Hyacinth, with a fine specimen of Von Schiller. The classes for Tulips, Narcissus, Crocuses, &c., though well filled, were, as regards quality, decidedly below the average of former years. Those for Chinese Primulas, Cinerarias, Spiræas, Deutzia gracilis, Cyclamens, &c., were good; the Primulas from Mr. M'Lachlan, of Greenock, were remarkably well grown, as were also the Cyclamens from the gardens at Kerse House, Lesmahagow, and the Cinerarias from Mr. Dougall M'Dougall, gr., Craighead, Blantyre. The Rhododendron collections contained a remarkably well-bloomed plant of the beautiful R. ciliatum, from the gardens of Mr. Thomas Hill, Cathcart. The prize for six hardy spring flowering plants was easily won by Mr. Robert Todd, gr. to A. B. Stewart, Esq., Rawcliffe Lodge, with large masses of Scilla sibirica, Dog's-tooth Violet, double-flowered Cheddy Pinks, Persian and Chinese Xs, &c. The other collections, though much smaller, contained some good clumps of Scilla bifolia, Sisyrinchium grandiflorum, Triteleia uniflora, various Hepaticas, &c.

The plants for table-decoration attracted considerable attention. The class open to gentlemen's gardeners and amateurs the 1st prize was gained by Mr. Todd, with Calamus ciliaris, Aralia Veitchii, Croton undulatum, Dracæna Cooperi, Kentia Balmoreana, and Thrinax elegans. Mr. George Irvine's collection, which came 2d, was also a pretty group, his best plants being Weddellianna, Aralias Veitchii and elegantissima, and Geonoma gracilis. The other entries in this class were also very good. The nurserymen's class for twelve table plants brought out two very fine groups, the 1st prize being awarded to Mr. Peter McKenzie, and to Mr. John Sutherland. The Abutilon Sellowianum variegatum from Mr. McKenzie was exceedingly good. The collections of specimen stove and greenhouse plants were, as usual, very fine, including some good Orchids which are here admissible amongst the collections of specimen plants, having the finest class provided for them in the schedule, which is at least an inadvertency. But, thanks to the liberality of A. B. Stewart, Esq., these were not wanting, for we counted about one and a-half dozen distinct species amongst his collection of various kinds, including (next to Mr. Todd) the 1st for the six specimen plants, with Dendrobiums Wardianum and nobile both large and well-bloomed, the former being one of the finest specimens in the country; Genetylis fuchsioides was also very fine, as also two Azaleas, one red and one white. Mr. Dougall, gr. to Lord Blantyre, Esq., of Lanrick, was 2d, his plant of Rhododendron Countess of Haddington being a gigantic specimen, well grown and bloomed; Epacris Eclipse was also very fine, also his Croton interruptum and Gleichenia Speluncæ. The same exhibitor carried off the chief prizes in the classes for single specimen plants, and also in the class for the three large specimens. Mr. D. McDougall, who came 2d for three, had a grand plant of Rhododendron Princess Alice. The Azaleas confined to 8-inch pots were also very good, the 1st prize being won by Mr. James Reynard, gr., Beechwood, Newton Kilpatrick. One of the finest pot specimens of Mignonette that we have seen for a long time came from Mr. James Hutchinson. A finely coloured form of Imantophyllum miniatum called maximum came from Mr. R. Murray, gr., Benmore, Kilmuir, which was highly commended by the judges, as was also a large box of cut Rhododendrons from Mr. James Graham, gr., Garscube, Maryhill; also some Cinerarias from Mr. Neil Glass, and a collection of seed Potatos from Messrs. Smith & Simons.

The fruit and vegetable collections were few but good in quality. The amateurs' collections were confined to the lesser hall, and, as a rule, were very creditable but few in number—one gentleman, Mr. Peter Fox, being worthy of special mention, having gained a number of prizes. Mr. Mathew Miller, gr. to James Mann, Esq., of Bothwell, materially assisted the display here with a fine collection of Hyacinths, not for exhibition. Mr. A. B. Stewart, Messrs. J. & R. Thyne, and Messrs. Austin & McAslan sent large and fine collections for exhibition, and were greatly admired, but space precludes us from entering more into detail at this time. A fine truss of the rare scarlet-flowered Brownea grandiceps was shown, along with some cut blooms of Orchids from the Botanic Garden. A complete list of awards is published in the Glasgow daily papers of March 29. *Robert Bullen.*

Royal Caledonian Horticultural: *March* 28.—This exhibition, the following notice of which we condense from the *Scotsman*, was held as usual in the Music Hall, and was visited by a large number of spectators. A considerable amount of taste was manifested in the arrangement of the brilliant and beautiful exhibits, the foliage plants intermingled with the flowers affording an agreeable relief to what might otherwise have been an excessive blaze of colour; while they at the same time threw into admirable relief the bright blossoms of a hundred hues. Apart from the bank of tropical foliage presented by the contributions of the Lawson Nursery Company, which filled the background of the orchestra, the eye rested with pleasure, on first entering the hall, upon the magnificent array of Himalayan Rhododendrons, whose stately crowns, gemmed with the rich and rare blossoms, rose with perfect grace in front of the platform. The brilliant shades of the Indian Azaleas were no less attractive, their formal lines being somewhat set off by adjacent feathery plumes of Palms and Dracænas. Naturally one of the chief features of a spring show is the bulbous flowers; and it was admitted on all hands that a finer display of Hyacinths, Tulips, Narcissus, and Cyclamens has not been seen in Edinburgh. The Hyacinths were especially noteworthy for their general and uniform excellence. There was keen competition for the silver cup offered for the best eighteen Hyacinths, and the coveted prize fell to Mr. A. Kerr, Chapel, Lauder. His spikes were superb in size and form. Mr. G. Maclure's 2d prize lot were very fine, but the size of the spikes was unequal—a remark which also applies to Mr. H. Sime's third dozen and half—two of which, by the way, were likewise past their best. Mr. W. Young, an enthusiastic Hyacinth admirer, secured the premium for the best nine with spikes perfect both in size and form, and Mr. J. Martin's prize half-dozen were neat, but wanted character. In the Tulips, Mr. A. Paul has had to lower his colours for once to Mr. J. Bald, whose plants were well grown, but the colours of the cups were more delicate. Mr. J. Bald also exhibited his cultural skill with bulbs in the fine, well-grown Narcissus and Cyclamens. In the nurserymen's class, Messrs. Downie & Laird carried the palm for Hyacinths with athletic spikes of the most notable being Ida, Prince Albert, and Grand Lilas. The same firm also secured the prize for a fine collection of Cyclamens; for hand bouquets the beauty of whose component flowers was only equalled by the taste with which they were made up; and for Camellia variety texture and brilliancy. The 1st prize for table bouquets fell to Mr. H. Robinson, but while admitting its nice rounded shape and the superb quality of the flowers of which it was made, it was rather formal in character. There was an artistic grace and freedom about Mr. G. Maclure's second-prized bouquet that was absent from the others. The display of Orchids was unusually large and fine. Mr. M'Gregor was 1st for the pair, with a delicate Phalænopsis and Dendrobium crassinode; Mr. J. Paterson, Millbank, coming 2d with a fine Dendrobium nobile and Cattleya Mossiæ whose exquisite mauve and peach colours were enhanced by the delicate fringe round the perianth. Mr. H. Rintoul's dozen cut blooms of Maréchal Neil—the prince of yellow Roses—were deservedly admired, and no less so were the four pots of hybrid pink and crimson Roses with Mr. J. Paterson carried off the palm. Turning to the Azaleas, it is difficult to speak without exaggeration of their quality and beauty. Unquestionably there seems a friendly rivalry from year to year between Mr. J. Paterson and Mr. A. Paul in the cultivation of these noble class of plants, and the public receive the benefit in the increasing loveliness of the display furnished every spring. On this occasion Mr. Paterson seems to have devoted his recognised horticultural skill to the perfect finish and bloom of his plants, and he finds his account in doing so, the first in each. Mr. Paul, on the other hand, in the "four" class, has two plants not excelled in the show—a superb pyramid of the exquisite white Magnificent, and a rounded globe of the deep salmon Stella. In greenhouse plants, Mr. Paterson was 1st in the "six" class—the plants comprising several beautiful Indian Azaleas, a fine Acacia, &c. Mr. H. Robinson was unexcelled for his splendid Dracænas; and among his table plants, which were awarded the 1st prize, were Aralia elegantissima, Croton undulatus, and C. Disraeli. For three greenhouse plants, Mr. M. Cameron was 1st. Deutzia gracilis was represented by many well-flowered specimens, as were Cinerarias, Primulas, Cyclamens, Spiræas, and Lily of the Valley. The Ferns were quite up to the mark, including magnificent specimens of Adiantums. A competition of much interest, from the friendly rivalry involved, was that for the best six Rhododendrons by nurserymen. For many years past Messrs. T. Methven & Sons have deservedly carried off this prize, but on this occasion they were forced to give place in the front rank to Messrs. Downie & Laird, whose contributions included R. Falconeri, R. argenteum, and R. Camille de Rohan, than which finer have scarcely ever been seen in a show hall. Messrs. Methven's lot comprised a good Queen, the finest of hybridised whites; Lord Clyde, a rich dark crimson; and Stanleyanum, a blood-red. It is but fair to notice that the latter are all hardy, while the Himalayan varieties in the 1st prize lot are greenhouse

plants. There was but little fruit. Of Grapes there were three exhibits—the Gros Colman bunches of Mr. M. Brodie, Glenmayne, placed 1st, were admirably kept; while the others had shrunk a good deal. Mr. J. Anderson's fresh Strawberries from Oxenford Castle were most tempting; and the Apples were good, and of fine quality.



Notices of Books.

Forests and Moisture: *or Effects of Forests on Humidity of Climate*. By J. C. Brown, LL.D. Oliver & Boyd, Edinburgh, 1877.

This volume is one of a series compiled by Dr. Brown primarily with a view to the requirements of South Africa, but applicable *mutatis mutandis* to other countries. The author starts by alluding to the quantity of moisture evaporated from the surfaces of leaves, in connection with which subject we are surprised to find no reference to the exact and accurate experiments of Lawes and Gilbert, and others. From that subject the passage to the effect of forests on the humidity of the atmosphere and of the soil is natural, and this part of the subject is treated at considerable length, and will be found serviceable for reference, the more so as a full analytical table of contents is prefixed to the work. For the most part the facts cited are familiar to those interested in this department of inquiry, but the author's personal experience has supplied him with other information which he has turned to good account. Alluding to a tree, presumably Millettia Caffer, in the trunk of which is found a reservoir of water, the author tells us that Mr. Chapman, the well known South African traveller, from whom he derived his information, "first saw the tree when he and his companions were suffering from thirst. Observing one of his native servants placing forked boughs against the tree and preparing to climb, he asked what he was going to do. 'Look for water,' was the reply. The man having mounted, cried, 'Here it is!' The hard wood had decayed, leaving a very deep hole, which was almost closed at the top, apparently by the spreading arch of subsequently formed bark. One of the companions of the man cutting then a twig or shoot from the root, cut through the bark of this at two places, 2 feet or 30 inches apart, treated this as boys in Europe treat branches of Alder of which they wish to make whistles: beating and pressing it, and drawing out the wood like drawing a sword from its sheath, he handed up the bark to the man aloft, who, using this as a suction pipe, soon quenched his thirst, and made way for the others in succession to do the same."

The author culls from various sources a large body of evidence, amply supporting his conclusions "that there are cases in which an extensive destruction of forests has been followed by a marked desiccation of soil and aridity of climate, and some cases in which the replanting of trees has been followed by a more or less complete restoration of humidity, or the planting of trees where there were none has been followed by a degree of humidity greatly in excess of what had previously been observed. That there are cases in which the rainfall within forests or in their immediate vicinity has been perceptibly greater than in the open country beyond, but that there are also cases in which it is alleged that the desiccation of some lands once clothed with forests and fertile, now treeless and barren and dry, may be attributable in part, if not in whole, to other causes besides the destruction of the forests, and cases in which the extensive destruction of forests does not appear to have extensively affected the quantity of the rainfall over a wide expanse of country." It is only by collecting all the evidence *pro* and *con*, and balancing it fairly, that we can hope to arrive at the truth in this matter, and although the statements in the latter part of the paragraph just cited appear opposed to those in the first portion, yet it is clear that the balance of evidence is in favour of the proposition which Dr. Brown lays down, and that the exceptions depend on local conditions yet to be discovered. Actuated by similar views the Forest Conference of Vienna in 1873 adopted the following resolutions, which were sent to the various Governments:—

"1. We recognise the fact that in order effectually to check the continually increasing devastation of forests which is being carried on international agreements are needed, especially in relation to the preservation and proper cultivation (for the end in view) of those forests lying at the sources and along the courses of the great rivers, since it is known that through the reckless destruction of them there results a great decrease of the volume of water, causing detriment to trade and commerce, the filling up of the river's bed with sand, caving in of the banks, and inundations of agricultural lards along the river course.

"2. We further recognise it to be the mutual duty of all civilised nations to preserve and to cultivate all such forests as are of vital importance to the well-being (agricultural and otherwise) of the whole land, such as those on sandy coasts, on the sides and crowns, as well as on the steep declivities of mountains, and on the sea-coasts and other exposed places, and that international principles should be laid down, to which the owners of such protecting or 'guardian forests' should submit in order to preserve the land from damage.

"3. We recognise further that it is the case that we have not at present a sufficient knowledge of the evils (disturbances in Nature) which are caused by the devastation of the forests, and therefore that the efforts of legislators should be directed to causing exact data to be gathered relating thereto."

—— Another of Messrs. Macmillan's very useful primers is that devoted to *Philology*, and drawn up by Mr. John Peile. From the nature of the subject this work is not of so elementary a character as some of its predecessors, but it is clearly written and full of interest. Students of natural history will be surprised to find how closely similar are the methods followed by philologists in their researches into the history and inter-relationships of various languages, and of the words composing them, to those with which the naturalist is familiar. In speaking of the changes which have taken and are taking place in our own language, the author shows that these are not capricious or accidental, but are capable of explanation, at least in some cases, and we may therefore "expect that there are reasons for the other changes which are still obscure or unexplained, and so we adopt provisional hypotheses to account for these latter changes — hypotheses which we must surrender if a fuller knowledge shows that they are untenable." Again, it is shown how the peculiarities of the construction of words and sentences in certain languages point "to one common speech, and can be explained in no other way but as the daughters of a single parent language, precisely as the inter-relationships of plants point to a common stock or stocks from which existing forms have been derived. Considerations of this nature lead up to the final inquiries whether speech preceded thought or thought speech, and as to the origin of language. The author, in treating these matters in two short pages, unites boldness with caution when he tells us—"We may speculate, only let us remember how weak is the basis for our results." That such a book should be within the reach of every schoolboy sufficiently advanced to appreciate it, or of any young gardener desirous of self-improvement, is assuredly one of the signs of the times. Fifty—nay, twenty years ago, even professed scholars would have found it difficult, if not impossible, to procure any work conveying so much general information on the comparative study of languages as is now compressed into 160 pages, at the cost of one shilling.

—— Under the title *Reminiscences of Animals, Birds, Fishes, and Meteorology*, Mr. Kingsford has jotted down a number of isolated notes with reference to the natural history of the neighbourhood of Canterbury, and which will be of the more service as a record from the changed conditions of the localities. The very idea of an otter in the Stour now-a-days would be treated with the utmost scepticism, yet in 1827 the author of this volume tells us he killed one. Three bitterns in the Vauxhall Nurseries would, indeed, be *raræ aves* now-a-days, though a lamprey 3 feet long and 4 lb. in weight is recorded as having been lately captured. We entirely sympathise with the author's tenderness for animals, and his reprehension of the cruel and useless tortures inflicted from mere wantonness, or so-called sport. We could wish that our anti-vivisection friends would take to heart this saying—"There is more honour due to the men who perform it (vivisection) purely for science than to keep foxes for the purpose of hunting and tearing them to death." The book, we presume, is chiefly intended for private circulation. Should it be thought desirable to give it wider circulation, a table of contents and index should be added, and the text carefully edited. It is much to be wished that other observers in various localities would jot down their observations as Mr. Kingsford has done.

—— The last issued part of the *Compendio di flora Italiana* contains the description of the Ericaceæ, Campanulaceæ, and other orders, while the plates, 67—69, represent various genera of Borragineæ and Gentianeæ. In all the diagrams of the Borragineæ that are given the scales in the mouth of the corolla are figured as forming part of the same cycle with the stamens, which is clearly an error.

—— Messrs. Cassell have published the first part of a serial publication entitled *Familiar Wild Flowers*, figured and described by Mr. F. E. Hulme. It bids fair to be a pretty publication. We must await further instalments before we can say much as to its utility.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, APRIL 4, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32°.	Barometer. Departure from Mean of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for the Day.	Temperature of the Air. Departure of Mean from Mean of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Degree of Humidity. Saturation = 100.	Wind. Average. Direction.	Rainfall.
Mar.	In.	In.	°	°	°	°	°				In.
29	29·67	−0·09	51·7	41·4	10·3	46·8	+ 5·5	41·5	85	S.E.	0·47
30	29·85	+0·10	53·8	43·0	10·8	46·9	+ 3·2	41·6	82	S.E. / S.W.	0·00
31	29·90	+0·15	55·8	38·8	17·0	45·4	+ 1·4	39·8	81	S.W.	0·00
April											
1	29·82	+0·08	52·2	45·2	7·0	48·0	+ 3·8	43·8	85	W.	0·24
2	29·71	−0·04	56·1	38·0	17·2	45·7	+ 1·3	42·0	77	N.W. / W.	0·09
3	29·17	−0·58	58·7	43·1	15·6	49·6	+ 5·0	45·9	88	S.S.E. / S.E.	0·04
4	28·93	−0·81	67·0	45·0	22·0	53·1	+ 8·3	48·2	85	S	0·41
Mean	29·58	−0·17	57·9	42·2	15·7	48·2	+ 4·1	43·8	85	S.W. : sum / S.	1·28

March 29.—Overcast, dull, and wet till 11 A.M. Fine but cloudy afterwards. Very dark, with heavy showers at 7 P.M.
— 30.—Fine, but dull and cloudy day. Cloudless at night.
— 31.—A fine day, very cloudy at times. Cool breeze.
April 1.—Overcast, dull, and wet throughout.
— 2.—Fine, but dull and cloudy. Rain fell in early morning.
— 3.—Fine, but very cloudy. Little rain fell in afternoon and evening.
— 4.—Generally fine, but very cloudy. Thunderstorm in afternoon, accompanied with heavy rain and very large hailstones. Vivid lightning. Cloudless at night.

LONDON: *Barometer*.—During the week ending Saturday, March 31, in the vicinity of London, the reading of the barometer at the level of the sea decreased from 29.90 inches at the beginning of the week to 28.98 inches by the morning of the 25th, increased to 29.87 inches by the night of the 28th, decreased to 29.84 inches by the afternoon of the 29th, increased to 30.14 inches by the morning of the 31st, and was 30.07 inches at the end of the week. The mean reading for the week at sea level was 29.61 inches, being 0.11 inch above that of the preceding week, and 0.33 inch below the average.

Temperature.—The highest temperatures of the air varied from 61° on the 29th to 48½° on the 26th; the mean for the week was 55°8. The lowest temperatures of the air ranged from 38° on the 28th to 43° on the 30th; the mean value for the week was 40½°. The mean daily range of temperature in the week was 15°5, the greatest range in the day being 20° on the 29th, and the least 9° on the 26th.

The mean daily temperatures of the air were as follows:—25th, 47°; 26th, 43°.2; 27th, 45°; 28th, 46°.3; 29th, 48°.8; 30th, 46°.9; 31st, 45°.4; and the

departures in excess of their respective averages were :—4°.7, 0°.7, 2°.3, 3°.3, 5°.5, 3°.2, and 1°.4. The mean temperature of the air for the week was 46°.1, being 3° above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 117½° on the 25th, 114° on the 27th, and 111¼° on the 29th; on the 26th, 67° was the highest reading. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 24° on the 28th and 36° on the 31st; on the 30th the lowest reading was 40°.

Wind.—The direction of the wind was S.W. and S., and gentle in motion. The weather during the week was generally fine and mild, with frequent showers of rain. A lunar halo was seen on the 25th inst.

Rain fell on five days during the week; the amount collected was 0.98 inch.

ENGLAND : *Temperature.*—The highest temperatures of the air observed by day were 61½° at Blackheath and 59½° at Leicester; at Hull 53° was the highest temperature in the week. The mean value from all stations was 56½°. The lowest temperatures of the air observed by night were 31½° at Eccles and 32° at Hull; at Brighton and Norwich 39° was the lowest temperature. The general mean from all stations was 35½°. The range of temperature in the week was the least at Brighton, 16°, and the greatest at Bristol and Eccles, both 25½°. The mean range of temperature from all stations was 21°.

The mean of the seven high day temperatures was the highest at Blackheath and Leicester, both 55½°, and the lowest at Bradford, 47°; the mean value from all stations was 52½°. The mean of the seven low-night temperatures was the lowest at Eccles, 35°, and the highest at Brighton and Portsmouth, both 42°; the mean from all stations was 38⅜°. The mean daily range of temperature was the greatest at Truro, 18°, and the least at Bradford, 8½°; the mean daily range from all stations was 13⅛°.

The mean temperature of the air for the week from all stations was 44½°, being 1⅜° higher than the value for the corresponding week in 1876. The highest was 46½° at Blackheath, Leicester, Brighton, and Portsmouth, and the lowest was 41½° at Bradford.

Rain fell on every day in the week at Manchester and Eccles, and on five days at most other stations. The amounts measured varied from 2½ inches (nearly) at Bradford to a quarter of an inch at Leicester, Wolverhampton, and Liverpool; the average fall over the country was eight-tenths of an inch. The weather during the week was generally fine and mild, but showery. *Lunar halos* were seen on the 25th at Blackheath, and on the 27th and 28th at Cambridge. *Thunderstorms* occurred at Bristol and Birmingham on the 29th.

SCOTLAND : *Temperature.*—The highest temperatures of the air varied from 56° at Dundee to 50° at both Greenock and Perth; the mean value from all stations was 52⅜°. The lowest temperatures of the air ranged from 31° at Dundee to 35° at Greenock; the general mean from all stations was 33°. The mean range of temperature in the week from all stations was 19½°.

The mean temperature of the air for the week from all stations was 40°, being 3° lower than the value for the corresponding week in 1876. The highest occurred at Aberdeen and Leith, both 41°, and the lowest at Greenock and Perth, both 39°.

Rain fell to the amount of 1⅜ inch at Dundee and 1⅛ inch at Perth, at Aberdeen three-quarters of an inch was measured. The average fall over the country was 1¼ inch.

JAMES GLAISHER.



Law Notes.

WHAT CONSTITUTES DELIVERY OF GOODS?—*Radcliffe and Others* v. *Turner.*—At the Bloomsbury County Court recently the plaintiff in this action (a horticulturist of London) sued the defendant (a florist carrying on business in Sheffield) to recover the sum of £15 odd for artificial and other flowers supplied.

Mr. Charles Williams, solicitor for the plaintiff, said the goods in question were ordered from his client by the defendant for his customers at Sheffield, and were directed to be sent through Chaplin & Horne in December last, but when they arrived at Sheffield the defendant refused to receive them, and returned them to the railway company. The defendant had been repeatedly applied to for payment, and as he denied his liability the matter was now brought before his Honour to decide.

The plaintiff corroborated the statement made by his solicitor.

It was urged on the part of the defendant that he was informed by the plaintiff when the goods were ordered that he had them in stock, and could be supplied at any time at a moment's notice. But notwithstanding this, they did not arrive at Sheffield within the stipulated time, and were too late for the purpose for which they were ordered. They were refused, and returned to the plaintiff, accompanied by a letter stating the reasons for their being sent back.

The plaintiff said the flowers had been sold, and sent as directed by the defendant, and therefore he refused to receive them back, or make any allowance, as they were much deteriorated in value.

At this stage of the case the learned Judge asked Mr. Williams how he could get over the Statute of Frauds in the present instance, as delivery to a common carrier is not a delivery to, or an acceptance by, a consignee? Having called Mr. Williams' attention to the *Exchequer Law Reports* in support of this view, his Honour said that as the matter at present stood he must rule in favour of the defendant. But after hearing Mr. Williams the learned Judge consented to nonsuit the plaintiff under the old law, by which means he was entitled to sue again if he deemed it expedient to do so.

A COUNTY COURT ACTION BY A SOLICITOR AGAINST A SALESMAN FOR ONE SHILLING.—*Ashwell* v. *J. B. Thomas.*—This was an action brought in the Westminster County Court, in which the plaintiff, a solicitor, residing at St. Albans, sued the defendant, a Potato salesman of King's Cross and Covent Garden, to recover the sum of 1*s.* under the following circumstances.

The plaintiff stated that he ordered from the defendant in December last a sack of Potatos, to be sent to his residence. He paid for the Potatos, but was charged 1*s.* on the sack, which was to be returned to him when he sent the sack back. He had returned the sack, and on demanding his shilling it was refused, on the ground that he had no ticket, and in consequence of which he brought the present action solely on principle. The return of the bag having been proved by a person in the plaintiff's employment, and the plaintiff's case closed, when

J. Lewis said he was in the employment of the defendant as clerk, and would willingly have paid the plaintiff the shilling if he could prove that the sack returned was the defendant's, and would even now pay it if the plaintiff could produce his ticket.

In reply to the learned Judge, the witness said that the ticket was one which was always given to customers who had their sacks, and when they produced their tickets the deposit left on the bags would be returned to them.

The learned Judge wished to know whether this was the usual custom of the trade, and witness replied it was universally so, and that if the case was adjourned he could produce many salesmen from Covent Garden to prove it. Were the case otherwise it would offer a premium for stealing sacks, as any person by whom a sack was returned would be able to claim a shilling whether the sack belonged to him or not.

The learned Judge considered the custom a very reasonable one.

The plaintiff said the defendant's name was stamped on the sack, upon which his Honour remarked that might be so, but it did not follow but that some other person might have returned the sack. Judgment must therefore be given in favour of the defendant.

Mr. Lewis applied for costs, which his Honour granted.

A DISPUTED TRANSACTION BETWEEN SALESMEN.—At the Westminster County Court the case of Joel *v.* Cohen was recently heard before Mr. Judge Bayley. Both plaintiff and defendant were salesmen in Covent Garden market, and the former sued the latter to recover the sum of £3 12*s.* for money alleged to have been lent to him.

The plaintiff stated that on July 26 last the defendant asked him for the loan in question in order to pay a bill, and he at once accommodated him, on the promise that he would be repaid on the following day, instead of which the defendant repudiated the debt.

Henry Edwards, a porter in the plaintiff's service, said he was present when the money was lent; and John Defries, a salesman, gave corroborative evidence.

The plaintiff, in cross-examination, denied ever buying and selling goods in connection with the defendant, or that any implied partnership ever existed between them.

The defendant being called said, the plaintiff had not on July 26, or at any other time lent him a shilling, but they frequently bought goods together and sold them to retail dealers. On July 26 they bought a box of Melons, which was sold to a fruiterer for £3 12*s.*, but as he had not yet been paid for them, and as the person to whom he had sold them had gone away and could not be found, he (the defendant) had crossed it off as a bad debt, and never thought the plaintiff would sue him for it.

The learned Judge considered the plaintiff entitled to recover the sum sued for, together with the costs of his witnesses.

The defendant asked time for payment, which plaintiff would not consent to, as the defendant bought about £10 or £20 worth of goods in the market daily, and was well able to pay a small amount like this at once.

Judgment was accordingly entered for the plaintiff, with an order for immediate payment.

Obituary.

THE LATE MR. THOMAS DICKSON, OF CHESTER.—Those who knew Mr. Thomas Dickson, and were brought into personal contact with him, will regret the comparatively early death of this estimable gentleman. He was a partner in the firm of Messrs. Francis & Arthur Dickson & Sons, and was the responsible head of the nursery department at Upton. The whole of his business life was passed at the Upton Nursery; it was there he gained his first knowledge of its practical duties. He was admitted a partner in the business in the lifetime of his father, the late Mr. Francis Dickson, and did much to develope the extensive nursery trade done by this well-known Chester firm. Until recently, when his illness assumed a more serious nature, he took a very active part in the management of the nursery, and was well known among horticulturists in Lancashire, Cheshire, and North Wales, where he made an annual business journey. He won local respect and esteem by his genial manner and gentlemanly bearing; he was a true friend to many gardeners whom he knew, and whom he was always ready to assist to the best of his ability. Many of these will hear of his death with lively regret. If, horticulturally speaking, his life was an uneventful one, it was nevertheless characterised by great activity; he had a high sense of the value of system and order, doing his work thoroughly and well. Among those who will most regret his decease will be the heads of departments at the Upton Nursery and a wide circle of private friends. He died in his forty-second year, and was buried in the cemetery at Chester.

—— We regret to have to record the death of JOSEPH HUNT, Esq., which took place at High Wycombe, on the 23d ult. Mr. Hunt, who was 71 years of age, was well known amongst the older florists as a successful grower of Tulips and Pansies, and as having effected very great improvements in the quality of the Sweet William from the florist's point of view. Indeed some years since Mr. Hunt's strain of Sweet Williams enjoyed a particularly high reputation amongst growers, on account of the advance made towards the production of smooth-edged flowers.

Enquiries.

He that questioneth much shall learn much.—BACON.

180. CORCHORUS OLITORIUS.—Will anyone be kind enough to inform me what is Corchorus olitorius—an esculent called *Corette potagère* by French and Belgian gardeners—and how it is cultivated and sent to table? *E. S. D.*

Answers to Correspondents.

BAMBOOS FLOWERING : *Y.* The statement in one of the daily papers is based upon truth. Many of the Bamboos flower only after several years, and then die down. When, as sometimes happens, the flowering of the Bamboo occurs in times of scarcity, the natives very naturally look on the bountiful supply of nutritious seed as specially providential. The subject has frequently been adverted to in our columns, especially

last year, with reference to the flowering of Thamnocalamus Falconeri = Arundinaria falcata of gardens.

BOOKS: *Ehor.* 1. Loudon's *Encyclopedia of Plants* is a different work from the *Encyclopedia of Trees and Shrubs.* 2. The subject of a *Hortus Europæus* was broached at the Botanical Congress at Brussels last year, and will, we believe, be further discussed at the Botanical Congress to be held next week in Amsterdam. We shall hope to be able to report progress on the return of our reporter.

CAMELLIAS: *L. J.* The dropping of the young leaves may have been caused by excessive fumigation with some of the many fumigating compounds, or by overdryness at the root.

EVERGREENS UNDER TREES. *T. Brown.* There is nothing better for clothing the ground than Ivy. Mahonia Aquifolium is also available; also Hollies or Rhododendrons if the soil is suitable for either of them. They must not suffer from drought while establishing themselves.

FERNS: *A. B. P.* Your question is not explicit enough. If you mean exotic Ferns generally, the best illustrated complete work we know of is Hooker's *Species Filicum*, in five volumes; if garden exotic Ferns, Lowe's *Ferns* gives the most complete series of figures.

FUNGUS: *T. W., Ipswich.* The name of the fungus upon decaying Fir cones is Hydnum auriscalpium.

INSECT ON VINES: *A. Elkington.* Pulvinaria vitis; the common Vine scale of the Continent. *Ed.*

LAWNS: *T. H.* The moss may be owing to poverty or dampness. If the former, give a dressing or two of guano compost or of soot; if the latter the only remedy is draining. Daisies should be dug up, or if not too numerous may, we believe, be got rid of by using Watson's lawn sand.

NAME OF APPLE: *J. F. Harpur.* Dumelow's Seedling.

NAMES OF PLANTS: *Mrs. Brooke.* Sparmannia africana.—*Norfolk.* 1, probably an Epacris; 2, probably Clianthus puniceus. It is impossible to say for certain from such wretched materials.—*T.* Cheilanthus farinosa. The primate leaf is probably that of Poinciana pulcherrima.—*E. H.* Spiræa Thunbergii.—*E. F., Florence.* Agave names correct; Yucca 28 = Y. recurvifolia, Y. 7 is Y. gloriosa var.—*F. C.* Spiræa Thunbergii.

NÆGELIAS: *B. T. Y.* Refer to instructions under Calendar of Operations a few weeks since, for culture of Gesnera zebrina and its allies.

PEACHES AND NECTARINES: *Mr. A.* It is impossible for us to say what is the cause of the flowers dropping off, without knowing more of the local conditions under which they are growing. It is possible that the roots have got into the mud and are growing too rankly, and not thoroughly ripening the wood.

PHYLLOXERA.—The Editors of the *Gardeners' Chronicle* will be obliged if their correspondents will furnish them with specimens of roots or leaves affected with this pest, and with any information they can furnish on the subject. The information so given will be considered confidential, if so desired.

PRIMROSE: *Hydropathic.* It is an exceptional bloom, in having six segments instead of five; similar instances amongst wild plants are occasionally met with.

SEEDLING ACACIA: *W. T. P.* Not fasciated. A strong shoot.

VARIEGATED CUCUMBER: *J. King.* We have met with similar cases, but it is not at all common for the plant to become variegated all over. We do not think it would be advisable to save seed from it, as it is doubtful if it would come true, and besides would be of no use if it did.

WRIGHT'S EXPLOSIVE FLAME IMPACT BOILER.—Messrs. Wright send us a letter on this subject, based on the assumption that the report we published in a former issue was the "production of another firm in the same line of business." As this is a wholly erroneous assumption, we need not insert a letter which is, to use Messrs. Wright's own expression, "quite too awfully delicious." Our report was from an independent observer of the highest standing, and we have not yet seen any reason to modify it.

☞ FOREIGN SUBSCRIBERS sending Post-office Orders, payable at the post-office, King Street, Covent Garden, London, are requested to be good enough to write to the Publisher, at the office of this paper, 41, Wellington Street, Covent Garden, at the same time, to inform him of the fact.

CATALOGUES RECEIVED.—Charles Turner (The Royal Nurseries, Slough), General Spring Catalogue.—Charles Van Geert (Antwerp, Belgium), General Catalogue of Plants, Trees, &c.

COMMUNICATIONS RECEIVED.—A. D. R.–An Amateur.—H. D. P.—R. B. (many thanks)—E. S. D.—J. C.—H. C. O.—R. G. (in an early issue)—G., Bath.—J. S.—A Lover of Horticulture.—X. X.—H. G.

Markets.

COVENT GARDEN, April 5.

Business seems inclined to improve, conspicuously clearances have been more readily effected. Several good samples of new Grapes have arrived, but hardly make their value in the face of the old ones. The supply of Strawberries is steady, selling readily at moderate rates. Amongst vegetables, Cucumbers, Beans, and new Potatos have experienced a decline. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.

	s. d.	s. d.
Azaleas, per dozen ..	24	0-60
Begonias, per doz. ..	6	0-12 0
Bouvardias, do. ..	12	0-24 0
Cineraria, per doz. ..	9	0-18 0
Coleus, per dozen ..	3	0- 9 0
Cyclamen, per doz. ..	9	0-24 0
Cyperus, do. ..	6	0-12 0
Draciena terminalis	30	0-60 0
— viridis, per doz.	18	0-24 0
Ferns, in var., p. doz.	2	0- 4 0
Ficus elastica ..	2	6-15 0
Fuchsias, per dozen ..	9	0-18 0
Heaths, variety, doz. ..	9	0-24 0
Heliotrope, per doz.	6	0-12 0
Hyacinths, per doz..	8	0-18 0
Hydrangea, per doz.	18	0-30 0
Lily of Valley, each	1	6- 3 6
Mignonette, per doz.	6	0- 9 0
Myrtles, do. ..	3	0- 9 0
Palms in variety, each	3	6-21 0
Pelargoniums, scarlet, per doz. ..	6	0-12 0
Primula sinensis, doz.	4	0- 9 0
Richardia æthiopica, per doz. ..	9	0-18 0
Spiræa, per doz. ..	12	0-30 0
Tulips, per dozen ..	8	0-12 0
Valotta purpur., doz.	12	0-18 0

CUT FLOWERS.

	s. d.	s. d.
Azaleas, 12 sprays ..	0	6- 2 0
Bouvardias, per bun.	1	0- 4 0
Camellias, 12 blooms	2	0- 3 0
Carnations, per dozen	1	6- 4 0
Chrysanthemums, doz..	0	3- 0 9
Daffodil, double, 12 bunches ..	..	4 0- 9 0
— single, 12 bun. ..	2	0- 3 0
Epiphyllum, 12 blms.	1	0- 3 0
Eucharis, per doz. ..	6	0-12 0
Euphorbia, 12 sprays	2	0- 3 0
Gardenia, per doz. ..	4	0-12 0
Heliotropes, 12 spr.	0	6- 1 0
Hyacinths, 12 bunch.	4	0- 6 0
Lily of Valley, 12 spr.	0	9- 3 0
Mignonette, 12 bun.	4	0- 9 0
Narcissus, 12 sprays	0	4- 0 9
Pelargoniums, 12 spr.	1	0- 2 0
— zonal, 12 sprays	1	0- 2 0
Primroses, per dozen	1	0- 3 0
Primula, dbl., p. bun.	1	0- 2 0
Roses, indoor, p. doz.	2	0- 6 0
Spiræa, 12 sprays ..	1	6- 4 0
Stephanotis, 12 spr.	9	0-15 0
Tropæolum, 12 bun.	2	0- 6 0
Tulips, per dozen ..	1	0- 2 6
Violets, 12 bun. ..	4	0- 9 0
Wallflowers, p. doz.	4	0- 9 0

VEGETABLES.

	s. d.	s. d.
Artichokes, per bush.	4	0- ..
— Eng. Globe, doz.	4	0- 6 0
Asparagus, Fr., bun.	20	0- ..
— English, per 100	10	0- ..
— Fr., natural bun.	4	0- ..
— Sprue, per bun.	1	6- ..
Beans, French (new) per 100 ..	2	0- 2 6
— Runner, Long-pod, ½-bushel	1	8- 0 ..
Beet, per doz. ..	1	0- 2 0
Brussels Sprts. bush.	2	0- 3 0
Cabbages, per doz. ..	1	0- 2 0
Carrots, per bunch..	0	6- ..
— New Fr., p. bun.	0	6- ..
Cauliflowers, per doz.	2	0- 4 0
Celery, per bundle ..	1	6- 2 0
Chilis, per 100 ..	1	0- ..
Cucumbers, each ..	0	6- 1 0
Endive, per doz. ..	1	0- 2 0
— Batavian, p. doz.	2	0- 3 0
Garlic, per lb. ..	0	6- ..
Herbs, per bunch ..	0	4- 0 6
Horse Radish, p. bun.	1	0- ..
Leeks, per bunch ..	0	2- 0 4
Lettuces, Fr., p. doz.	1	0- 2 0
— Cos, per doz. ..	1	0- 2 0
Mint, green, bunch ..	0	2- ..
Mushrooms, per pott.	0	6- 1 6
Onions, per bush. ..	5	0- 8 0
— young, per bun.	0	8- 0 10
Parsley, per bunch ..	0	2- ..
Peas, green, per lb..	1	0- ..
— shelled, per qt.	8	0- ..
Potatos, per cwt. ..	5	0- 8 0
Radishes, per bunch.	0	1- 0 3
— Spanish, doz. ..	1	0- ..
— New Fr., per doz.	0	6- ..
Rhubarb, per bundle	1	0- ..
Salsafy, per bundle	1	0- ..
Seakale, per punnet	0	1- 0 6
Shallots, per lb. ..	0	6- ..
Spinach, per bush.	4	0- 5 0
Tomatas, per doz. ..	2	0- 6 0
Turnips, per bundle	0	4- 0 6

Potatos.—Kent Regents, £5 to £6; Essex Regents, £4 10s. to £5; Kidneys, £8 per ton.

FRUIT.

	s. d.	s. d.
Apples, per ½-sieve	3	0- 8 0
Cobs, per lb. ..	1	0- 1 6
Grapes, per lb. ..	2	0- 5 0
Lemons, per 100 ..	4	0-10 0
Oranges, per 100 ..	4	0-10 0
Peaches, per doz. ..	0	0- 0 0
Pears, per doz. ..	2	0-12 0
Pine-apples, per lb.	0	6- 1 0
Strawberries, p. oz.,	0	6- 1 0
Figs, green, each ..	1	0- 2 0

CORN.

Monday being a statute holiday no business was transacted at Mark Lane. Trade on Wednesday was quiet, with no particular feature. Some of the Wheat was in very good condition, and the better descriptions of produce were held for the full prices of Wednesday se'nnight; millers, however, operated cautiously. Fine malting Barley was firm, with an upward tendency. Secondary Barley was unaltered, and quotations were much the same for other classes of grain.—Average prices for the week ending March 31:—Wheat, 51*s.* 1*d.*; Barley, 41*s.* 4*d.*; Oats, 24*s.* 6*d.* For the corresponding week last year:—Wheat, 44*s.* 5*d.*; Barley, 33*s.* 7*d.*; Oats, 25*s.* 2*d.*

CATTLE.

At the Metropolitan Market on Monday there was only a short supply of beasts, but the demand was very limited, and prices cannot be quoted any higher. About 200 Canadians, some of them choice qualities, were pretty readily disposed of. The general run of stall, and prices on the average scarcely so good as on Monday se'nnight. Choice lambs and calves sold at about former rates. Quotations:—Beasts, 4*s.* 4*d.* to 5*s.*, and 5*s.* 4*d.* to 5*s.* 10*d.*; calves, 6*s.* to 7*s.*; sheep, 5*s.* 4*d.* to 6*s.* and 6*s.* 8*d.* to 7*s.* 8*d.*; lambs, 8*s.* to 9*s.*; and pigs, 4*s.* to 5*s.*—On Thursday trade in the beast market was quiet, with prices about the same as on Monday. Sheep, though not in large supply, met rather a slow sale at late rates. Lambs were scarce and dearer, and calves barely supported late extreme rates.

HAY.

At the Whitechapel market on Tuesday there was a large supply of fodder, which sold slowly, at barely previous quotations. Prime clover, 100*s.* to 128*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 122*s.*; inferior, 70*s.* to 85*s.*; and straw, 40*s.* to 54*s.* per load.—On Thursday there were fair supplies and a quiet trade at the following quotations:—Clover, best, 100*s.* to 128*s.*; inferior, 85*s.* to 95*s.*; hay, best, 90*s.* to 122*s.*; inferior, 70*s.* to 85*s.*; and straw, 40*s.* to 54*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 132*s.* to 138*s.*; inferior, 110*s.* to 126*s.*; superior Clover, 132*s.* to 140*s.*; inferior, 110*s.* to 120*s.*; and straw, 53*s.* to 58*s.* per load.

COALS.

The business at market on Wednesday was a steady one, at the following quotations:—Bebside West Hartley, 16*s.* 9*d.*; Walls End—Haswell, 20*s.*; Hetton, 20*s.*; Hetton Lyons, 17*s.* 9*d.*; Hawthorns, 17*s.* 9*d.*; Lambton, 19*s.* 6*d.*; South Hetton, 20*s.*; Chilton, 18*s.* 9*d.*; Hartlepool, 19*s.*; Kelloe, 18*s.*; East Hartlepool, 19*s.* 9*d.*; South Hartlepool, 18*s.*; Tees, 19*s.* 6*d.*

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HILL AND SMITH'S BLACK VARNISH for Preserving Ironwork, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the present advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom.

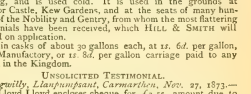
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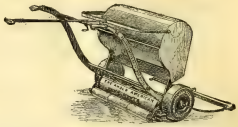
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New Patent "Roller" Lawn Mower.



New Patent Lawn-Edge Cutter.



Royal Prize Medal Patent "Anglo" American Lawn Mower.

Upwards of 37,000 of these celebrated Machines have been sold during the past few years.

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FOLLOWS AND BATE here abstain from enumerating in detail the various good points "claimed" for other Machines, and content themselves with saying that their Lawn Mowers possess them all, and more also; they therefore solicit the favour of an application for one of their CATALOGUES, with Testimonials, BEFORE PURCHASING.

To be had from all respectable Ironmongers and Seedsmen in the United Kingdom, or from the Patentees and Manufacturers, FOLLOWS & BATE, Manchester.

F. & B. are the sole makers of the well-known Patent "CLIMAX" LAWN MOWER, with Back Delivery, from 25s. each; NEW PATENT LAWN-EDGE CUTTER, which entirely supersedes the Shears; PATENT GARDEN PLOUGH, &c.

Machines of any make Repaired or allowed for in Exchange.

ESTABLISHED A CENTURY.

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WM. ROLLISSON & SONS'

NEW AND GENUINE

Flower Seeds, Vegetable Seeds, Farm Seeds,

CAREFULLY SELECTED FROM

THE BEST ENGLISH AND FOREIGN STOCKS.

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GRATIS AND POST FREE ON APPLICATION

Also TENS of THOUSANDS of

WELL GROWN STOVE, GREENHOUSE and HARDY PLANTS

OF EVERY DESCRIPTION ARE ALWAYS TO BE SEEN AT

THE NURSERIES, TOOTING,

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S. OWENS & CO.,

HYDRAULIC ENGINEERS,

WHITEFRIARS STREET, LONDON, E.C.



THE IMPROVED SELF-ACTING HYDRAULIC RAM.

This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to any height or distance, without cost for labour or motive power, where a few feet fall can be obtained, and is suited for supplying Public or Private Establishments, Farm Buildings, Railway Stations, &c.

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Peat, Loam, Sand, Birch Brooms.

HARRIET SCOTT, Dealer in all kinds of GARDEN MATERIALS, such as STAKES, RODS, HURDLES, WATTLES, BAVINS, PEA STICKS, PIMPS, MOSS, &c., delivered free. Price List on application.
H. S. begs to notify that Mr. Uwins is no longer in her employ.
Broom Maker to the Crystal Palace Company.
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Garden Brooms.

GARDEN BROOMS at 2s., 3s., and 4s. per dozen (not less than two dozen), sent to any part on receipt of Post-office order. The Trade and Shippers supplied.
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Is in use over many thousand miles,
And has been awarded the Medals and highest Commendation of all the leading Agricultural Societies.
It is constructed with
POWERFUL WINDING STRAINING PILLARS, RIGID INTERMEDIATE IRON POSTS, STRONG and DURABLE WIRE CABLE STRANDS,
Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

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With bars secured by F. M. & Co.'s Patent Self-locking Joints, which effectually prevent the uprights being pushed aside, and are independent of loose pins, wedges, or staples.

IRON ENTRANCE and FIELD GATES,
IN WROUGHT AND CAST IRON,
Designed for the Mansion, Villa, or Farm,
WICKET AND GARDEN GATES,
In Great Variety of Patterns.
Iron Hurdles, Railing, Tree Guards,
FRUIT ESPALIERS, WALL FRUIT TRAINERS, &c.
☞ *Illustrated and Descriptive List in F. M. & Co.'s New Catalogue, sent on application.*

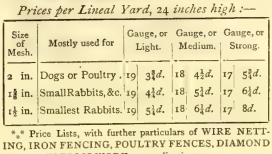
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E. T. ARCHER'S "FRIGI DOMO."—Patronised by Her Majesty the Queen, for Windsor Castle and Frogmore Gardens, the late Sir J. Paxton, and the late Professor Lindley, &c.
MADE of PREPARED HAIR and WOOL.
A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for Pits and Forcing Frames.
PROTECTION from COLD WINDS and MORNING FROSTS.
"FRIGI DOMO" CANVAS,
2 yards wide .. .. .. 1s. 10d. per yard run.
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ELISHA T. ARCHER, only Maker of "Frigi Domo," Brockley Road, Forest Hill, London, S.E.; and of all Florists and Seedsmen. All goods carriage paid to London.
NOTICE—REMOVED from 3, CANNON STREET, CITY.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Blight, Birds, &c.: 2 yards wide, 3d. per yard, or 100 yards, 20s.: 4 yards wide, 6d. per yard, or 50 yards, 20s.
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 12. per yard; ¾-inch mesh, 4 yards wide, 12. 6d. per yard.
TIFFANY, 6s. 6d. and 7s. 6d. per piece of 20 yards.
EATON AND DELLER, 6 & 7, Crooked Lane, London Bridge.

RALPH WALLER AND CO., 45, Dale Street, Manchester, Manufacturers of all kinds of GARDEN NETTING, &c., for protecting Fruit Trees from Frost; also FRIGI DOMO, 2 yards, 4 yards, and 3 yards wide.
HOTHOUSE SHADINGS of various thicknesses, superior to any other yet discovered for lightness, strength, and durability, standing, as they do, all weathers.
TIFFANY of various kinds always on hand. Netting and Shading in pieces 30 yards long by 1¾ yard wide. Tiffany in pieces 20 yards long, 38 inches wide. Also Tiffany in mineralised state.
For prices, &c., apply to the above address—
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The Sole International Prize Medals for
GALVANIZED WIRE NETTING
Have been awarded to Messrs. J. B. BROWN AND CO., at the VIENNA EXHIBITION, 1873, and at the PHILADELPHIA CENTENNIAL and INTERNATIONAL EXHIBITION, 1876.



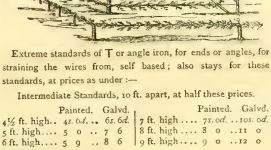
Prices per Lineal Yard, 24 inches high:—

Size of Mesh.	Mostly used for	Gauge, or Light.	s.	Gauge, or Medium.	s.	Gauge, or Strong.	s.
2 in.	Dogs or Poultry .	19	3½d.	18	4½d.	17	5½d.
1½ in.	SmallRabbits, &c.	19	4½d.	18	5½d.	17	6½d.
1¼ in.	Smallest Rabbits.	19	5½d.	18	6½d.	17	8d.

*** Price Lists, with further particulars of WIRE NETTING, IRON FENCING, POULTRY FENCES, DIAMOND and other TRELLIS WORK, on application.

J. B. BROWN & CO.,
Offices—90, CANNON STREET, LONDON.

THE FRENCH SYSTEM
OF TRAINING FRUIT TREES, &c.



Extreme standards of T or angle iron, for ends or angles, for straining the wires from, self based; also stays for these standards, at prices as under:—
Intermediate Standards, 10 ft. apart, at half these prices.

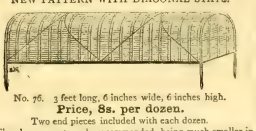
Painted.	Galvd.	Painted.	Galvd.
4½ ft. high..	4s. 6d..	6s. 6d.	7 ft. high	7s. 0d. .. 10s. 0d.
5 ft. high....	5 0 ..	7 6	8 ft. high	8 0 .. 11 0
6 ft. high....	5 9 ..	8 6	9 ft. high	9 0 .. 12 0

STRAINING SCREWS and NUTS, one to end of each wire, 3s. per dozen.
No. 13 WIRE, 10 inches apart, 2s. 3d. per 100 yards.
*** Prices of Material for WIRING GARDEN WALLS on the FRENCH SYSTEM on application.

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R. H. HAMPSON, Egerton Mills, Stockport, Manufacturer of HORTICULTURAL SHADINGS for protecting Wall Trees from Frost and Insects, &c. 54 and 60 inches wide, any length up to 100 yds. Prices on application.

THOMAS'S
PEA AND SEED GUARDS.
REDUCED PRICES. SEASON 1877.
Superior Quality. Galvanised after made.
NEW PATTERN WITH DIAGONAL STAYS.



No. 76. 3 feet long, 6 inches wide, 6 inches high.
Price, 8s. per dozen.
Two end pieces included with each dozen.
The above are strongly recommended, being much smaller in the mesh than the ordinary diamond pattern, and proof against the smallest birds.
Having a large stock of the above, Orders can be executed on receipt.
Illustrated and Priced Catalogues of Horticultural Wirework on application.
Five per cent. discount allowed for prompt cash on orders amounting to 20s. and upwards.
Special quotations for large quantities.

J. J. THOMAS & CO.,
PADDINGTON WIREWORKS,
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Post-office Orders to be made payable at 310, Edgware Road.

SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW AND CO., 29, Oxford Street, Manchester.

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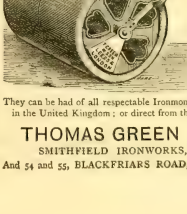
For CONSERVATORIES.
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Ironwork Flower Stands.
Balloon and other Trainers.
GARDEN.
Wirework Arches.
Wirework Roseries.
Wirework Summer-houses.
Wirework Screens.
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Iron and Wire Espaliers.
Iron Gates.
Water-piping laid on in Gardens.
Illustrated CATALOGUE of Designs.
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GREEN'S
PATENT "SILENS MESSOR,"
Or Noiseless Lawn-mowing, Rolling, and Collecting Machines for 1877.
The Winner of every Prize in all cases of competition.



The superiority of these Machines over those of all other makers is universally acknowledged. They will Cut either long or short Grass, Bents, &c., wet or dry.
These advantages no other Lawn Mowers possess.
They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant.
Every Lawn Mower sent out is guaranteed to give entire satisfaction, otherwise it may be returned at once free of cost to the Purchaser.
N.B.—Those who have Lawn Mowers to repair will do well to send them either to our Leeds or London Establishment, where they will have prompt attention, as an Efficient Staff of Workmen is kept at both places.
Descriptive Illustrated Price List free on application.

GREEN'S PATENT ROLLERS
For Lawns, Drives, Bowling Greens, Cricket Fields, and Gravel Paths.
SUITABLE FOR HAND OR HORSE POWER.



They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom; or direct from the Manufacturers.
THOMAS GREEN & SON,
SMITHFIELD IRONWORKS, LEEDS;
And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

THE PATENT "EXCELSIOR" LAWN MOWER,

The simplest and best ever introduced.

Waite, Burnell, Huggins & Co.,

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Sole Consignees for Great Britain, Ireland and France.



The "Excelsior" has never been beaten in Competitive Trials.
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BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and qualities, of

BETHAM & SON,

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B. & S. have always a large Stock in London of 20-in. by 12-in., 20-in. by 14 in., 20 in. by 16 in., in 16-oz. and 21-oz.

JOHN MATTHEWS, The Royal Pottery, Weston-super-Mare, Manufacturer of TERRA COTTA VASES, FOUNTAINS, ITALIAN BASKETS, BORDER TILES, GARDEN POTS, of superior quality, from 1 to 30 inches diameter, stand the frost and seldom turn green. ORCHID, FERN, SEED, and STRIKING PANS, RHUBARB and SEAKALE POTS, &c. Price Lists post-free. Sheets of Designs, 6*d*. Books of Designs, 1*s*.

SIR J. PAXTON'S HOTHOUSES for the MILLION.—Price List free. Conservatories, &c., built to Architects' Plans, or Designs prepared and Estimates given to Rough Sketches, with sizes required. Heating apparatus fixed complete. Pamphlet, with Illustrations, post-free, 3*d*.
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HORTICULTURAL BUILDERS AND HOT-WATER ENGINEERS.
Patentees & Manufacturers of the Self-adjusting Throttle Valve.
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Designs and Estimates free of cost.
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Estimates given on application for GREENHOUSES and CONSERVATORIES of all kinds, and to any design.

GARDEN BOXES and LIGHTS.	Each.
Portable Box with One Light, 6 feet by 4 feet, glazed good 16-oz. sheet glass, painted four coats, and packed ready for use	£ s. d. 35 0
Portable Box with Two Lights, as above, each light 6 feet by 4 feet	65 0
LIGHTS ONLY.	
3 feet by 4 feet Light, not painted nor glazed	3 6
Ditto glazed, good 16-oz. sheet glass, and painted 4 coats	10 0
6 feet by 4 feet, not painted nor glazed	6 0
Ditto glazed and painted four coats	16 6

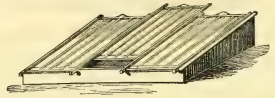
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55, Lionel Street, Birmingham. Established A.D. 1818.
BOOKS of DESIGNS, 5*s*. each.

☞ The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.

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One Hundred Melon and Cucumber Frames and Lights, glazed with best 21-oz. glass of the following sizes, ready for delivery. LISTS, with full particulars, post-free :—

1-light frame,	4 feet by 6 feet	..	£1	17	6
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3 ,, ,,	12 ,, 6 ,,	..	4	17	6
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Carriage paid to any Railway Station in England and Wales, also to Dublin, Edinburgh, and Glasgow, on Orders amounting to 40*s*. and upwards.

PATENT PLANT PRESERVER LISTS post-free.
GREENHOUSE LISTS post-free.
Horticultural Buildings of any description and dimension.
Designs prepared. Estimates free of charge.
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HORTICULTURAL WINDOW GLASS.

—A large variety of sizes, 15 oz., 12*s*. 6*d*.; 21 oz., 16*s*. 6*d*. per 100 feet. Large sizes, in Cases, for Cutting up, 15 oz. 4ft., 36*s*.; 5ft., 40*s*. per 300 feet. 21 oz. 4ft., 36*s*.; 5ft., 40*s*. per 200 feet. Prices forwarded for large and special quantities.

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WOOD TRAINING STICKS and TALLIES,

commended by Royal Horticultural Society. BAMBOO CANES, RAFFIA for tying, VIRGIN CORK, ARCHANGEL and other MATS, PACKING MATS, &c. Wholesale prices on application to
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Indestructible Terra-Cotta Plant Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens, sent post-free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c.
MAW AND CO., Benthall Works, Broseley.

Under the Patronage of the Queen.

J. SMITH'S IMPERISHABLE STRATFORD LABELS.

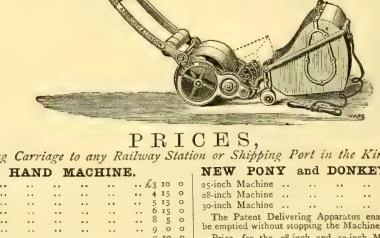


The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.
The *Gardeners' Magazine* says :—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
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SHANKS' NEW PATENT LAWN MOWERS,

Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The *Sole-Plate* or *Bottom Blade* is made with *Two Edges*, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the Grass escaping the Box when the Machine is in use during the prevalence of wind.



PRICES,

Including Carriage to any Railway Station or Shipping Port in the Kingdom :—

NEW HAND MACHINE.

10-inch Machine	£3 10 0
12-inch Machine	4 15 0
14-inch Machine	5 15 0
16-inch Machine	6 15 0
19-inch Machine	8 5 0
22-inch Machine	9 0 0
24-inch Machine	9 10 0

The Hand Machines are all fitted with Silent Movement, and can be used either with or without the usual Front Rollers.

NEW PONY and DONKEY MACHINE.

25-inch Machine	£13 10 0
28-inch Machine	15 15 0
30-inch Machine	17 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

Price, for the 28-inch and 30-inch Machines, 30*s*. extra; 25-inch Machine, 25*s*. extra. Silent Movement, 12*s*. 6*d*. extra. Boots for Pony, 24*s*.; Donkey, 20*s*. per set.

NEW HORSE MACHINE.

30-inch Machine	£20 10 0	42-inch Machine	£28 0 0
36-inch Machine	24 0 0	48-inch Machine	32 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.
Price, for the 48-inch, 42-inch, and 36-inch Machines, 40*s*. extra; for the 30-inch, 30*s*. extra. Silent Movement, 20*s*. extra.
Boots for Horse's feet, 25*s*. per set.

A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

SHANKS' PATENT LAWN MOWERS
Are warranted to give ample satisfaction, and if not approved of can be at once returned.

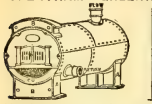
ALEXANDER SHANKS & SON,

Dens Ironworks, Arbroath; and 27, Leadenhall Street, London, E.C.

27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.

Small Lawn Mowers—6-inch, 25s.; 7-inch, 35s.; 8-inch, 50s.

STEVENS' TRENTHAM GREENHOUSE BOILER,



After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved. For illustrations, with full particulars, apply to the Sole Makers,

F. & J. SILVESTER.

HOT-WATER ENGINEERS, &c., &c.,
Castle Hill Works, Newcastle, Staffordshire.

☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

AN EXTRAORDINARY BOILER.—During the Great Boiler Contest at Birmingham, in 1872, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 100 feet of 4-inch pipes, and yet had more than 1 bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners. This was THE CHAMPION, Deards' Patent Close Coil Boiler, for Drawings and Prices of which send two stamps to

Messrs. DEARDS, Boiler Works, Harlow,

who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

For Sale, a

STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to

HILL AND SMITH, Brierley Hill Ironworks, Dudley.

HENRY ROBINSON, IRONFOUNDER and ENGINEER, Stewkins Foundry, Brettel Lane, Stourbridge.

	9-in.	3-in.	4-in.	
HOT-WATER PIPES,	2s. 1d.	3s. 4d.	4s. 3d.	per 6-ft. length
Ditto	,,	4s. 7d.	5s. 10d.	p. 9-ft. length
ELBOWS, No. 12	,, 12. 1d.	12. 6d.	2s.	each.
TEES, No. 33	,, 12. 4d.	2s. 4d.	3s. 3d.	each.
SYPHONS, No. 23	,, 12. 4d.	2s.	3s.	each. Price

List free on application. Portable Pipes, Gold Medal Boilers, &c.

AGRICULTURAL LOCOMOTIVES,

STEAM PLOUGHING MACHINERY,
ROAD LOCOMOTIVES, TRAMWAY LOCOMOTIVES,
STEAM ROAD ROLLERS.

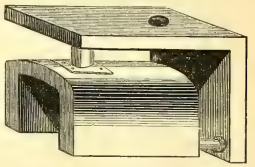
For Prices, Description, and Reports of Working, apply to the Manufacturers,

AVELING & PORTER,

ROCHESTER, KENT; 72, CANNON ST., LONDON, E.C.; and 9, AVENUE MONTAIGNE, PARIS.

AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of *three and one-fifth pounds of coal* per horse-power per hour.

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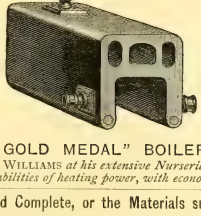
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JOURNEYMAN, or IMPROVER, in the Houses, under a good Foreman, in a Nobleman's or Gentleman's Garden.—Age 21. Can produce a good character. —W. M. DEVON, Lawn, Wimbledon Park, Wimbledon

To the Trade.

PROPAGATOR AND GROWER.—A first-class Man; excellent Propagator, Cyclamen Grower, &c.; At in Fruit Culture, Vines, Cucumbers, Melons, Peaches, Strawberries, &c. Would not object to superintend Outdoor Department.—ALPHA, Messrs. J. & G. Lowe, Nurserymen, Kingston Lane, Hillingdon, Uxbridge.

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Amsterdam.

DUTCH GUIDE.—To Families and Gentlemen coming to Holland during the International Horticultural Show at Amsterdam, April next, a respectable Dutch Guide, of first-class references and conversant with the modern languages, recommends his services.—G. SLATS, Jun., Noordwyk-Binnen, near Haarlem, Holland.

BOOK-KEEPER (ASSISTANT), or INVOICE CLERK.—Belgian; understands English and German, and corresponds in French and Flemish.—Z. Z., Post Restante, Ghent.

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HOLLOWAY'S PILLS.—Health's Fountain.—It cannot surely be necessary to remind any intelligent reader of these pages that the blood determines every individual's health and vigour. Holloway's medicine searches out the slightest taint in the vital fluid and neutralises or expels it so that the circulation supports the system in place of sowing the seeds of decay. When epidemics are advancing and disease is steadily on the increase, it behoves every one to have a restorative like these Pills ready to set right any irregularity in the stomach, liver, bowels, or kidneys. Holloway's treatment is especially suitable for the young, delicate, and nervous, who are most susceptible of any prevailing sickness, and whom violent measures would endanger little less than the epidemic.

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AMERICAN LAWN MOWER

HAS BEEN AWARDED

GRAND DIPLOMA of HONOURABLE MENTION, Vienna, 1873.
SILVER MEDAL, Vienna, 1870. SILVER MEDAL, Hamburgh, 1869.

NOTE.—The "Archimedean" was specially selected from the Mowers exhibited at Vienna for constant use in the Exhibition Grounds, and gave great satisfaction; and we have pleasure in calling attention to the following Testimonial, received from the Inspector of the Royal Gardens, Schonbrun, Vienna:—

"Your 'Archimedean' Lawn Mowers have been used for some time past at the Imperial Gardens, and I have great pleasure in stating that they have given perfect satisfaction. Their quick and good work prove them to be the best and most efficient machines of the kind."

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"The quickest, most simple, and most efficient Mower ever used."—*Gardeners' Chronicle.*

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"We feel bound to recommend it to our readers as one of the best Mowers we have as yet made acquaintance with."—*Florald World.*

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HER GRACIOUS MAJESTY THE QUEEN,
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HIS IMPERIAL MAJESTY THE EMPEROR OF AUSTRIA,
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And many of the Nobility and Gentry of Great Britain.

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TESTIMONIALS.

From A. F. BARRON, Esq., *Royal Horticultural Society, Chiswick Gardens, W.*

"GENTLEMEN,—We have now had your 'Archimedean' Lawn Mower in use for several months, and without hesitation I can truly say it is the *best* and *most efficient* implement of the kind we have ever used."

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And if not approved of may be returned within a Month, and the amount paid be refunded.

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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

In consequence of the intended VISIT of HER MAJESTY THE QUEEN to the Gardens of the Royal Horticultural Society, on WEDNESDAY, May 2, the FLOWER SHOW, which was intended to have been held on the 1st, will take place on that day.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—SCIENTIFIC, FRUIT, and FLORAL COMMITTEES' MEETINGS, on WEDNESDAY NEXT, April 18, at 11 o'Clock. GENERAL MEETING at 3 o'Clock, for the ELECTION of FELLOWS, &c. Admission 1s. Band from 2 o'Clock p.m.

N.B.—On this occasion the Fruit and Floral Committees will meet in the CONSERVATORY, where Exhibits will also be shown.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

EXHIBITION of PLANTS, FLOWERS, BOUQUETS, FRUITS, FORCED VEGETABLES, and SALADS, by the Growers and Salesmen of Covent Garden Market, on WEDNESDAY, April 18. GOLD, SILVER, and BRONZE MEDALS awarded in the following Classes, according to Merit:—

1. GROUPS OF PLANTS.
2. WINDOW DECORATIONS.
3. TABLE DECORATIONS.
4. BOUQUETS. The best Bouquet of any kind.
5. FERN CASES.
6. FRUITS. Collection.
7. VEGETABLES.—SALADS.

In Class 1 and 7 the Exhibits must be grown by the Exhibitor.

Intending Exhibitors to inform Mr. BARRON, Royal Horticultural Gardens, South Kensington, S.W., not later than Monday, April 16, 1877.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—The Council of the Royal Horticultural Society have, in accordance with a Memorial from the Exhibitors, agreed to ALTER the DAYS of MEETINGS from WEDNESDAYS to TUESDAYS, and therefore announce that on and after May 1 next the MEETINGS of the FRUIT, FLORAL, and SCIENTIFIC COMMITTEES will be held on TUESDAYS instead of Wednesdays. The dates in future will therefore be—for Fruit and Floral Committees, Tuesdays, May 1 and 15, June 5 and 19, July 3 and 17, August 7 and 21, September 4 and 18, October 2, November 6, and December 4.

The Scientific Committee will meet on the same days as above, except during the months of August, September, and October.

ROYAL BOTANIC SOCIETY,—Gardens, Regent's Park.

EXHIBITION of SPRING FLOWERS, WEDNESDAY next, April 18. Gates open at 2 o'Clock. The Band will play from 2 to 4 & 5 to 7. Tickets to be obtained at the Gardens only, by vouchers from Fellows of the Society, price 2s. 6d. each.

CRYSTAL PALACE.—AURICULA SHOW, April 24; GREAT FLOWER SHOW, May 12; ROSE SHOW, June 23. Schedules for the two latter can be had on application to

GENERAL MANAGER, Crystal Palace.

NATIONAL AURICULA SOCIETY—SOUTHERN EXHIBITION.—The Public are respectfully informed this Exhibition will be held in the Crystal Palace on TUESDAY, the 24th inst., when Prizes will be awarded to upwards of FOUR HUNDRED SPECIMENS. These Prizes are open to all competitors, whether subscribers to the Society or not. Notice of Entry must be given to the Honorary Secretary, of whom Schedules and all needful particulars may be obtained, not later than Friday the 20th inst.

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Splendid Novelty.

HARRISON'S New MUSK.—For full description and particulars, see p. 460 of *Gardeners' Chronicle*, or apply to

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NURSERYMEN COMING to HOLLAND during the International Horticultural Show at Amsterdam, in April, 1877, are kindly requested to Visit my Nursery.

A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

Exhibition of Spring Flowers, &c.

DOWNIE AND LAIRD, Royal Winter Gardens, Edinburgh, will hold during the month of APRIL, in the above Gardens, an EXHIBITION of RHODODENDRONS, HYACINTHS, and other Spring Flowers. Inspection invited. Admission free.

To the Trade.

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To the Trade.

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JAMES BIRD, Nurseryman, Downham.

ASPARAGUS, Giant, 3-yr. and 4-yr., fine, price 3s. per 100.

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CLEMATIS.—Finest named kinds, spring and autumn flowering, any number at very reduced prices.

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Verbenas, Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other mixed sorts, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, package included. Cash to accompany all orders.

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EARL BEACONSFIELD FUCHSIA is the greatest novelty of the year. Two First-class Certificates. (See *Gardeners' Chronicle*, April 7, p. 436.) 5s. 6d., post-free. Special Trade offers.

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To the Trade.

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ALFRED LEGERTON, Seed Merchant, 5, Aldgate, London, E.

For Sale.

NEW ENGLISH SCARLET RUNNER BEANS. Price 23s. per bushel. Apply to

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GARDEN POTS of best quality, are requested to send their orders to

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MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 16, at half-past 12 o'Clock precisely, a large importation of some hundreds of plants of CYMBIDIUM EBURNEUM, just arrived in splendid condition, several of the plants with flowers on them that have expanded in the cases while in transit; many of the plants are large and fine masses, with from six, eight, ten to twelve growths each. At the same time will be sold immense quantities of many other CHOICE ORCHIDS, such as Vanda striata, Cymbidium gigantæum, Vanda cœrulea, Saccolabium Cartii, some hundreds of good plants of Aerides Fieldingii (Foxbrush), Dendrobium formosum, Dendrobium nobile Wallichii; hundreds of plants of the rare Cattleyæ barbata, various Pleiones, and some good plants, just imported, of Oncidium varicosum varieties, O. Rogersii type, and some healthy plants of Odontoglossum vexillarium.

On view morning of Sale, and Catalogues had.

City Auction Rooms, 38 & 39, Gracechurch Street, E.C.

IMPORTANT SALE of a first-class Collection of CARNATIONS, PICOTEES, and PINKS of the finest possible selected hardy AMERICAN PLANTS, CONIFERÆ, SHRUBS, STANDARD and DWARF ROSES, hardy CLIMBING PLANTS, choice GREENHOUSE and BEDDING PLANTS. Imported and other FLOWER SEEDS, DAHLIAS, &c.

MESSRS PROTHEROE AND MORRIS will SELL by AUCTION the above, at the City Auction Rooms, on TUESDAY, April 17, at half-past 12 o'Clock precisely.

On view the morning of Sale. Catalogues had at the Rooms, 67 of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, F.

Nursery.

TO BE SOLD, a flourishing, extensive, and old-established NURSERY, occupying a first-class position near London. Capital House, Shop, &c. Suitable for either a private Gentleman or a Business Man. Satisfactory reasons for disposal.

Address, in first instance, by letter only, E. W., care of Messrs. Kingsbury & Co., Lombard House, George Yard, E.C.

TO BE SOLD, or LET for a Long Term, a SIX-ROOMED HOUSE, 1 ACRE of GROUND, and about 1000 feet of GLASS, with Stock suitable for growing Cut Flowers: about 7 miles from Covent Garden Market.

P. Q., *Gardeners' Chronicle* Office, W.C.

FOR SALE, TYNEVILLE VINERIES, St. Aubin's Bay, Jersey, consisting of handsome Gothic Residence, and Gardener's Cottage in keeping; also Outhouses, and between 2000 and 10,000 superficial feet of Glass, heated and fitted up with latest improvements and every convenience for saving labour. About 2000 superficial feet of Glass for early Potatos. The whole has been erected within the last six years, and is now in full and early bearing. An excellent opportunity of profitable and safely investing seldom occurs. Satisfactory reasons given for selling.

Full particulars of the owner at the above address.

Notice.

FOR SALE, in a first-class Watering-Place on the South Coast, a First-class BUSINESS as FRUITERER, GREENGROCER, &c., in a splendid position in the centre of the Town—a very large corner Shop with two fronts, doing a capital Trade, and could be doubled in a very short time, if managed by a party that thoroughly understands the business. The proprietor is giving up on account of illness in the family.

Apply to Messrs. NUTTING AND SON, 60, Barbican, London, E.C.

To Nurserymen, Seedsmen, and Florists.

FOR DISPOSAL, a BUSINESS, fine large HOUSE and SHOP, small compact NURSERY close to, three Greenhouses well heated with four-light sixteen Frames, fully stocked with saleable Bedding Plants. Good Jobbing connection, and every chance of greatly increasing it. Shop in fractious position. Long Lease and moderate rent. Apply for further particulars on the premises,

7, Swiss Terrace (adjoining Swiss Cottage Station, Metropolitan Railway), Belsize Road, St. John's Wood, N.W.

Dover.

TO BE LET, with Immediate Possession, an old-established FLORAL, JOBBING, and SEED BUSINESS, situated in the best part of the town. The Buildings comprise Dwelling-house, with Seed Shop, large Showhouse, Three Greenhouses, Potting Shed, with large Garden. Rent £40 per year.

For particulars apply to Messrs. JAMES B. TERSON AND SON, Auctioneers, Valuers and Estate Agents, 97, Castle Street, Dover.

Balsam, Cineraria, and Primula Seed.

F. AND A. SMITH offer the above, saved from their unrivalled stocks, in 12, 25, 60, and 5s. packets. Price per weight to the Trade on application.

The Nurseries, West Dulwich, S.E.

Notice.

D. HEFFERMAN, NURSERYMAN, Egham, has been instructed to Sell, in connection with his own Stock, the unrivalled Collection of named RHODODENDRONS, AZALEAS, &c., &c., growing on G. Baker & Son's American Nurseries, Bagshot.

For Price, &c., address as above.

Cinerarias and Specimen Azaleas.

F. AND A. SMITH'S Collections of the above are now in their full beauty. A visit is solicited.

The Nurseries, West Dulwich, S.E.

ASPARAGUS.—Now is the best time for Planting. Strong plants, at 2s. 6d., 3s. 6d., and 5s. per 100; 20s., 30s., and 40s. per 1000.

JAMES DICKSON AND SONS, Newton Nurseries, Chester.

Presented (by post) on application,

NEW CATALOGUE for 1877.

For remarks and List of Plants offered, with prices, see last week's large Advertisement. Plants true to name, well hardened off, low in price. See New Catalogue.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

ROYAL MANCHESTER BOTANICAL and HORTICULTURAL SOCIETY.—AURICULA SHOW, &c., at the Town Hall, Manchester, on April 27. The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1877 (ONE THOUSAND POUNDS in Prizes) will open on May 16. Special SHOW of ROSES, TULIPS, DINNER-TABLE PLANTS, on May 25 and 26. ENTRIES close on May 10. Schedules now ready.

BRUCE FINDLAY, Curator and Secretary.
Royal Botanic Gardens, Manchester.

GRAND FLOWER SHOW will be held by the Orleans House Club, Twickenham, on FRIDAY and SATURDAY, May 18 and 19, in the Grounds, under the entire superintendence of Mr. Thomas R. Rollisson. Schedules and full particulars can be had of WILLIAM ROLLISSON and SONS, The Nurseries, Tooting, S.W.

Captain H. WOMBWELL, Manager and Secretary.
Offices, 14, Waterloo Place, S.W.

BURTON-ON-TRENT FLORAL and HORTICULTURAL SOCIETY.—The FIRST EXHIBITION of the Season of FLOWERS, FRUITS AND VEGETABLES will be held in the Hay, Burton-on-Trent, on WEDNESDAY, June 27, 1877. £200, £150, and £5 for the best TWELVE STOVE or GREENHOUSE PLANTS, &c.

SCHEDULES of PRIZES and any information may be obtained from the Secretary, to whom Nurserymen and others wishing to become Subscribers should apply.

F. S DUNWELL, Secretary.
10, Market Place, Burton-on-Trent.

TORBAY HORTICULTURAL SOCIETY, TUESDAY, JUNE 27 and 28.

SUMMER SHOW of PLANTS, FRUIT, VEGETABLES, &c., Prizes ONE HUNDRED POUNDS; and a Grand ROSE SHOW. Money Prizes awarded in TWENTY-SEVEN GROUNDS, and Five Silver Cups. For 72 varieties, one truss each, 1st prize, Cup, value £8: 2d prize, £5; 3d prize, £2. For 12 Tea and Noisette Roses, one truss each (Amateurs), 1st prize, presented by Messrs. Curtis, Sandford & Co., Cup, value five guineas. Entries close Thursday, June 21. Schedules, &c., ready.

W. FANE TUCKER, Capt., Hon. Sec. T. H. S.
Braddon Tor, Torquay.

NATIONAL ROSE SOCIETY.—GRAND EXHIBITION of ROSES at St. James's Hall, WEDNESDAY, July 4. Upwards of TWO HUNDRED and EIGHTY POUNDS given in Prizes, including Three Silver Cups. The best Collection of Roses in cut Schedules and Forms of Entry can be had on application to

H. HONYWOOD D'OMBRAIN, } Hon. Secs.
HORACE K. MAYOR, }
Horticultural Club, 3, Adelphi Terrace, W.C.

THE INTERNATIONAL POTATO EXHIBITION will be held at the Royal Aquarium, Westminster, S.W., on October 3, 4, and 5, when Prizes amounting to Seventy-five Pounds, and TWENTY POUNDS will be awarded. SCHEDULES are now ready, and may be had on application to

Mr. J. A. MCKENZIE,
1 and 2, Great Winchester Street Buildings,
April 7, 1877. London, E.C.

Centenary Celebration.

BATH and WEST of ENGLAND SOCIETY (Established 1777), and SOUTHERN COUNTIES ASSOCIATION.

BATH MEETING, JUNE 4, 5, and 6.

ENTRIES of LIVE STOCK, CHEESE, IMPLEMENTS, WORKS of ART, &c., CLOSE APRIL 18, after which date no Fees or Entries can be received.

POULTRY ENTRIES CLOSE MAY 2.

FORMS and all information supplied on application to

JOSIAH GOODWIN, Sec.
4, Terrace Walk, Bath.

Transfer of Business.

MESSRS. J. CROUCHER and H. BOLLER beg to inform the Public that they have TAKEN THE BUSINESS lately carried on by C. H. DESBOROUGH, at 72, South Street, Dorking, as Seed Growers, and hope to receive the confidence of those who patronised the late C. Piersdorff; also the Public generally.

All orders for any Succulent Plants, both miniature and others, will receive prompt attention.

Messrs. C. & B., having had great experience in this class of plants, can guarantee correct names. The Trade supplied.

Pelargoniums, Pelargoniums.

JAMES HOLDER AND SON have a fine healthy Stock of the above to offer, at the following low prices for Cash, viz., 35s. per 100, distinct sorts, hamper and package included; also extra strong plants, in 32-pots, 42s. per dozen, in 48-pots, 2s. per dozen, 60s. per 100, basket and packing extra. Crown Nursery, Reading.

H. AND F. SHARPE'S Wholesale Spring CATALOGUE of HOME-GROWN AGRICULTURAL and GARDEN SEEDS is now ready, and may be had on application. The prices will be found very moderate.

Seed Growing Establishment, Wisbech.

LYCOPODIUM.—10,000 well grown for Sale; also a quantity of GARDENIAS, 3s. per dozen, 12-inch pots, well set with buds. No reasonable offer refused.

J. BERKLEY, Hope Nursery, Lewisham High Road, S.E.

LOBELIA, EMPEROR WILLIAM (David-son's Stanmore Park variety)—In single pots, from Cuttings, on and after May 10, 5s. per dozen, package free for dozens.

HENRY DAVIES, Florist, &c., Great Stanmore, N.W.

Jackson's Dwarf Hybrid Scarlet, Crimson, and Blush FREE-FLOWERING RHODODENDRONS.

W. JACKSON AND CO., Nurseries, Bedale, Yorkshire, offer the above RHODODENDRONS, on own roots, strong plants, 1 to 1½ foot, 12s.; 2 to 2½ feet, 21s. MAHONIA ASPIDIFOLIARIS, 2 to 3 feet, 12s. per dozen. The finest of all Evergreen Flowering SHRUBS.

CATALOGUES.—His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (by post) to

S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

POTATOS for SEED.—Myatt's Ashleaf Kidney, Rivers' Royal Ashleaf, Barron's Perfection, Ne plus Ultra, Early Vermont, Early Oxford, Golden Eagle, Purlie, Rector of Woodstock, Red Emperor, Turner's Union. Prices (moderate) on application.

JAMES COCKER AND SONS, Sunnypark Nursery, Aberdeen.

All the Best Selected

NEW CONTINENTAL ROSES for 1877. Fine Stock of the above now ready.

Descriptive CATALOGUES on application.

WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

Special List of Choice Orchids (No. 33).

THE NEW PLANT and BULB COMPANY beg to announce that the above is now ready, and will be sent post-free on application. It also contains a List of New Ferns, Beautiful Foliage Plants, Succulents, australasica, &c., all at low prices. Lea Bridge Wall, Colchester.

W. F. BOFF offers easy growing, free-blooming ORCHIDS, 12s., 30s., and 42s. per dozen.

TUBEROSES, 2s. per dozen, 12s. per 100.

LILY of the VALLEY, imported clumps, 9s. per dozen.

CALCEOLARIAS, yellow, rooted cuttings, 5s. per 100.

293, Upper Street, Islington, N.

To the Trade.—Mangel Wurzel Seeds, 1876 Growth.

H. AND F. SHARPE invite the attention of the Trade to their fine selected stocks of home-grown MANGEL SEEDS, raised from fine picked bulbs. Special offers and samples may be had on application.

Seed Growing Establishment, Wisbech.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LIST for 1877.

Extra Strong SEAKALE, 2s. per dozen.

RICHARD SMITH, Nurseryman, Worcester.

VERBENAS, VERBENAS, VERBENAS. Strong, well-rooted, healthy cuttings, perfectly free from disease. White, Purple, Scarlet and Pink, 6s. per 100, 50s. per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, for 5s. Terms cash.

H. BLANDFORD, The Dorset Nurseries, Blandford.

To the Trade.—Turnip Seeds.

H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.

Seed Growing Establishment, Wisbech.

SEEDS—SEEDS—ALL KINDS.—Before ordering send for our Catalogue for Illustrated CATALOGUE, which contains full Directions,

How, When and What to Sow.

PENGILLEY AND POOL (successors to the Heatherside Nurseries Company), 59, Queen Victoria Street, London, E.C.

Special Offer. 150,000 Vesuvius.

WILLIAM BADMAN offers strong autumn-stuck VESUVIUS, from single pots, 10s. per 100; or from store-pots, 8s. per 100, 75s. per 1000, package included. Terms cash.

Cemetery Nursery, Gravesend, S.E.

Centaurea candidissima or ragusina,

PACKAGE FREE.

WOOD AND INGRAM offer fine plants of the above, thoroughly established in single pots, at 20s. per 100, or £9 per 1000. Not less than 50 will be sold at the 100 price, or 500 at the 1000 price.

The Nurseries, Huntingdon.

WEBB'S PRIZE COS FILBERTS, and other PRIZE COB NUTS and FILBERTS, LISTS of these varieties from MR. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours. ALBICANS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.

Mr. WEBB, Calcot, Reading.

RICHARD WALKER can still supply any quantity of Enfield Market CABBAGE PLANTS, 2s. 6d. per 1000; Red Dutch, for Pickling, 5s. per 1000. I am bound to sell cheaper than any man in Bagshwade. I have 500 of the best forcing SEAKALE in the country, at 10s. per 100; best Scotch SEED POTATOS in cultivation, good clumps, 6s. per dozen, planting out, 12. per dozen; ASPARAGUS PLANTS, 2s. 6d. per 100; LEMON THYME, 8s. per 100; PENNYROYAL 8s. per 100; BLACK THYME, 5s. per 100; Scarlet King and pink DAISIES, 5s. per 100; splendid double white ROCKETS, 2s. per dozen; PYRETHRUMS, 2s. per dozen; PHLOXES, 2s. per dozen; new DELPHINIUMS, mixed colours, 1s. per dozen; white Spanish ONION SEED, all new and genuine, and intermediate, at 2s. 6d. per lb. Terms cash.

Market Gardens, Biggleswade, Beds.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden.—"Gee's superior Bedfordshire-grown Plants and Seeds have attained much celebrity."—*Vide Bedford Mercury*, July 29, 1876. "The soils of the district offer facilities enjoyed at few places for bringing away plants, &c., and under the skill and persevevance of Mr. F. Gee they are turned to good account."—*Vide Agricultural Gazette*, July 31, 1876. See other opinions of the Press, also a Treatise on the Cabbage, in CATALOGUES, lowest prices, &c., on application to R. FREDERICK GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

ESTD 1777 SOUTH DEVON AGRICULTURAL SOCIETY MANURE INCORPORATED 1868

FIFTY THOUSAND MAGNIFICENT DWARF ROSES, in POTS.
ROSES for BEDDING, at 12s. to 18s. per dozen, 100s. per 100.
TEA-SCENTED ROSES, superb, established in 6-in. pots, adapted for greenhouse or conservatory, 30s. per dozen, 200s. per 100. Descriptive CATALOGUES on application.
WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

New Bedding Tropæolum, "

DOWNIE AND LAIRD have much pleasure in offering for Spring delivery the above Tropæolum, which has been raised by Mr. Andrew Hunter, gardener to Lord Shand, New Hailes House, near Edinburgh. This is an excellent Bedding Tropæolum, surpassing its parent Cooperi, being of a much dwarfer habit, and we can with perfect confidence recommend it. The Editors of the *Gardeners' Chronicle* say, "It grows about 6 inches high, is very neat and compact in habit, and a most effective plant, the flowers being of medium size, nice form, and of a bright scarlet colour." Price, per dozen plants, 12s.; each, 1s. 6d. Usual discount to the Trade.
West Lodge Nursery, Edinburgh.

Cheap Bedding Geraniums.

ALFRED FRYER offers the following good Bedders at per dozen for cash:—Golden Tricolors: Peter Grieve, 12s.; Prince of Wales, 6s.; Lady Cullum, 3s. 6d.; Sir Robert Napier, 3s. 6d.; Mrs. Pollock, 3s.; Sophia Dumaresque, 3s.; Silver Tricolors: Lass o' Gowrie, 4s. 6d.; Queen of Hearts, 4s. 6d.; Miss Burdett Coutts, 3s. 6d.; Mrs. John Clutton, 3s. 6d. Prince Silverwings, 3s. Double flowered: Marie Lemoine, 3s.; or one of each for 5s. No charge for packing. Parcels are returned at once, and post-free for 6d. per dozen extra. For Priced LISTS apply to
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. Is perfectly hardy, and the whole improves annually. The only secret of success is a rich soil, to keep up free growth. Extra strong plants, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.
RICHARD SMITH, Nurseryman, Worcester.

Shallot Seed.

DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild; one trifling treatment bulbs have been grown to and even 12 inches in circumference—by far the best method of growing the Shallot. Per packet, 1s. Price 12s. per packet.
May be had of all Seedsmen in sealed packets, and Wholesale of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C.
B. R. DAVIS, Nursery and Seed Warehouse, Yeovil.

LYE'S FAVOURITE.—The handsomest and best Potato ever offered. Indispensable for Exhibition. This variety will be the greatest Prize Winner of the season. We have purchased the entire Stock of Mr. James Lye, Clyffe Hall, Market Lavington, and parties wishing to grow this remarkably handsome and beautiful variety should order at once, as the Stock is strag very limited. It can only be obtained direct from us. Price 5s. per lb. Orders of 20s. and upwards carriage free.
DANIELS BROS., The Royal Seedsmen, Norwich.

LOBELIA, EMPEROR WILLIAM.—For Sale, 10,000 plants from Cuttings, now ready. This Lobelia is one of the finest ever introduced, being of dwarf compact habit, with large flowers of the most intense blue, and, what is of great consequence, will remain in full bloom from June to November. 4s. per 100, 3s. per dozen, package free. Price to the Trade on application.
H. GODDARD, Stone Grove Nursery, Edgware, Middlesex.

WILLIAM POTTEN can supply:—
12 ZONAL GERANIUMS, choice new, of 1876, for 10s.
12 " " " 1875, for 5s.
12 LITTLE TROT, the best dwarf, silver variegated, for 3s.
12 KLEINE RIESE, the best dwarf, golden leaf, for 2s. 6d.
12 CHRYSANTHEMUMS, good large flowering, for 3s.
PETUNIA ROMULUS, a beautiful double pink, 3s. per doz.
" NINE varieties, distinct colours, 3s.
The above strong healthy plants, post free.
W. P. has a large stock of fine healthy plants, including the best varieties in cultivation. CATALOGUE free on application.
Camden Nursery, Sissinghurst, Staplehurst, Kent.

Verbenas, Verbenas, Verbenas.

FRANCIS C. BOFF offers White, Purple, Scarlet, Pink, Rose, Crimson, Maroon, Mulberry, true to name, 12s. per 100. CLOUDS, BALLOONS, HELIOTROPES, light and dark, all at 5s. per 100, or 45s. per 1000.
LOBELIA PUMILA and MAGNIFICA, 4s. per 100, 3s. 30s. per 1000, well grown, strong, clean and healthy.
Terms—Cash with all Orders.
MAGDALA NURSERY, UPPER HOLLOWAY, N.
(Late of Northampton Park Nursery, Canonbury.)
N.B.—Address 17, Magdala Road, Upper Holloway, N.

VERBENAS.—Strong, spring-struck Plants, beautifully clean and free from disease, are now being sent out. 12s. per 100, 6s. per 50, or in pots, 2s. 6d. per 100, consisting of Purple, White, Scarlet, Pink, and many other shades of colour, all true to name.
CALCEOLARIA, Golden Gem and other varieties, good sturdy plants, 8s. per 100, 50s. per 1000.
HELIOTROPE (light and dark), 12s. per 100.
COLEUS VERSCHAFFELTII, 12s. per 100.
BEDDING and other GERANIUMS, Plain and Zonal, in splendid variety, 12s. per 100.
MRS. POLLOCK GERANIUMS, established in single pots, 20s. per 100.
CRYSTAL PALACE GEM, established in single pots, 15s. per 100.
All the above package-free for Cash.
S. BIDD, Alma Nursery, Farnham, Surrey.

WOOD AND INGRAM beg to offer:—
PELARGONIUMS, Show, Spotted, and Fancy, fine plants in 5-inch pots, good named sorts, 50s. per 100, 8s. per dozen.
CALCEOLARIA, Herbaceous, finest exhibition strain, fine plants in 5-inch pots, 9s. per dozen, 12s. each.
CARNATIONS, Border, in variety, to name, fine plants, 9s. per dozen pairs.
The Nurseries, Huntingdon.

NEW PLANTS, 1877.

CHARLES LEE & SON,

SUCCESSORS TO
MESSRS. JOHN AND CHARLES LEE,
OF THE
Royal Vineyard Nursery,
HAMMERSMITH, near LONDON,

Have the pleasure to offer the following very beautiful and interesting

NOVELTIES,

now offered by them for the first time:—

BEGONIA COLTONI.

This distinct and beautiful Begonia was raised at the Royal Vineyard Nursery. The colour of the flowers is quite new in Begonias, being of an orange-crimson. It is a most abundant bloomer, and the flowers are of the largest size. It received a First-class Certificate from the Floral Committee of the Royal Horticultural Society in 1875. Good plants, price 10s. 6d. each.

BEGONIA RODWELLII.

This lovely Begonia was also raised at the Royal Vineyard Nursery. The flowers are of a bright vermilion-scarlet, and of the largest size, while the plant is a very abundant bloomer. It received a First-class Certificate from the Committee of the Royal Horticultural Society. Good plants, price 10s. 6d. each.

CORNUS MASCULA AUREA ELEGANTISSIMA (J. & C. Lee).

This elegant and lovely hardy shrub was raised from seed in our Isleworth Nursery, and has been proved to be perfectly constant in its beautiful variegation. A broad margin of pure gold surrounding a bright green centre is of itself a sufficient attraction, but when in July the tips of the leaves become suffused with the brightest crimson, the plant is possessed of an idea of the beauty and elegance of the plant, which will bear a favourable comparison with the best variegated stove or greenhouse exotics. Suffice it to say, that it has been seen and admired by many amateurs and nurserymen, and has been awarded a First-class Certificate at South Kensington. The habit of the plant is semi-pendulous, and very graceful. Price of maiden plants, 15s. each; larger specimens, 21s. each. A Coloured Plate may be had on application for 1s.

JUNIPERUS VIRGINIANA ELEGANS (J. & C. Lee).

This very elegant variety of the Red Cedar was raised from seed in our Isleworth Nursery in 1860. It is scarcely necessary to remark upon the hardiness of this plant, but it is due to its character to state that the elegant cream-coloured variegation with which the whole plant is suffused is perfectly constant, and has never been injured by frost or burned in the least degree by the hottest sunshine, although fully exposed in the open air. The plant is of the first growth, and received the honour of a First-class Certificate from the Floral Committee at South Kensington, in July, 1875. Price 15s. each; larger specimens, 21s. each. A Photograph of the plant may be had on application for 1s.

POPULUS CANADENSIS AUREA VAN GEERTI (1876).

The golden variety of this noble Poplar sent out in February last by Mr. Charles Van Geert, of Antwerp, has fully borne out in our Nurseries the description he gave of it, and has raised its golden colour much better than either the Golden Catalpa or the Golden Oak during the late tropical summer.

EXTRACT FROM MR. VAN GEERT'S DESCRIPTION.

"We have only to assure of offering an extremely remarkable variety of the Canadian Poplar, with a foliage which presents during the whole summer the finest hue of golden-yellow. It is in our opinion a most valuable acquisition, and the finest pronounced so by every connoisseur who has admired it in our nursery, for the coloured foliage now so frequently met with among the trees fails almost entirely under the larger trees. The Catalpa aurea and the Quercus Robur concordia are the only trees known as possessing the same golden foliage; but the former is only a specimen of effect, and the latter has not the vigour of the common Oak. Our golden Poplar, on the contrary, is a first-sized tree, of rapid and vigorous growth. Its leaves are quite as large as those of the common Canadian Poplar, and the yellow hue, instead of looking sickly, has a warm and vigorous tint. The better nourished the tree is, and the more it is exposed to the sun, the more vivid is the golden hue."

Having received in February last a large consignment of this magnificent novelty from Mr. Van Geert, we are enabled to offer nice plants at 7s. 6d. each.

ABIES EXCELSA AUREA (J. & C. Lee, 1875).

This is decidedly the finest golden Conifer of large growth yet introduced. It is of free growth, and requires to be planted in the full sunshine. In such a position the whole tree is suffused with the richest gold. A First-class Certificate has been awarded to this valuable tree at South Kensington. Price of nice plants, 15s. each; larger specimens, 21s. each.

LAURUS CAMELLIÆFOLIA (Wood, 1875).

We can still supply a few hundreds of this extraordinary and elegant Laurel. Price 21s. 6d. each; per dozen, 18s.

CHARLES LEE & SON,
HAMMERSMITH, W.

THE NEW SEEDLING BRIAR.—Strong, twice transplanted of the above, for immediate Root Grafting, 6s. per 100, cash.
J. D. GODWIN, Angel Road, Edmonton, N.

To the Trade.

J. L. WATSON, Manor Road Nursery, Grave-end, is now offering:—
LOBELIA, Bluestone, 4s.
CALCEOLARIA, Golden Gem, 6s.
HELIOTROPE, dark, 6s.; light, 4s.
FUCHSIAS, 5s. per 100.
Including packing for Cash.

Special "Reduced" Offer for Cash.

SUPERIOR NEW ENGLISH SCARLET RUNNER BEANS, selected as the greatest croppers in cultivation; can be highly recommended and sure to give satisfaction; price 25s. per bushel. Fine Early Longpods, at 6s. 6d. Common Windsors, new samples, at 8s. 6d.; selected Broad Windsors, at 12s. per bushel. Bushel Bags, 6d. each; 4 Bushel Sacks, 1s. 3d. each. Terms Cash with orders. F. Gee has now only a few quarters of each of the above left, therefore to ensure a supply early orders are requested.
FREDK. GEE, Seed Grower, &c., Biggleswade, Beds.

Southport Winter Gardens.

EXHIBITION of NEW SWEET-SCENTED RHODODENDRONS, &c.

ISAAC DAVIES, Brook Lane Nursery, Ormskirk, is exhibiting at these Gardens magnificent plants of his new Scented RHODODENDRONS, AZALEA MOLLIS, and other Novelties, which are now a mass of blooms and delightfully fragrant, and are well worth the attention of lovers of this class of flowers. Admission to the gardens as usual.

ROSES, Dwarf, on Manetti, fine plants, 25s. per 100.
SEAKALE, good Planting, 25s. per 1000.
ASPARAGUS, Giant, 2-yr., 15s. per 1000; 3-yr., 20s. per 1000.
SEAKALE CUTTINGS, fit for Planting, 7s. 6d. per 1000.
Cash only.
RICHARD LOCKE, Redhill, Surrey.

To Parties Furnishing New Houses.

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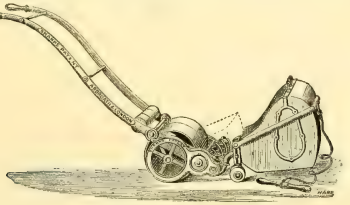
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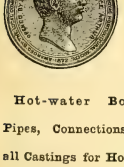
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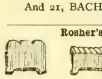
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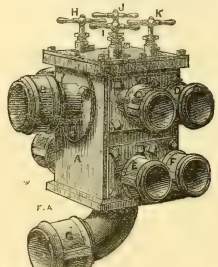
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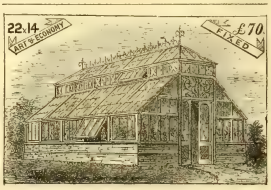
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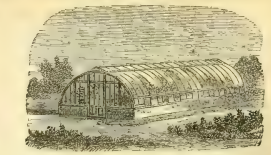
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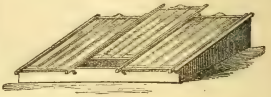
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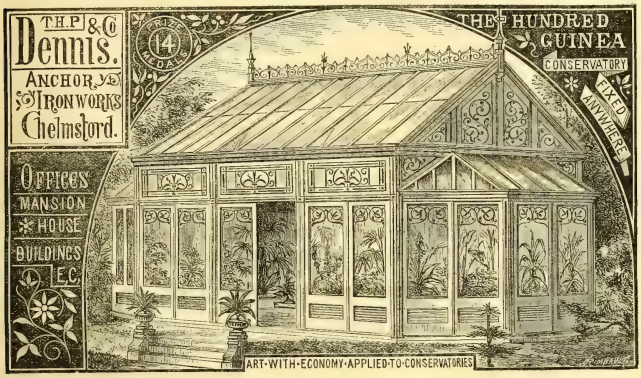
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Gentlemen waited upon at their residences by experienced designers.

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CAREFULLY SELECTED FROM

THE BEST ENGLISH AND FOREIGN STOCKS.

SEED CATALOGUE FOR 1877

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Also **TENS** of **THOUSANDS** of

WELL GROWN STOVE, GREENHOUSE and HARDY PLANTS

OF EVERY DESCRIPTION ARE ALWAYS TO BE SEEN AT

THE NURSERIES, TOOTING,

LONDON, S.W.

The Greatest Novelty of the Season.

MIMULUS MOSCHATUS
HARRISONI.

Awarded a First-class Certificate by the

Royal Horticultural Society and Royal Botanic Society of London, 1876.

This exquisite plant is a Hybrid between the Large Spotted Mimulus and the Giant Musk. The flowers are as large as the former, with the rich golden-yellow colour of the latter, exquisitely spotted on the lower segments with rich brown. Its habit is recumbent and neat, blooming at every joint, thus producing an abundance of elegant flowers which are brilliant and interesting. A few plants will effectually brighten and scent a Conservatory or Greenhouse. It will succeed admirably in all situations where it can be freely supplied with moisture, although a cool shady place is the best. Being an excellent Bedding Plant, and especially adapted for Rockwork, it will be rapidly brought into requisition, and its universal cultivation will quickly be accomplished. Its easy culture and other qualities will secure for it a popularity and extensive sale. It continues to bloom from March until December, and retains its scent throughout the year. As a free-growing odorous plant it is admirably adapted for Asylums, Hospitals, and other Public Institutions.



NATURAL SIZE.

Harrison's New Musk.

OPINIONS:—

From THOMAS MOORE, Esq., *Chelsea Botanic Gardens, Nov.* 17, 1876.

"I was much pleased with your hybrid Musk as exhibited at South Kensington. I thought it likely to make a useful decorative 'everybody's' plant, fit for the conservatory or the cottage."

From SHIRLEY HIBBERD, Esq., F.R.H.S., *Stoke Newington.*

"Harrison's Musk is one of the most interesting of the novelties of the season, for the Musk in its old form is a universal favourite, and in this new variety we see it improved in all its attractive characters, so that it may rank with the florists' flowers, while continuing to charm us with its refreshing odour."

From Mr. A. F. BARRON, *Chiswick Gardens, W., Nov.* 13, 1876.

"I like Mimulus Moschatus Harrisoni very much. It is as strongly perfumed as the ordinary Musk plant, with the addition of large yellow flowers, like the common Mimulus. It is sure to be largely grown as a window plant."

From Mr. R. DEAN, *Nurseryman, &c., Ealing.*

"MIMULUS MOSCHATUS HARRISONI.—This is a bold-growing perfumed Musk, with large yellow red-spotted flowers. In addition to the spotting, it may give us a race of scented-foliaged Mimulus with flowers as large and beautifully spotted as any now to be found on the improved varieties. This interesting hybrid was exhibited by Messrs. Harrison & Sons, nurserymen, Leicester, and awarded a First-class Certificate of Merit—the highest award a new plant can receive."

From Mr. JNO. WILLS, *Nurseryman, Onslow Crescent, South Kensington, Nov.* 13, 1876.

"I was much pleased with your new Mimulus Moschatus Harrisoni when I saw it exhibited some time since, and consider it a great acquisition, and shall be glad to have some plants of it as soon as it is in commerce."

This beautiful plant will be distributed on or before May 1.

Plants 5s. each; Six for 25s.; Twelve for 48s.

Orders booked and executed in rotation, as received.

HARRISON & SONS, LEICESTER.

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Mr. B. S. WILLIAMS, Holloway, N.,

Can also supply the Trade.

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THE LARGEST AND BEST STOCK IN EUROPE.

WILLIAM BULL, F.L.S.,

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MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

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MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 16, at half-past 12 o'Clock precisely, a large importation of some hundreds of plants of CYMBIDIUM EBURNEUM, just arrived in splendid condition, several of the plants with flowers on them that have expanded in the cases while in transit; many of the plants are large and fine masses, with from six, eight, ten, to twelve growths each. At the same time will be sold immense quantities of many other choice ORCHIDS, such as VANDA STRIATA, CYMBIDIUM GIGANTEUM, VANDA CŒRULEA, V. CATHCARTI; some hundreds of good plants of AERIDES FIELDINGII (FOXBRUSH), DENDROBIUM FORMOSUM, D. NOBILE WALLICHII, hundreds of plants of the rare CŒLOGYNE BARBATA, various PLEIONES, and some good plants, just imported, of ONCIDIUM VARICOSUM varieties, O. ROGERSII type, and some healthy plants of ODONTOGLOSSUM VEXILLARIUM.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

THE NEW ROSE,
QUEEN OF BEDDERS (NOBLE).

Perhaps the Finest Rose for Bedding ever sent out.

COLOUR OF "CHARLES LEFEBVRE."

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that a plant 18 inches high had 84 Buds and expanded Roses upon it on the 6th September, 1876, and flowered continuously from June until November, on the 20th of which month (1876) it was still in bloom.

Good Plants will be sent out, in strict rotation, at 10s. 6d. each,

COMMENCING FIRST WEEK IN MAY.

CHARLES NOBLE, BAGSHOT.

SPECIAL NOTICE.

APRIL and MAY the best Season for Transplanting HOLLIES.

WM. CUTBUSH & SON

POSSESS MANY THOUSANDS OF

VARIEGATED AND OTHER CHOICE HOLLIES,

AT THEIR "BARNET NURSERIES,"

varying from 2 to 6 feet, bushy, all transplanted in 1874, and will move with splendid roots.

An Inspection invited, or Prices, &c., sent on application.

EXTRA STRONG IRISH and OTHER IVIES.

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HIGHGATE NURSERIES, N., OR BARNET, HERTS.



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FLOWER AND VEGETABLE SEEDS FOR 1877.

	Per packet.—s. d.
BALSAM, Williams' Superb Strain .. 2s. 6d. and	1 6
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Packets of Flower Seeds, excepting heavy kinds, Free by Post.



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	Per packet.—s. d.
BEANS, Williams' Early Prolific Dwarf French—per qt.	3 0
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SUTTON'S CHOICE FLOWER SEEDS,

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Sutton's Improved Miniature Aster.

A profuse flowering variety, of dwarf compact habit, remaining in bloom for a considerable period, hence it is invaluable for growing in pots for conservatory or drawing-room decoration. We have this season succeeded in saving six distinct colours, which greatly increases the value of this beautiful Aster for bedding purposes.

Price per Packet, mixed, 2s. 6d.
Six varieties, separate, 5s.

SUTTON'S COLLECTIONS of CHOICE FLOWER SEEDS,

To produce a beautiful and continuous display during Summer and Autumn.

Free by Post or Rail.	£	s.	d.
No. 1 Collection of Flower Seeds	2	2	0
No. 2 Collection Ditto	1	11	6
No. 3 Collection Ditto	1	1	0
No. 4 Collection Ditto	0	15	0
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Small and useful Collections can also be had, from 2s. 6d. to 7s. 6d., free by post.

Full particulars may be had, gratis and post-free, on application.

TO OBTAIN THE

Best Garden Lawns and Croquet Grounds

SOW

SUTTON'S LAWN GRASS MIXTURE,

Which forms a close velvety turf in a very short time.

For making New Lawns or Croquet Grounds 3 bushels, or 60 lb., is required per acre, or 1 gallon to every six rods (or perches) of ground.

For improving those already in turf, 20 lb. should be sown per acre.

March, April, and May are the best months for sowing.

Price, 1s. 3d. per lb., 22s. 6d. per bushel, carriage free.

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds Gratis and post-free.

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THE QUEEN'S SEEDSMEN,
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SATURDAY, APRIL 14, 1877.

WINE AND THE VINE.

FOR many centuries this country was satisfied with the wine of its own growth. Vines, we are told, overran the walls of churches, and there were vineyards attached to several of the monasteries and religious houses. The chief wine district was in Gloucestershire, which, according to William of Malmesbury, boasted better Grapes and more vineyards than any other part of England.

Among the names that linger like old legends, and reveal something of the history of particular spots, that of "Vineyard Holm," a sheltered and sunny hollow of the Hampshire Downs, tells his own story. The warm slopes of the "vineyard hills" at Godalming were once hung with Vines, and country people still point to the hill as a spot where labourers once worked for a penny a day, and were well off, as they would have been in the eleventh and twelfth centuries, when the silver penny weighed as much as our threepenny piece, and beef and mutton were a farthing a pound.

Petrarch was mistaken in saying that the English drank nothing but beer and cider; they drank the juice of the English Grape unfortified with spirit. Vineyards were common for several centuries after the Conquest. The Abbey of St. Augustine at Canterbury, and the Priory at the same place, each had its vineyard. The Battle of Hastings was fought near the great plantation of Vines at Santlac. Domesday Book contained thirty-eight entries of valuable vineyards—one in Essex consisted of 6 acres, and yielded 20 hogsheads of wine in a good year. There was another of the same extent at Ware. Wine was made at the Royal palace of Woodstock and at Windsor Park, and an old manuscript roll in the Castle showed the yearly accounts of the cost of planting Vines, and the quantity of wine produced in the Little Park in Richard II.'s time. Part of the wine was used in the Royal household, and part was sold, "the tithes whereof were paid to the Abbot of Waltham, then the parson of New and Old Windsor."

There are sites called "The Vine" at Rochester, Sevenoaks, and other places. In Edward II.'s reign the Bishop of Rochester sent the King "a present of his drinks, and withal both wine and Grapes of his own growth at his vineyard at Halling." The vineyard at Peterborough was planted by the Abbot in the time of Stephen; Prior John, of Spalding, an improver and builder, planted both vineyards and orchards; and others were planted by the Abbots of Denny Abbey in Cambridgeshire, of Dunstable, St. Edmund's Bury, and other abbeys. The Isle of Ely was called by the Normans "L'Isle de Vignes." The Bishop's yearly tithe of wine was three or four tuns, besides whatever liquor accrued to him by leases and escheats.

The clergy of the Romish church drank, in their palmiest days, a wine called "Theologicum," which was only found in their establishments; and woe to the merchant who sent them wine of an inferior quality. After the battle of Poictiers, which was fought in a French vineyard, French wine became the fashion; and Cressy being won, and Edward III. king, wines were poured into this country from Bordeaux, and were relished as the produce of English

provinces in France. Then came a long series of misfortunes, and within a hundred years of Cressy all the recent conquests and the inherited domains in France were lost, except the seaport of Calais. During this disastrous period the supplies of foreign wine were interrupted. For a while France was ruined, and considerable progress was made towards her final conquest by the extirpation of the population. At Cressy 30,000 Frenchmen of the rank and file fell, besides 1200 knights, and the blind old king, who had his horse led into the *mêlée* that he might strike one good blow. At Poictiers, the Black Prince's victorious forces killed 11,000 or nearly 1½ Frenchman per English bill and bow. The peasant insurrections of "Jacques Bonhomme" increased the general misery, and Petrarch, a witness of the widespread desolation, writes, "I could not have believed that this was the same France which I had seen so rich and flourishing;" then he goes on to describe the land uncultivated, the houses in ruins, the people in poverty, Paris burnt, its streets deserted and overgrown with weeds, the country a solitude. "War," said Henry V. when he invested Rouen, which was defended by the new artillery, "war has three handmaidens ever waiting on her, Fire, Blood, and Famine;" and at Agincourt, when his band of archers bared their arms to use "the crooked stick and the grey goose wing," they killed 11,000.

During this long, dark period of French history her vineyards suffered terribly by the actual loss of population; but the extirpation of a people in an extensive country has always proved a tedious operation. At every interval of war in the case of France the population spread again over the desolated tracts like a flood of waters broken loose; and, in spite of their calamities, we presently find the French once more prosperous and victorious, sweeping the Channel with their fleet, and seizing the semi-sacred "Theologicum" freighted specially for the Church. It was impossible such a state of things could continue long, but while it endured the unwonted cry was occasionally heard on our southern coast: "The French! Out, out!—the French are upon us!" Two Cinque Ports, side by side on the Sussex coast, were burnt during one of these landings, and the "Theologicum" yet remaining in the famous vaults of our chief wine ports (Rye and Winchelsea) was destroyed.

The above recital shows how the fortunes and circumstances of nations entirely changed, even in that slow age, within the short period of fifty years. Quitting the vineyards of our neighbours, we may recall the fact of the utter ruin of the gardens and vineyards of England, which we are assured by the best authorities occurred during the Wars of the Roses. Passing on, however, to later times, we once more meet historically with English wines and Vines. Dr. Ralf Bathurst made claret at Oxford in 1685, "as good as one could wish to drink;" and Sir Henry Lyttelton subsequently made wine at Over-Arly—a warm nook in Staffordshire. We could mention the names of many individuals who drank wine of English growth 170 years ago, and pronounced it good. Sir John Hanmer loved his country's wines, so did Stephen Hales, the founder in England of vegetable physiology, who thought Dr. Shaw's vintage at Kensington equalled the lighter wines of France. The sites of Dr. Shaw's vineyard and of another at Hammersmith were not very favourable, yet so long as due care was taken good wines were sold from both of them.

At Walham Green a Mr. Rocque planted a vineyard in a field, and made wine for thirty years equal to that of Orleans and Auxerre. A better site was at Pains' Hill, near Cobham, on the south side of a gentle hill, where the soil was warm, gravelly, and dry; and here the Hon. Charles Hamilton made excellent champagne. There was a noble vineyard at Arundel Park, and in 1763 there were sixty pipes of English Burgundy in the Duke's cellars there—better than a great deal that is imported, and very superior to what is generally drunk in France. There was a vineyard on the steep southern face of a hill at Deepdene, Dorking; but Daniel Defoe, who commenced a *Tour Through the Island of Great Britain*, mentioned that in his time the gardens and vineyards at Deepdene were neglected.

English Grapes which had previously yielded good vinous juice, ceased to do so for a period of about twenty-five years from 1790, when a cycle of wet, cold summers and bad harvests commenced. This was a great blow to our modern vineyards, and prejudice and the lost *prestige* of the wines have completed their ruin. It is hard to say whether the *prestige* or the art of making the wine was lost first; but it is not too much to assert that, if the home-made wines of France were as badly managed as those of England are at the present time, they would be equally indifferent.

In the southern counties the Vine has clung tenaciously to its old sites, and while legends, dim memories, and characteristic names still attach to certain spots, and dedicate them to the Vine, the Vine itself overruns and adorns the cottage walls, and its produce frequently pays the cottager's rent

We conclude with a few statistics in favour of improving the art of English wine-making. A common price of thin claret is 12*s*. per dozen, or 6*s*. per gallon. A much stronger English wine can be made from Grapes and sugar at half that price. We are, therefore, glad to hear of an experiment in wine growing on the estate of the Marquis of Bute in Glamorganshire. There are many dry and sunny slopes in the warmest parts of England which might be profitably covered with the Vine. Sugar would assist the modern wine-maker. It cannot be maintained for a moment that home-grown wine will acquire the nutty flavour of good old sherry, but we still think that the commonest foreign wines, the sophisticated and unwholesome liquors too often sold as foreign wines, and the vile mixtures sometimes miscalled port, sherry, and champagne, might be excelled by wines of English growth. *H. Evershed.*

ERICA CODONODES.

The beautiful specimen from which the accompanying engraving (fig. 70) of this chaste and charming hardy Heath was prepared, was sent to us in January last from the garden of the Hon. and Rev. J. T. Boscawen, Lamorran, Cornwall, where, as will be seen from the profusely flowered condition indicated in our woodcut, which is by no means exaggerated, it grows in the highest degree of perfection. Under such favoured conditions of climate it is perfectly hardy, as indeed it is in most parts of England, but in low-lying damp situations we have known it cut down to the ground by winters of exceptional severity. It, however, springs again from the root.

Erica codonodes was figured by Dr. Lindley in the *Botanical Register* (t. 1698), where he remarks concerning it:—

"This species of Heath has the general appearance of E. arborea, a plant which is a great ornament to rocky places in the south of Europe, where it grows intermixed with different kinds of Cistus and the wild Arbutus. But it seems essentially distinct in its larger flowers, more slender leaves, less hoary branches, and truly bell-shaped corolla, which has by no means the globular form of that of E. arborea; its stigma is, moreover, very small, and not at all dilated or lobed, either when dried or recent. E. polytrichifolia, which we presume is the E. arborea stylosa of English gardens, is equally distinct in the same characters."

The specimen figured by Lindley was grown by Mr. Wood, of Maresfield, in Sussex, where the plant is reported to be quite hardy, and to form a bush 10 to 12 feet high. There "it begins to blossom in February, and continues till the end of May, disregarding both frost and snow, being often covered with flowers from top to bottom, and forming a most beautiful object. It thrives in light sandy peat." *T. M.*

TO HAARLEM AND AMSTERDAM.

Most people who have never been to Holland entertain a prejudice against its cities. They imagine dingy crowded houses, whose conglomerated mass is separated only by narrow lanes, called "canals," which are stagnant water instead of wholesome solid pavement. The fancy picture is finished off by the additional touches of a heavy breathless atmosphere, deficient light, suffocating smells, and a plague of mosquitos. These notions may have been suggested or confirmed by the unhappy idea of calling Amsterdam the Venice of the North. Never was comparison less applicable. Omitting other differences, the nuisances expected to be met with in the Northern, are much more rife and intense in the Southern city.

The drive from the Hôtel St. Lucas to the railway which is to take you from Rotterdam northwards, suffices alone to clear away the misconception. Fancy a very broad street, and in the middle of the street a wide water-way sufficient for the passage to and fro of seagoing vessels, and of course of multitudinous freshwater craft graduating in size through large, less, and least. These vessels are sufficiently crowded to show that the town is engaged in serious business, instead of leading a life of *dolce far niente*, part of whose sweetness, in Italy, is made up of poor living, pride, and poverty. The Dutch canal, too, is bordered on each side with trees that are well taken care of. Between the trees and the lines of houses, along each side of the canal runs a quay, which often of itself would elsewhere make a fair street. It is not intended to be asserted that there are no quays and canals of more modest proportions.

But, in Amsterdam especially, there is one great desideratum—no seats or benches are provided under those trees for weary walkers to rest upon. Economy cannot have been the cause of the want, for expense is not spared on the marble of the doorsteps. It may be meant as an intimation not to loiter—a practical application of the blunt motto on the old church clock, "Go about your business." Nevertheless, after prolonged wanderings along the labyrinthine quays of Amsterdam, a few minutes' repose now and then would be welcome. And you have no foot pavement to walk upon either; the space where a footway should be, is railed off with chains or palisadings, inclosing a small paved area in front of each house, not unfrequently of costly workmanship and materials. Something of the kind, perhaps copied from the Dutch, may be seen at Great Yarmouth; only, there, there are excellent foot-pavements. As a slight concession to pedestrians, Amsterdam's street gutters, in front of those railings, have wooden covers, to prevent splashing and other offences against neatness.

As at Antwerp, the northgoing railway station is close to the Zoological Garden, at whose entrance an avenue of macaws scream invitations to enter, in case you have an hour to spare. There are stations and stations, and, therefore, we look closely at the first Dutch station of importance which we enter. As might be expected, its main characteristics are comfort combined with ornamentation. The waiting rooms are well supplied with tables and chairs, and a deal of mahogany is used in the furniture. That for first-class passengers is like a drawing-room, with carpet and other pleasant extras. As in Belgium, the waiting-room is also a refreshment room, the convenience of which needs no pointing out.

On taking your ticket, you find the price marked on it, to the great satisfaction of suspicious travellers. The journey northwards is still a repetition of gliding over seemingly endless green plains, with little other variety than that some pastures seem better kept, *i.e.*, freer from weeds and Thistles than others. Besides grazing sheep and cattle, few other living creatures are seen than flocks of lapwings wheeling about, showing now a white front and now a black one, and a stork or two dancing and fluttering along in search of the Dutchman's mortal enemies, field mice, and other rodents which burrow in the dams and by the sides of canals; for, in Holland, the lettings-in of waters are even worse than the beginnings of strife. With so vast a horizon spread out before you, how small even the nearest objects seem as glanced at



Fig. 70.—Erica codonodes, nat. size. A, flower; B, section; C, ditto, seen from below—all × 5; D, pollen, × 380.

from a railway carriage window. That yellow-flowered aquatic plant in the boundary ditch looks no bigger than a Daisy, although it is our common yellow Water Lily: a Nuphar with no more than a Daisy's dimensions would be an acquisition to aquarium lovers. As we advance familiar names meet the eye and the ear—Schiedam, calling up memories of long-drawn gossips over hot gin-and-water before going to bed on frosty nights; Delft, whose "old Blue" is now the rage; soon afterwards the Hague (*'s Gravenhage*, in Dutch), where we have not time to stop to-day; Leyden, the learned, on which also we can only bestow a wistful look, being obliged, as the French say, to *brûler*, or burn it. From Leyden the railway skirts the chain of dunes or sandhills on the left that line the coast. On either side of the line are small fields or patches planted with garden bulbs and tubercules—Hyacinths, Tulips, Anemones, Ranunculuses—which, in the season of their flowering, break the monotony of the plain with charming bursts of bright colour. But the traveller will doubtless be aware that he is passing over ground of the highest interest on many other accounts besides floriculture.

You soon reach Haarlem, where you ought to stop awhile, there being every inducement to do so. Walking from the station along Kruisstraat, you find, close at hand to the right, Funckler's Hotel, which is excellent, with chambers like those of a private house, a dining-room almost too big and airy, looking as if it sometimes served for dancing and speechifying, but which the Amsterdam Exhibition will probably fill at times, and, far from least merit, capital cookery. Artophagous Frenchmen complain that, at Dutch hotels, the bits of bread beside your plate are absurdly small, and as light as sponge cake, but no penalty is incurred by asking for more.

Haarlem is a delightful town, which wears its Sunday clothes every day in the week. In spite of its 32,000 inhabitants and more it is so quiet, staid, and orderly, that you would say it was Sunday all the week long, did not its important markets and its vast horticultural and other produce prove that it must have working days. Everything about it is healthily neat and tidy, and kept in the most finished order. An air of perfect and unquestionable respectability and honourability pervades the whole place. The late police magistrate Walker, the author of *The Original* (who was one of the first to be instrumental in reforming the overloaded profusion of English set dinners), believed that there were individuals so admirably constituted, that their personal cleanliness was always irreproachable, independent of washing operations. Haarlem looks as if rose from the earth a naturally bright and spotless town, like a fresh and immaculate meadow Mushroom, which no soil or speck was ever to touch without sharing its short-lived and fragile nature.

Moreover, the suburbs of Haarlem harmonise perfectly with its interior. They are simply delicious. True, there are no rocks nor brawling trout-streams; but there is a soft gradation through pleasant places, even though they bear such droll names as Koekamp, from the central great market-place to the Wood of Haarlem, which often make you ask yourself by the way whether you are traversing a *rus in urbe* or an *urbs in rure*. For besides restaurants, hotels, picture-galleries, and casinos interspersed, not too closely, you pass, one after another, inviting villas which, if ever to let, would not have long to wait for a tenant, each rivalling its neighbours in the finished order of its well-kept grounds, one favourite ornament of

a lawn being the trunk of a dead tree, whose hospitable top invites a pair of storks to rear their young upon it. Such invitations are accepted in confidence, without the slightest apprehension of being (as they would be in England) shot and stuffed immediately after their arrival from the South, by some ardent lover of natural history. In the twilight of a summer's evening, the long-legged nestlings, standing up to await or digest their suppers, their forms howing black against the glowing sky, look like metal birds stuck there for ornament.

Haarlem Wood and also the famous Hague Wood, are believed to be the remnants (with careful renovation) of an immense forest, once swarming with game, which stretched from one point to the other, and beyond them. At present, they show how the swampy desert may be made to uplift itself, flourish, and bloom. No wonder that many Amsterdam merchants make Haarlem and its environs their residence. N.B. Let not the agricultural tourist forget that close by is the marvellous drained Haarlem lake or sea, converted into fertile polders, which now produce abundant food for beast, and consequently for man.

One of Haarlem's lions is E. H. Krelage & Son's horticultural establishment, the most important in Holland, founded sixty-six years ago. You reach it by a pleasant five-and-twenty minutes' walk from the station or from Funckler's Hotel, which shows you besides a couple of shady canals or "grachts"—you will find "grachts" in plenty at Amsterdam—the great High Street, so spruce and so sober; the Groote Kerk, or Big Church, containing the finest organ in the world; Koster's statue, who first invented movable printing types; ending with a peep at the aforesaid Cockamp, the interpretation whereof may possibly be cow-field. Bulbs would be M. Krelage's speciality, if he had one speciality more than another; but, to use a non-horticultural metaphor, he has a great many irons in the fire. Besides the men in aprons, who sit in a group peeling Hyacinths by millions, as cooks peel Onions, to be stored in their airy magazine; besides the Perspective, or Alley of Tulips (bordered by Conifers), 150 metres long and 2 metres broad; besides the Lily grounds, containing lancifolium, longiflorum, with more Lilies, and Lilies again; besides the auxiliary magazines, kept slightly warmed in winter, where Anemone and Ranunculus roots are dried on airy stages, there are Strawberry plants to be prepared for exportation, many bound for America, while Spiræas and Lilies of the Valley are sent off by thousands of stools. Queer old-fashioned plants are not forgotten; you may have night-blooming Cereus in six or eight varieties; Elephants' Feet from 300 francs (£12) the pair to small petitoes 10 francs a-piece; the Old Man Cactus, Cereus senilis, values his venerable head of hair at from 40 to 150 francs.

It is wonderful to see what may be done on a very poor soil with the help of cow-dung and wooden walls, or boarded inclosures to break the wind, for the gusts from the North Sea must sometimes be furious. In spite of which it is found that Conifers and evergreen shrubs thrive well in the sandy soil; witness the healthy Pinsapos and the collection of variegated Hollies. The Pinus Nordmanniana is helped to hold its own by its tardy growth. Abies Douglasii, however, proves more prosperous in England than here. Not to attempt a catalogue, I will merely mention Hyacinthus candicans, a colossal white late-flowering species from the Cape, with a stem a yard high, and Asclepias tuberosa, as plants respecting whose future fortunes little doubt can be entertained.

M. Krelage's general catalogue, *Hortus Krelageanus*, invites inspection of these interesting nursery grounds, which gives the present writer the opportunity of thanking him for the great courtesy and patience with which his visit was received—besides which, it gives useful information respecting Haarlem itself and its environs, such as that the great organ plays from 1 to 2 on Tuesdays and Thursdays, entrance to the church gratuitous, on other days for a fixed honorarium, that pictures of the old and the new Dutch schools are to be seen at the Hôtel de Ville and elsewhere; that the house Johannes Enschedé en Zonen, type-founders, are also the publishers of the *Haarlemsche Courant*, the oldest of all Dutch newspapers; and other things not generally known, but desirable to know when you visit Haarlem.

With regret you take the ordinary train, which carries you to Amsterdam in half an hour. There is but one intervening station, Halfweg, where on one side you have the recently drained and dried up Y or I J, and on the other the pastures which replace the Haarlem Sea. It is through Dutch industry and courage alone that you are travelling on dry land. On reaching Amsterdam, unless your topographical education is far advanced, you are advised to immediately engage either a guide and interpreter or a hackney carriage. As Prussian officers employ their leisure in the imaginary siege of foreign capitals, so intending visitors to Amsterdam may profitably occupy an evening or two over the plan of that city just as well as with the last new game or puzzle, to see if they can discover the best way from one point to another, or contrive to find out any given address by means of its complication of letters, numbers, and names. Where, for instance, if you please, is J 563, Warmoesstraat J 564? †

ROSSIE PRIORY.

IN our number for November 18 last we gave some particulars of the gardens at Rossie Priory, the seat of the Right Hon. Lord Kinnaird, and are now enabled to give a plan (fig. 71) of the kitchen garden and a portion of the pleasure-grounds, reduced to a scale of 100 feet to an inch. A reference to the plan on the opposite page will show that the houses which we have already described are situated on the left, with the kitchen garden quarters in front. This block includes eight vineries, four Peach-houses, four orchard-houses, Pine-stove and Pine-pits, two plant-stoves, greenhouse, Fig-house, Melon and Cucumber houses, Mushroom-house, pits and frames for growing Melons and Cucumbers, and for protecting bedding plants, &c., propagating pit, two bothies, paint and glass shed, tool shed, fruit-room with cellar below, seed and store room, an open space for refuse (walled in), potting shed, and an open shed, &c. The gardener's house, B, is situated at the side of the kitchen garden, the quarters in which are lettered A, and from the kitchen garden the flower garden in the centre is reached by a path leading down some sloping banks of Laurels about 3 feet high. The flower garden is surrounded by Yew hedges 4 feet high and 2 feet broad, is tastefully designed, and was very effectively bedded-out when we saw it. Near by is a fountain, C, a fernery, E, a fine bank of Laurels, H, and a carriage drive, G. The Priory (which from the exigencies of space we cannot show) is reached by an almost direct line, the whole of the gardens and pleasure-grounds being situated on the southern slope of a high ridge of ground. We have already dealt in detail with the kitchen garden, and it will therefore only be necessary now to note a few of the leading Conifers with which the pleasure-grounds are so nobly ornamented.

Amongst the most notable specimens is one of Abies Douglasii, a very fine tree, but somewhat disfigured by the wind having broken some of the branches on the west side, where it is most exposed. It was planted in 1833, but has got good nursing, to the shape of fresh soil or manure. Its height is 76 feet, girth at 3 feet from the ground 9 feet 2 inches, and the circumference of the branches, which lie on the ground, 56 yards. Taxodium sempervirens is represented by a beautiful plant in fine health, but which has had its leader broken several times by the wind: height, 47 feet; girth of stem, 6 feet 9 inches; and circumference of branches, which lie on the ground, 36 yards. It was planted in 1850. A specimen of Wellingtonea gigantea was planted in 1856. It was grown from the first seed sent home by a son of the late Mr. Mathew of Gourdiehill (a frequent contributor to our columns). Its height is 24 feet, girth of stem, 3 feet 3 inches; circumference of branches, 30 feet; and is in vigorous health, though it has not received any particular attention.

Abies Menziesii is represented by a magnificent plant in the most robust health, growing on a dry gravelly subsoil, with not above 14 inches of light loam on the surface: height, 56 feet; girth of stem, 7 feet 6 inches; circumference of branches, which lie on the ground, 38 yards. There are several younger plants of this in various parts of the grounds, all doing well. This tree ought to be more generally planted, not only for its beauty, but also for its value in the production of timber, which is spoken of as being hard and close-grained.

Araucaria imbricata, planted about 1833. Height, 28 feet; girth of stem, 3 feet 3 inches; circumference of branches, 12 yards. In fine health; it has not been injured by frost. Cryptomeria japonica is a very handsome specimen: height, 34 feet; girth of stem, 3 feet 9 inches; circumference of branches, 18 yards. This plant has lost its leader several times with the wind, but soon makes another. Cedrus Libani, planted in 1837: height, 36 feet 4 inches; girth, 4 feet up, 5 feet 8 inches. The above are the measurements of 1871. Cedrus atlantica: height, 50 feet; girth, 3 feet 5 inches, with stem clear of branches for 15 feet. When this tree was planted is not known; it was found, in making some alterations, growing in a thicket of Laurels, which accounts for the stem being so clear of branches. These are a few of the finest specimens of the new Conifera, but there are many other good plants scattered through the grounds, principally planted on the margins of the drives and walks, which Lord Kinnaird prefers to having them altogether, as in walking through the grounds there is always fresh interest created in coming to a specimen when unexpected.

There are many fine trees of Silver Fir, upwards of 100 feet high and 4 feet in diameter. Most kinds of trees do well except Larch, which are subject to the disease. Although there are some remarkably fine specimens in sheltered situations, as a rule those planted within the last fifty years are not thriving.

THE SPECIES OF HELLEBORUS.

(*Concluded from p.* 432.)

5. *H. viridis*, Linn. Sp. Plant., p. 784; Eng. Bot., t. 200; Hayne, Arzng., t. 9; Reich. Ic. Fl. Germ., t. 105; Gren. Fl. France, vol. i., p. 41.—Acaulescent, bearing crowded annual tufts of one leaf and one flower-stem from a short-creeping rhizome. Petiole 6—8 inches long when fully developed; blade glabrous, not at all coriaceous, obscurely pedate; segments crowded, oblanceolate, 5—6 inches long, 1—1½ inch broad above the middle, sharply irregularly inciso-serrate in the upper half, acute, usually all simple, 3—5 on each side of the central one, springing from a spreading axis under ¼ inch long. Flowering stem about 1 foot high, bearing 3—6 distant flowers, and copious large leaf-like bracts deeply palmately cut, with incised linear segments. Sepals bright green, obovate or oblong, 1 inch long, spreading, and nearly flat. Petals ½ inch long, cuneate, with a short stipe. Stamens about half as long as the sepals; anthers narrow, oblong, ⅛ line long. Follicles about four, as long as the sepals, strongly ribbed transversely; style persistent, erect, ½—¾ inch long.

The typical form of viridis, as just described, is the only one that is known in the western half of Europe. It extends to Spain and Italy, and is said to reach Turkey. It is, I believe, truly wild in the woods of the limestone hills of the North of England, growing with such plants as Actæa spicata and Aquilegia vulgaris. Our west European plant is the *H. viridis var. Smithianus* of A. Braun, *Ann. Sem. Hort. Berol.* 1861, p. 4, and will be found figured satisfactorily in the works just cited. The principal forms which are distinguished from this by characters of slight importance are the following:—

Sepals green, as in typical viridis. { *b.* DUMETORUM. *c.* LAXUS. *d.* BOCCONI. *e.* CYCLOPHYLLUS.

Sepals green, tinged with purple. { *f.* INTERMEDIUS. *g.* GRAVEOLENS.

Sepals bright purple. *h.* PURPURASCENS.

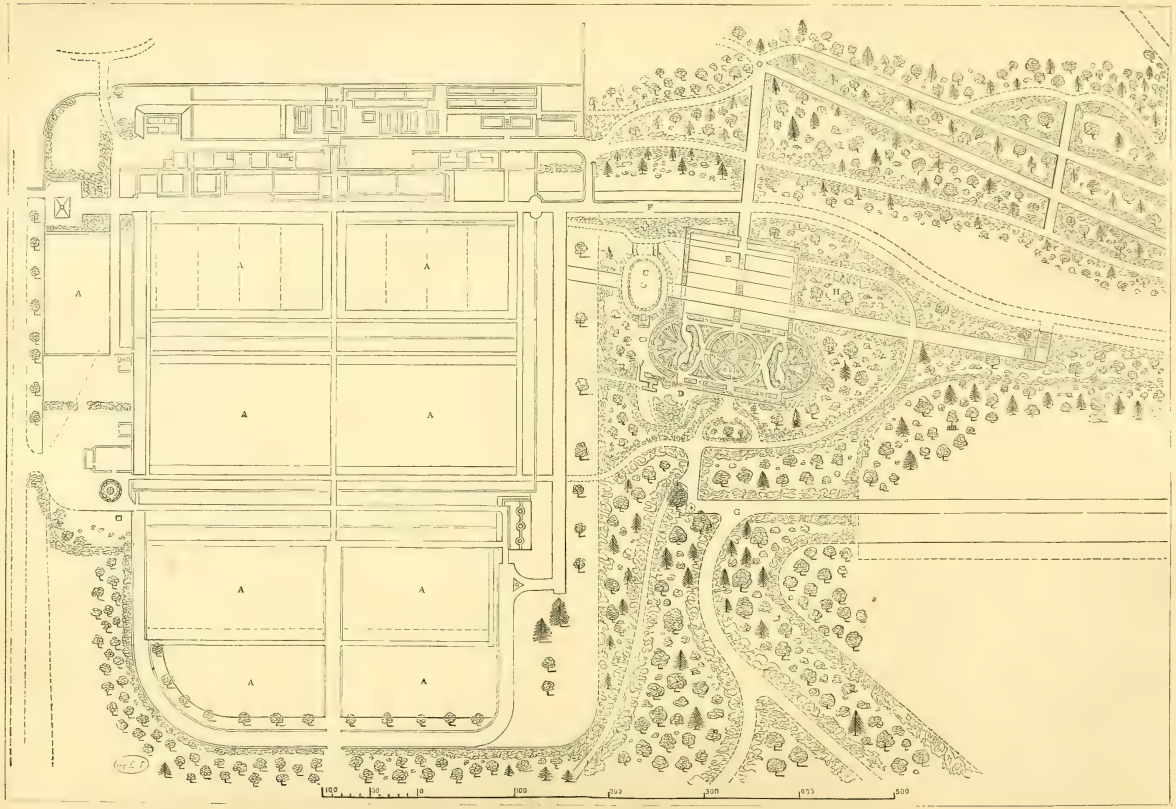
(*b*). *H. dumetorum*, Waldst. and Kit.; Koch, Synopsis Fl. Germ., p. 22; Reich. Ic. Fl. Germ., t. 106; Sweet, Brit. Flow. Gard., t. 109; *H. viridis var. dumetorum*, A. Braun, Ind. Sem. Hort. Berol. 1861, App., p. 14.—Habit of growth more slender. Leaf more distinctly pedate, the connecting axis of the lateral leaflets reaching a length of half an inch, the usually simple segments not so large, and more finely serrated; texture and veining of leaves and bracts as in typical viridis. Corymb 2—4 flowered; flowers smaller. Sepals green, ¾—⅞ inch long.

A native of Hungary, and other parts of Austria.

(*c*). *H. laxus*, Host, Fl. Austr., vol. ii., p. 89; Reich. Ic. Fl. Germ., tab. 107; *H. viridis*, Jacq. Fl. Austr., tab. 106; *H. viridis var. Jacquinianus* and *grandiflorus*, A. Braun.—Habit of growth as robust as in typical viridis. Leaves more distinctly pedate, and the toothing of the usually simple segments finer. Texture and veining of leaves and bracts as in typical viridis. Sepals broader in proportion than in typical viridis, and a paler green, 12—15 lines long.

A native of Carinthia and other parts of Austria. This is connected with dumetorum by the form H. pallidus, Host, Fl. Austr., vol. ii., p. 90.

(*d*). *H. Bocconi*, Tenore, Fl. Nap., vol. iv., p. 354, tab. 150; Reich. Ic. Fl. Germ., tab. 103; *H. angustifolius*, Host, Fl. Austr., vol. ii., p. 90; *H. multifidus*, Visiani, in Flora, vol. xii., part 1, p. 133; *H. intermedius*, Guss. Fl. Rar., p. 224, t. 41, *non* Host.—Leaf firmer in texture than in the three foregoing, subcoriaceous, obscurely pedate, with stronger veins, raised on the under surface, the main ones pubescent; segments 7—9, all deeply palmately cleft into linear lobes 2—3 inches long, ½—¾ inch broad, sharply serrated and narrowed gradually to the tip. Flowering stems deeply forked, often bearing six or eight flowers. Bracts, like the leaves, much more compound than in typical viridis. Sepals green, roundish or obovate, finally about 1 inch long and broad.



The Gardeners' Chronicle.] FIG. 71.—PLAN OF THE KITCHEN GARDEN AND A PORTION OF THE PLEASURE GROUNDS AT KOSSIE PRIORY. [April 14, 1877.

A native of Dalmatia, Istria, Naples, and Sicily. One of the most distinct forms of the viridis group.

(*e*). *H. cyclophyllus*, Boiss., Fl. Orient., vol. i., p. 61; *H. viridis var. cyclophyllus*, A. Braun, Ind. Sem. Hort. Berol. 1861, p. 14.—This is the only form of viridis in which I have seen two leaves produced in a tuft, as is common in the orientalis group. Leaves obscurely pedate, more coriaceous and persistent than in typical viridis, pubescent beneath, with strongly-raised veinlets, the segments lanceolate, all simple unless it be the outermost, reaching a breadth of 1–1½ inch at the middle, regularly finely incised from the acute point three-quarters of the way down. Flowering stems deeply forked. Sepals green, obovate-orbicular, ¾–1 inch long and broad.

A native of the mountains of Greece (Olessus, &c.), at an elevation of 4000—6000 feet. This again is a well-marked plant, but I have never seen it in English gardens. It was distributed under the name of orientalis in Heldreich's Greek herbarium, and in my view has as good a right to a place in the orientalis group as here.

(*f*). *H. intermedius*, Host, Fl. Austr., vol. ii., p. 88; Reich. Fl. Excurs., No. 4722; *H. viridis var. subcoloratus*, A. Braun, Ind. Sem. Hort. Berol., 1861, p. 13.—Glabrous. Leaves similar in shape and texture to those of dumetorum and laxus, more distinctly pedate than in typical viridis, with the central segments usually simple and the veinlets of the under-surface not raised. Flowers 2—4 to a stem. Sepals obovate-oblong, under an inch long, greenish within, dull purple on the outside.

A native of Bosnia and Carinthia. Different from dumetorum mainly in the colour of the flower. *H. cupreus*, Host, Reich. Fl. Excurs., No. 4724, is a similar form.

(*g*). *H. graveolens*, Host, Fl. Austr., vol. ii., p. 89; Reich. Fl. Excurs., No. 4716; Ic. Fl. Germ., t. 104; *H. viridis var. atrovirens*, A Braun, Ind. Sem. Hort. Berol. 1861, p. 14.—Leaves similar to those of laxus, more pedate than in typical viridis, glabrous and fine-veined, with segments usually simple, ¾–1 inch broad, crowded, finely serrated from the tip to within a short distance of the base. Flower-stems short, about 2-flowered, glandular-pubescent; sepals nearly round, about an inch long and broad, greenish inside, tinged with brown-purple on the outside.

A native of Hungary and other parts of Austria.

(*h*). *H. purpurascens*, Waldst. and Kit. Fl. Hung., vol. ii., p. 105, tab. 101; Reich. Fl. Excurs., No. 4725; Ic. Fl. Germ., tab. 110; Bot. Mag., tab. 3170; Sweet, Brit. Flow. Gard., ser. 2, tab. 142; A. Braun, Ind. Sem. Hort. Berol. 1861, p. 13.—Leaves glabrous, hardly at all pedate, like those of typical viridis in texture, the five crowded segments 3—5-cleft down to about the middle, their lanceolate acute lobes ¾—1 inch broad, irregularly sharply serrated. Flowers few, generally only 2—3 in wild specimens, the bracts like the sepals much cleft palmately. Flowers large, the round sepals being finally 12—15 lines long and broad, much tinged with purple, especially on the outside.

A native of Hungary and other provinces of Austria. It is the handsomest and one of the most distinct forms of the viridis group, and is often seen in gardens.

The following key to the viridis forms, founded on leaf-character, may also be found helpful:—

Central leaf-segments deeply palmately cleft.	(*d*. BOCCONI. (*h*. PURPURASCENS
Central leaf-segments usually entire.	
Leaf obscurely pedate.	(*a*. VIRIDIS. (*e*. CYCLOPHYLLUS.
Leaf divinctly pedate.	(*b*. DUMETORUM. (*c*. LAXUS. (*f*. INTERMEDIUS. (*g*. GRAVEOLENS.

6. *H. orientalis*, Lam. Encycl., vol. ii., p. 92; Boiss. Fl. Orient., vol. i., p. 61; *H. officinalis*, Salisb. in Trans. Linn. Soc., viii., p. 305; Sibth. Fl. Græc., vol. vi., p. 19, t. 523; *H. ponticus*, A. Braun, Ind. Sem. Hort. Berol. 1853, App., p. 24.—Acaulescent, bearing crowded annual tufts of one leaf and one flower-stem from a short-creeping rhizome. Petiole reaching a length of 1 foot when fully developed; blade coriaceous, persistent, shortly pedate, glabrous on the upper surface, pubescent, with strongly-raised veins beneath; segments 7—9, oblanceolate-oblong, acute, not palmately cut, half a foot long, 1½—2 inches broad above the middle, regularly inciso-serrate in the upper half or two-thirds, cuneately narrowed to the base. Flowering-stem a foot or more high, forked only in the upper third or quarter, bearing 2—6 flowers, and copious large leaf-like bracts deeply palmately cut, with incised linear segments pubescent on the veins beneath. Sepals roundish, white, tinged at the edge with purple, much imbricated, spreading, 1—1½ inch long and broad. Petals cuneate, green, stipitate, ½ inch long, ½ inch broad. Stamens about half as long as the sepals; anthers linear-oblong, pale yellow, a line long. Follicles oblong, shorter than the sepals, strongly ribbed transversely, with an erect or incurved slender style ¾ inch long.

A native of Macedonia, Thrace, Asia Minor, and the neighbourhood of Constantinople. This typical form is excellently figured by Bauer in the *Flora Græca*.

The principal forms which are distinguished from orientalis by characters of slight importance are:—

Sepals white, as in typical orientalis.	(*b*. ANTIQUORUM. (*c*. GUTTATUS. (*d*. OLYMPICUS.
Sepals white, tinged with green.	(*e*. PALLIDUS. (*f*. CAUCASICUS. (*g*. ODORUS.
Sepals decidedly green.	(*h*. ATRORUBENS. (*i*. COLCHICUS. (*k*. ABCHASICUS.
Sepals deep purple.	

(*b*). *H. antiquorum*, A. Braun, Ind. Sem. Hort. Berol. 1853, App., p. 23; Boiss. Fl. Orient., vol. i., p. 63; *H. orientalis*, Lindl. Bot. Reg., vol. xxviii. (1842), tab. 34.—Differs only from the last by its glabrous leaves, produced two in a tuft with a flowering stem.

My own impression is that this should only be distinguished from orientalis as a mere form. It was sent to Prof. Lindley from the Bithynian Mount Olympus, by Mr. Sanderson, then our Consul at Broussa.

(*c*). *H. guttatus*, A. Braun, Ind. Sem. Hort. Berol. 1853, App., p. 23; Boiss. Fl. Orient., vol. i., p. 63; *H. caucasicus var. guttatus*, Regel, Gartenflora, 1860, p. 103, 1863, t. 400.—Glabrous, leaves two in a tuft with a flowering stem. Sepals pure white, faintly streaked with purple lines at the throat.

A native of the Caucasus. A handsome form, which I have not seen in English gardens.

(*d*). *H. olympicus*, Lindl. Bot. Reg. 1842, tab. 58; A. Braun, Ind. Sem. Hort. Berol., App., p. 23; Boiss. Fl. Orient., vol. i., p. 63.—Glabrous. Leaves two in a tuft to a flowering stem. Sepals round, about an inch long and broad, white tinged with green.

Another form which was sent to Lindley from the Bithynian Olympus by Mr. Sanderson. We have a living plant in the Kew collection at present.

(*e*). *H. pallidus*, Regel, Gartenfl. 1860, p. 192; 1863, t. 400.—Differs from the last only by having a single leaf in the tuft with the flowering-stem.

A Caucasian form, now widely spread in cultivation. There is a specimen in Mr. Bentham's herbarium, received from Mr. Prescott as long ago as 1831.

(*f*). *H. caucasicus*, K. Koch; A. Braun, Ind. Sem. Hort. Berol. 1853, App., p. 24; Boiss. Fl. Orient., vol. i., p. 62; *H. viridis*, M. Bieb. Fl. Taur. Cauc., vol. ii., p. 30; *H. orientalis*, Ledeb. Fl. Ross., vol. i., p. 52; *H. caucasicus var. genuinus*, Regel, in Gartenflora, 1860, p. 102.—Quite glabrous. Leaves, according to A. Braun and Boissier, only one to a tuft, but in two specimens now before me two to a tuft, and altogether I cannot attach any absolute value to this character. Leaf very much broader and more coriaceous than in type orientalis, reaching a breadth of 3 or even 4 inches. Sepals round, pale green, much imbricated, reaching a length of 15—18 lines.

A native of the Caucasus.

(*g*). *H. odorus*, Waldst. and Kit.; Host, Fl. Austr., vol. ii., p. 88; Reich. Fl. Excurs., No. 4721; Ic. Fl. Germ., t. 108; Bot. Reg., tab. 1643; Rochel, Banat, t. 20.—Leaves glabrous or pubescent beneath, one or two in a tuft to a flowering-stem. Flowers 3—4, the branches of the corymb and bracts beneath also pubescent. Sepals roundish, decidedly green, 12—15 lines long and broad.

A native of Hungary and other parts of Austria. One of the most distinct forms of the orientalis group.

(*h*). *H. atro-rubens*, Waldst. and Kit., Fl. Hung., t. 271; Reich. Fl. Excurs., No. 4721; Ic. Fl. Germ., tab. 109; *H. odorus var. atrorubens*, Koch, Synops. Fl. Germ., p. 223; *H. viridis var. atrorubens*, A. Braun, Ind. Sem. Hort. Berol. 1861, App., p. 13.—Leaves only one to a flowering-stem, glabrous, thinner in texture than in the rest of the orientalis group, with narrower segments (¾—1 inch broad at the middle), resembling those of dumetorum and laxus. Flowers 2—4 to a stem in wild specimens. Sepals roundish, about 1 inch long, dark purple on the outside, greenish purple inside.

A native of Hungary and other parts of Austria. It is completely a connecting link between the viridis and orientalis groups, and has as good a right to go in one as the other. The plant figured in *Bot. Mag.*, and often grown in English gardens, under the name of atrorubens is colchicus, which is a decided member of the orientalis group, and comes from an entirely different country.

(*i*). *H. colchicus*, Regel, in Gartenfl. 1876, p. 202, 1878, p. 340; Boiss. Fl. Orient., vol. i., p. 62; *H. caucasicus var. colchicus*, Regel, in Gartenflora, 1860, p. 190, t. 293; *H. porphyranthus*, A. Br. and Bouché, Ind. Sem. Hort. Berol. 1861, App., p. 13; *H. atrorubens*, Bot. Mag., tab. 4581, not Waldst. and Kit.—Quite glabrous. Leaf one to a flower-stem, like that of typical orientalis in texture and veining. Flowers 2—6 to a stem. Sepals round, about 1½ inch long and broad, much imbricated, deep bright purple, both inside and out.

A native of the north-east district of Asia Minor. The handsomest of all the cultivated Hellebores, and a well-marked form.

(*k*). *H. abchasicus*, A. Br., Ind. Sem. Hort. Berol. 1853, App., p. 24; Boiss. Fl. Orient., vol. i., p. 63; *H. caucasicus var. abchasicus*, Regel, Gartenfl. 1860, p. 1863, 1866, t. 456.—A form known to me only by the descriptions and figure just cited, from which I infer that it differs from colchicus only by having two or more leaves to a flowering stem.

A native of the Caucasus. If any of my readers have this I shall be very glad of a specimen.

Those who want to study Hellebores critically should consult the second volume of Host's *Flora Austriaca*, the account of the genus in the first volume of Boissier's *Flora Orientalis*, the notes by Dr. Alexander Braun in the appendices to *Index Seminum Horti Berolinensis* for 1853 and 1861, a note by Mr. Fox-Strangways under tab. 82 of Lindley and Paxton's *Flower Garden*, and especially for the forms of the viridis group the excellent series of figures in Reichenbach's *Icones Flora Germanicæ*. *J. G. Baker.*

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Let the potting be completed of all hard-wooded plants. This applies to such as can be operated upon without interfering with their flowering. It would not be advisable to move specimens that were expected to bloom within the next two or three months, although these, where suffering for want of root-room, may be potted without any injury to their blooming, providing the work is done by experienced hands with care. Where it is attempted with plants in this condition, that the removal of the crocks from the bottom of the ball must be effected without disturbing the roots more than cannot be avoided. In the case of young thriving specimens, where the object is more to increase their size than to perfect their present season's flowering, there need be no hesitation in moving those that want more root-space. For two or three weeks after potting, follow the course before advised of keeping the atmosphere sufficiently moist by throwing water about in the middle of the day when the weather is bright, and using enough shade to obviate the necessity of giving much air. Plants of Daphne indica that have been brought into flower in warmth through the winter and are now about to commence growth, should be potted if they require it; but these highly esteemed plants must never have too much root-room allowed them, their natural inclination to exhibit well will permit of their occupying pots nearly so large as the majority of other hard-wooded plants need. When grown warm use a considerable quantity of well-rotted manure in the soil: those who have young plants of this most fragrant shrub cannot do better than grow them on in warmth for a couple of years, as the strength and vigour they thus attain admits of their flowers being cut to an extent that would all but destroy the plants if grown cool. It will be now advisable to look out and prepare as many flowering plants as can be had for the latter part of summer, when there is usually a lack of subjects for greenhouse and conservatory decoration. The useful late summer blooming Cassia corymbosa will be much benefited if it can have a little warmth now for a month or two. Where the Erythrina crista-galli is grown for late flowering it should be now kept quite cool, to keep quiet, slow growth to be made. A cold pit will suit it better than a house where growth is encouraged by less air and earlier closing in the afternoons. Pleroma elegans is another plant that, like the preceding, can be had in flower during the advanced summer and autumn. It does not like a long resting during the winter months, but if now subjected to the coolest greenhouse treatment it will come on much slower; it should have a little shade when the sun is powerful, or the leaves are liable to get disfigured. The different varieties of Statice are also well adapted for late summer and autumn flowering. If a few plants of S. profusa, S. imbricata, and S. Holfordii are grown in moderate-sized pots, and their flowers through the spring are kept pinched out, they will bloom freely in the summer and autumn, at which time their telling blue flowers form an excellent contrast in the conservatory to the numerous kinds of bright-coloured Lilies that are then in season.

SOFT-WOODED GREENHOUSE PLANTS.—If a portion of the autumn-struck Fuchsias, instead of being allowed to flower as soon as they are disposed, are

moved into larger pots, and the shoots kept well stopped back from time to time as required, these will succeed the early bloomed ones, and be found very serviceable later in the season. Kalosanthes may also have their flowering time retarded. If a few plants are now placed in a north house or cool pit, with abundance of air and not much under the influence of the sun, they will bloom six weeks later than such as receive ordinary treatment. In the cultivation of pot Lilies one of the principal things to be secured is short vigorous growth; if ever they become at all drawn up the foliage is correspondingly weak, and their flowering abilities proportionately diminished. Nothing tends so much to secure the desired condition as exposure to the open air soon after they appear above the soil; this is best attained by placing them in cold frames, where the lights can be drawn completely off during the day. When the weather is too wet to admit of this, the tops are necessarily so near the glass that there is no tendency to being drawn up, especially as the lights can be tilted high so as to give them almost as much air as if uncovered. As more head-room is required if the frames can be raised, for after this time there will be no danger from frost if the lights are shut down when there is an appearance of it: when there is not, the air is better left on. *T. Baines.*

ORCHIDS.—The great number of plants, the flowers of which are of fine form, rich colour, or in other respects showy and attractive, and also the numerous additions of choice varieties that are being continually made by the energy and enterprise of several of our principal Orchid importers, will always exert their influence in the formation and enlargement of any collection of these plants; and certainly, when once the taste for this class of plants has been acquired, it is only natural that the desire to possess and cultivate the most beautiful should make itself apparent in the search for, and in the getting together of, those that exhibit these characteristics in a more or less marked degree; nevertheless, to those who are, as it were, only on the threshold of such a purpose, and who are at present satisfied with the less showy, or such as may be considered old or accounted out of date—for there is such a thing as an assimilation to fashion in the appreciation and cultivation of some kinds of plants—there are many that are both curious and interesting, and quite as capable of imparting pleasure to a new-beginner as those the value of which may be reckoned by figures of a high amount. Among such as are fantastic in a pre-eminent degree may be named the Brassias, and though it may seem late to speak of these, there are many who are pleased even with them; and when they are in bloom, and cut flowers are in demand, the singular and distinct appearance which a spike of B. verrucosa major exhibits amongst a number of other flowers will be a sufficient reason why it should be grown and taken care of. This and B. Lanceana and Wrayæ are interesting and deserving of culture, and though not by any means difficult to grow, are, however, often met with in a state that is not very pleasing and satisfactory. They should all be grown in pots, well drained, in a mixture of peat and moss, and when potted kept well up above the rim of the pots, as the bulbs are liable through close contact with the soil to quickly turn black and rot. Place them in the Cattleya-house, watering them sparingly until the roots are nicely pushed out towards the soil, when they may be treated to a good supply, and occasionally sprinkled overhead with a syringe; here they will grow freely, the foliage keep fresh and green, and during the spring months the spikes come up strong and freely. Another, in many respects similar to the above both in the style of growth, general appearance, and method of blooming, is Cyrtochilum maculatum; this is of a compact habit of growth, has bright green foliage, the spike produced on the bulbs of the previous season's growth bringing from six to a dozen flowers of a bright green and purple colour: it will succeed with similar treatment to the foregoing. Aspasia lunata is another that may be grown with these. In appearance this much resembles some of the Miltonias—the foliage is of a pleasant green, the flowers are of good size, the sepals and petals being white spotted with brown, and the lip pale blue. This is a very pretty and interesting species. Bolbophyllum Lobbii is again another that may be classed among the singular ones. This, however, requires to be grown in the East Indian-house. The flowers, which are of a distinct brownish yellow colour, are specially attractive on account of the peculiar formation of the labellum, which is so constructed that, with a very slight motion of the plant, the lip is thrown backwards and forwards as though it were set with a hinge. This will succeed well in a pot, kept well up above the rim when growing, well supplied with water, but when the growth is finished only a small quantity will be required, otherwise the flowers, instead of coming altogether, come up very irregularly. Small pieces may be fixed on blocks or grown in baskets, and will be found to come on very quickly and soon get established. *W. Swan, Fallowfield.*

FRUIT HOUSES.

VINES.—Look over Grapes in the fruit-room once a week for decaying berries, and keep the bottles well filled up with soft water. Owing to the mildness of the season little fire has been used, and well-ripened fruit is keeping fresh and plump. This is a busy month, as every house is now at work, and disbudding, tying, and thinning must have attention at a time when a thousand other things require a gardener's care. Late houses now making good progress must be disbudded, tied out, and well syringed until the bunches show. Close early with sun, and dispense with fire-heat as much as possible. If, through hard forcing, red-spider has made its way into the early house, no time should be lost in applying the usual remedy. Examine the borders, and if dry, a condition under which spider makes rapid progress, lose no time in thoroughly watering and mulching with well-worked fresh horse-droppings. Perform this work early in the morning of a fine day, and keep a little air on the top sashes, to prevent injury from an overcharge of ammonia. Heavily cropped Vines do not always finish well; where this is the case they should not be hurried through the last stage, particularly at night, when the temperature should range low, by means of extra ventilation combined with a liberal supply of dry, warm air by day. Where young Vines have to be planted this spring, the materials for the borders should now be ready to use, and well protected from the weather. I prefer planting inside, with arrangements for taking the roots outwards when the first 6 feet of the inside border is well filled. A dry day should be selected for making the borders; let them be 2 feet 6 inches deep and 6 feet wide; allow the soil to become warm before the Vines are planted, spread out the roots over the surface, having completely shaken them free of old soil. Cover with 6 inches of compost. Give them a watering with water at a temperature of 90°, and mulch the surface with short dung. *W. Coleman, Eastnor.*

CUCUMBERS.—Favoured by mild, genial weather, Cucumbers are remarkably clean, healthy, and prolific, and firing having been reduced to a minimum, red-spider is less troublesome than usual: the cultivator must not, however, on this account allow his energies to be shaken. To keep the plants in a satisfactory state, stopping and dressing over, now growth is so rapid, must be attended to twice or three times a week, as nothing injures the plants more than neglect in this direction. Neither must spider have uninterrupted possession. It will, therefore, be well to apply the usual remedies once a week to keep the enemy in check. Plants that show signs of exhaustion from overcropping may have a portion of the old soil removed from the roots, and replaced with a rich compost of turf, lime rubble, and fresh horse-dung, to which a little fowl-dung or guano will quickly add their way. Syringe the foliage and every part of the house twice a-day. Give more water to the roots, close about 2 P.M. with sun-heat, and carefully guard against over-cropping by the removal of all ill-formed and surplus fruits before they have time to draw upon the plants. If the soil will weather the following a good deal, some very slight material may be drawn over the roof as much for the protection of the young fruit as of the leaves; but the system of shading for the sake of saving trouble must not be countenanced. Plants in cold frames may now have more water; stop and train thinly; add fresh earth to the hills as growth proceeds; close about 2o'clock on fine days, and sprinkle overhead with water at a temperature of 85°. Maintain the necessary bottom-heat by turning and renovating the linings. Cover up at night with good dry mats, and give a little air at the back of the light. If newly formed beds continue too hot for the reception of the plants when they are in the best condition for turning out, a common drain-pipe 2 feet in length and 6 inches in diameter may be laid across the bed in the centre of each light before the hills are made, and left open at the ends. The hills should be made small at first, and when the heat has declined to 85° the ends of the pipes may be closed, and more soil added as the roots push to the sides. *W. Coleman, Eastnor.*

PEACHES AND NECTARINES.—Considerable care and attention will now be requisite to regulate and check the exuberant tendency in the growths of the current year, so as to render the flow of the sap even in its operation over the whole surface of the tree. A considerable amount of discernment is necessary to effect this properly. To sustain a healthful and vigorous condition in the trees a plentiful leafage is indispensable, which should be well distributed in a manner which will admit of its perfect development. The terminals at the extremity of the trees may with propriety be allowed a good run, if the limit of the trellis will admit it, before being stopped, but those side shoots which issue from behind the fruit should be checked if they be vigorous, in order to assist the swelling off of the fruit more freely. Every encouragement towards this object should be vigorously enforced by keeping both foliage and roots in a healthy state. Syringe the trees with rain-water twice every day, and supply it, enriched with some manurial agent, plentifully at the roots at this period; and when a very forward supply of ripe fruit is obtained from trees in pots and the fruit is approaching the colouring process the foregoing observations must be sedulously observed. Attend to the trees in later houses as before advised, remove a large proportion of the fruit when it is necessary off those trees before it becomes large, as at this season it can be relied on, and if left on will only be to the disadvantage of those which are required. *G. T. Miles, Wycombe Abbey.*

KITCHEN GARDEN.

Sowing for successional purposes will still require the constant attention of the kitchen gardener. It is hardly possible to point out within a week or ten days when such operations should be carried out, the seasons vary so much that though it would in one season be correct to recommend the sowing of the main crop of Carrots on April 16, in another it might not be possible until the 25th: at all events experience tells us that somewhere about or between those dates is the best time, and when we recommended that this or that crop should be got in, our words must be taken with a grain of salt, and then or about that time be understood. With regard to the main crop of Carrots it should be got in at once, in finely pulverised soil; one half of the crop should consist of James' Intermediate Scarlet, the other moiety may be divided between Red Surrey and the Improved Altringham. Sow successions of Peas, giving No Plus Ultra the lion's share: if these could be sown in double rows with wide spaces between for other crops the produce would be greatly increased. Successional sowings of Broad Windsor Beans should be put in as soon as the previous sowing pushes through the surface. Another small sowing of early Turnips will be necessary towards the end of the month. The dull burning sun has such an injurious effect on the flavour of this crop during the summer that it can only be counteracted by copious supplies of water in dry weather; endeavour, therefore, as far as possible, to sow the plots as near the water supply as may be. The same precautionary remarks will apply equally to Turnip and other Radishes, which cannot be had in perfection in hot, dry weather without plenty of water. Sow Bush and Sweet Basil in pans, and forward them in a gentle heat, to be afterwards pricked out along the foot of south walls, where sustained vegetation is required: it will be necessary to make sowings of Lettuces, both Cos and Cabbage varieties, about every week or ten days at present, and the quantity required must regulate the breadth to be sown. The same remarks will apply to Small Salading. Spinach also must follow pretty nearly the same rule, as during the next three months, at least, the chances are very generally in favour of its running to seed. The ground should now be constantly stirred amongst Cauliflowers, Cabbages, Lettuces, and all other advancing crops; and as it is much to be feared that, owing to the mild and moist season, we shall find the slugs more than usually troublesome, it is advisable to dress the ground between the crops very heavily with lime previous to the surface stirring. The various beds sown with Brassica, Onions, and Parsnips, should also be occasionally dressed over with very quick lime; and if the destructive turnip-fly makes its appearance amongst the Brassica tribe, add dry soot and wood-ashes to the lime for the dressing. Thow up a good bed of fermenting materials sufficient for a one-light box in which to sow ridge Cucumbers and Vegetable Marrows for transplanting on the ridges early next month, for which purpose see that fermenting material is in the course of preparation. Where red Beet is in much request it may be advisable to make a small sowing for very early purposes, but as the chances are that more than half will run to seed, the sowing of the main crop must be deferred. Where the supply of dwarf French Beans is dependent on the open-air crops, a few boxes or pans may be sown and placed under shelter (a great heat is not necessary) so that they can be forwarded in any place secure from frost; they will be ready to transplant into a warm situation early next month, and if protected from frost for a week or so they will be a fortnight in advance of those sown in the open air at the proper season.

As neatness in this department is at all times a desideratum, means should be adopted at once in order to secure the freedom of the walks from weeds, which are now beginning to make themselves unpleasantly visible. Turning the gravel is a most excellent plan, but as the material of the walks is not always adapted for turning, and as the time for so doing cannot always be spared, other means must be adopted, such as a thorough good dressing of salt, or sulphuric acid mixed with water in the proportion of 1 pint to 3 gallons, or of carbolic acid; but in no case must these destructive substances be used in situations where there are Box edgings; where hand weeding and turning over the gravel are the obvious remedies. *John Cox, Redleaf.*

THE
Gardeners' Chronicle.
SATURDAY, APRIL 14, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	April 16	Sale of Cypripedium eburneum and other Orchids at Stevens' Rooms.
WEDNESDAY,	April 18	Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. Exhibition of Covent Garden Produce
		Royal Botanic Society: Second Spring Show.
THURSDAY,	April 19	Linnean Society: Meeting at 8 P.M.
FRIDAY,	April 20	Sale of Scientific Apparatus, at Stevens' Rooms.
SATURDAY,	April 21	Sale of Photographic Apparatus, &c., at Stevens' Rooms.

ONCE more an INTERNATIONAL HORTICULTURAL EXHIBITION, or rather an Internationale Tentoonstelling van Tuinbow—the site that quaintest of quaint towns, AMSTERDAM. Twelve years ago, when such exhibitions were in their infancy, Amsterdam made an excellent second to Brussels, and both were eclipsed by our display in 1866. Since that time various towns—St. Petersburg, Florence, Paris, and others—have taken up the tale, and now once more it is the turn for Amsterdam.

At the time of writing this note confusion reigns supreme, and it will only be after the lapse of two days that the Exhibition will be pronounced ready for opening, and therefore what we may say is open to correction. Nevertheless, the impression we have gained up to this time is that as a flower show it is far behind its predecessor of 1865. Indeed, neither in point of cultivation nor of novelty is the present Exhibition at all remarkable. True it is more dispersed. Instead of being arranged wholly within the Crystal Palace as before, the plants are dispersed through various stoves, conservatories, and temporary arcades scattered about the garden which now surrounds the building. Probably, then, there may be more exhibits than in 1865, but they do not at present show to such advantage. Moreover there is a lack of exhibits from the great Ghent nurserymen, few of whom, except M. LINDEN, are exhibitors on a large scale, Of British exhibitors, Mr. WILLIAMS amply sustains the credit, but he is left to do the honours for his country almost alone. That he has done it well no one who knows what his usual practice is will doubt. Nay, were it not for Mr. WILLIAMS, the show would indeed be a poor one. Of course we speak generally. There are some exceptions, to which we may hereafter refer. The general arrangements are far from good. Several hours elapsed after the jury were summoned before they were told off to work. When they began to do so, the Presidents of sections did not know who were to be their fellow jurors. The Secretary scoured the building for the President — the President hunted for the Secretary. Both set out in search of their company of jurors. When at length some of these were found—for the whole number was rarely made up—then began the search for the objects to be adjudicated on; No. 1 was here, No. 2 was a quarter of a mile away, No. 3 was nowhere, there were two No. 5's, and no No. 6, and so forth. All this might have been obviated by a little foresight and management—qualities which our Dutch friends are not usually deficient in. It must always be remembered that we are writing before the Exhibition is complete, and therefore much improvement may fairly be looked for; but at the same time we cannot too strongly represent to the managers of such exhibitions that it is little less than cruel to summon some hundreds of exhibitors, jurors, and members of Congress from all quarters of the globe, and then waste their precious time, when, if not wanted at the Exhibition, they might employ it so profitably and pleasantly elsewhere in the city. On the other hand, cordiality and hospitality never fail on these occasions, and there is ample promise that the Dutchmen will be equal to the occasion in this particular. As not only objects of horticultural interest are represented, but also Tobacco, Cinchona, Cotton, and other vegetable products, so the number of jurors and members of Congress is very large; among them, as usual, is a large proportion of the horticultural and botanical notabilities of Europe.

To this we may add, that we have received a telegraphic message from Amsterdam, to the effect that Mr. B. S. WILLIAMS, of Holloway, has been awarded the Prize of Honour, as well as eight gold medals.

—— We are authorised to state that Her Majesty the QUEEN has intimated her intention to VISIT THE EXHIBITION OF CHOICE FLOWERS to be held in the conservatory of the Royal Horticultural Society, South Kensington, on Wednesday, May 2; and that the flower show which was intended to have been held on the 1st will consequently take place as originally fixed. These changes backwards and forwards are some of the results of the recent meddling and muddling with engagements already fixed, announced in our last issue. The show of the Pelargonium Society is another case of accepted arrangements upset; and all for what? There are those who can tell, but the real reason is probably little suspected by the horticultural world generally.

—— The Cryptogamic botany of the late Transit of Venus Expedition still affords ample results, inasmuch as two further contributions, read at the Linnean Society on April 5, afford evidence. Professor REINSCH's article on the FRESH WATER ALGÆ OF THE CAPE OF GOOD HOPE, if technical, was at least beautifully illustrated by careful drawings of structural detail; and Mr. W. MITTENS' observations on the HEPATICÆ from near Cape Town equally attested accurate knowledge of his subject. But the Cryptogamy of our own islands does not seem exhausted, as new Irish Lichens, by the Rev. W. LEIGHTON, attest.

—— The FERNS OF MADAGASCAR evidently display an unlooked-for richness, since only last year Mr. POOL's collection yielded a great number of new forms; but again another collection by Miss HELEN GILPIN, from the neighbourhood of Antananarivo, placed in Mr. J. G. BAKER's hands, gives also good results. Of 150 species, seventeen are new — the points of interest concerning these having been laid before the Linnean Society on April 5 by Mr. BAKER, of Kew.

—— We are glad to see, from a circular issued by the ROYAL MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY, that £5400 has been raised towards the extinction of the debt of £6000, which has for many years been hanging like a millstone about its neck. This being the Society's Jubilee Year, it is proposed to make a special effort to get in the remainder, so as to send it forth free on its mission of improving the tastes of the dense population which surrounds it, and of encouraging the art of cultivation, by continuing its annual exhibitions, which are second to none, and at which premiums are distributed with a liberal hand for high-class horticultural productions. The Society well merits this support at the hands of all who, having the means, take an interest in the advancement of horticultural science and the refinement of the public taste; for it has now for fifty years done good work in this direction, having distributed in prizes a sum amounting to nearly £40,000. The annual flower show is held in the Society's garden at Old Trafford during Whitsun week, this season being kept as a holiday in the district, and the working classes, who are admitted at a low price, embrace the opportunity thus afforded them in large numbers, upwards of 30,000 having been admitted annually during the past nine years, in which the Society has extended and remodelled its exhibitions. Mr. B. FINDLAY, the Secretary and Curator, would gladly furnish forms of subscription to any persons willing to help in so good a cause. The Society's National Exhibition opens this year on May 18.

—— Two correspondents have sent us some curious abnormal growths of DENDROBIUM NOBILE. They consist of young shoots, producing roots, thrown out from the old stems, but instead of leaves these shoots bear membranous sheaths, out of which issues a solitary flower. In one shoot with three flowers there are no leaves; in another there are two leafless sheaths with a flower issuing from within each, then two sheaths bearing leaves, and also having axillary flowers, and finally a terminal leaf with a smaller leaf in its axil. The flowers are also abnormal, the lip being elongated, and convex instead of concave. Our correspondents ask the reason for these freaks, which we cannot tell. Have they been observed elsewhere?

—— On Thursday, April 5, a considerable number of POTATOS WERE PLANTED IN THE CHISWICK GARDENS under the personal superintendence of Mr. W. G. SMITH, with a view towards averting the usual murrain of the autumn. The ground selected is heavy, non-porous loam and loamy clay, and the principal position is between rows of trees, both representing highly favourable conditions for an attack of the disease. Most of the Potatos were planted in the same piece of ground where the disease was so unusually virulent in 1875, and the only natural position where the resting-spores have at present been found. One-half the Potatos were planted whole, the other half cut; and the Potatos selected for trial were the following:—1, American Early Rose (this is the Potato which suffered more severely than any other in the 1875 attack, and the Potato in all parts of which the resting-spores were found); 2, Lapstone; 3, Bresee's Prolific; 4, Paterson's Victoria; 5, Rintoul's Striped Don; 6, Regents. No farmyard manure or guano was used, but the material termed "Salus" was sifted into the furrows before and after planting, and the cut Potatos were dipped into the material.

—— The large pair of CHUSAN PALMS (Chamærops Fortunei) are now in splendid flower at the Victoria and Paradise Nurseries. Some of the branching spikes are about 3 feet long: a large crop of seed is expected.

—— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, April 16, when a paper will be read by Mr. J. SHAW, on "The Rivers Pollution Prevention Act, 1876." The chair to be taken at 8 o'clock.

—— Rather more than two years ago the eldest son of the late Mr. WILLIAM BARNES, of Camberwell, was unfortunately deprived by insanity of the means of supporting his wife and four young children, and it was thought by some friends of the family that something might be done to alleviate and render assistance in this dire calamity. A few old acquaintances of Mr. BARNES formed themselves into a committee, and an appeal was sent out, which resulted more successfully than the committee had anticipated, and an amount of £221 7s. 6d. was subscribed. The committee have now issued their report and a balance-sheet, showing how the fund has been administered, from which we gather that MRS. BARNES has been started in business as a milliner, at 37, James' Grove, Commercial Road, Peckham, and the committee hope, with every prospect of success; but the utter hopelessness of the recovery of her husband necessarily has a depressing influence on her exertions. In promoting the objects which the committee had in view, it transpired that the second son of the late Mr. BARNES, living in Natal, had expressed a wish to render assistance, and he offered to take charge of the eldest boy, aged 7 years, to educate and provide for him, and to start him in life when old enough. The boy has therefore been provided with an outfit, and sent to Natal, part of the expenses being allowed by the committee, and charged to the fund.

—— In CRITCHLEY'S HEAT REGULATOR we have what appears to be a useful contrivance for regulating the distribution of heat in plant-houses. It is also claimed for it that the amount of heat may be more efficiently regulated by this than by other means, the valves being worked to a scale marked on the piston rods. There are no doubt other methods of accomplishing the same objects, but there is a simplicity about the arrangements in this case which commends itself as being preferable to the intricacy of distant

and often inconveniently placed valves, since the valves—which in this case are sluice-valves—are here all brought together to one square box, and consequently are all close at hand, and all easily accessible, so that the hot water can be turned off and on without any difficulty or loss of time. The facility afforded for turning on and shutting off the heat in particular houses, where several are heated from one boiler, seems to us one of the main advantages to be derived from Messrs. Critchley's apparatus, as the flow can be carried on through the regulator, and the pipes for supplying bottom or top-heat in a particular house shut off on one or both sides by closing the side valves, while the heated water flows on to the house or houses beyond. Any one house of a series can thus be either heated or not, without interfering at all with the heating of the remainder, and more readily than by a complicated system of valves. The regulation of the amount of heat by the use of these particular valves does not appear to present any special advantage over that of other plans for effecting the same object, unless it be in their simplicity and accessibility. Those who have had them in use, including Mr. Cronk, gardener at Berkeley Castle, speak well of them; in fact, the latter writes that his two regulators, which represent thirty valves, are far superior to any other contrivance for effecting the same object.

—— It is proposed to publish monthly a *Journal of Forestry* for the purpose of encouraging the study of forestry in its many aspects, scientific, practical, artistic, and economic. It is hoped that the new journal will be useful to foresters, land-agents, and landed proprietors, and furnish "all those other little pieces of news which are so pleasing to read and yet so difficult to obtain in a reliable form." Messrs. Rider, of Bartholomew Close, E.C., the publishers of the *Timber Trade Journal*, will also be the publishers of the new journal, to which we wish every success, though we hope it will not interfere in any way with the proceedings of that useful institution, the Scottish Arboricultural Society.

—— Mr. A. W. Falconer, late gardener to S. Schloss, Esq., Bowdon, Cheshire, has been appointed to the management of the gardens of Mrs. F. G. Wilkins, The Poplars, Leyton, in succession to Mr. Ward.

—— The next exhibition of the Burton-upon-Trent Horticultural Society is announced to be held on June 27th. We see by the annual balance-sheet that the Society is in a flourishing condition, having a balance in hand of nearly £350, and as many as 1500 annual subscribers. The prizes offered are very liberal.

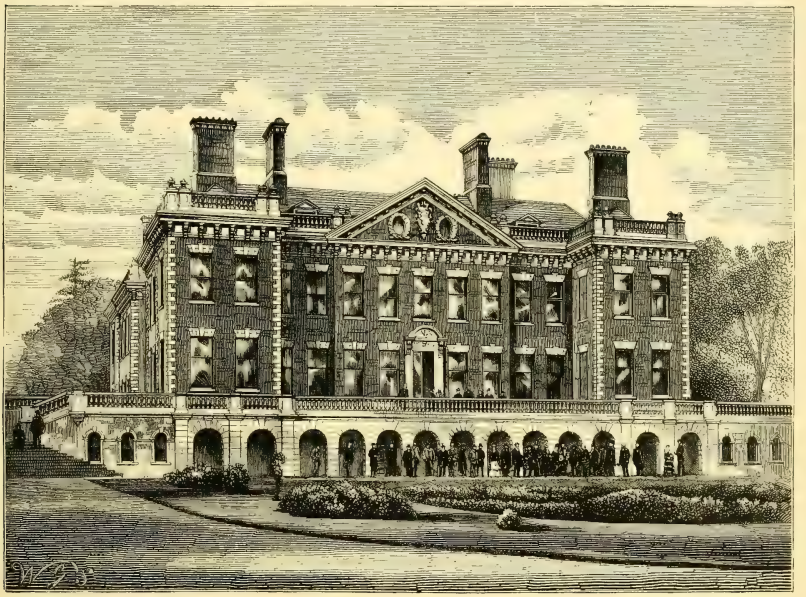


Fig. 72.—Shobdon Court, the residence of Lord Bateman.

—— Mr. A. G. Hight, of the Indian Forest Department, has been making some interesting experiments with a view to determine the Effect of the Soluble Salts in certain soils on the growth of plants. The plants experimented on were grown in watery extracts of the soils to be examined, and their vigour, size, and weight duly noted. Samples of five descriptions of soil were taken at a depth of 18 inches from the surface, and a watery extract prepared by pouring distilled water over them, and gradually heating the water to the boiling point. On cooling the water was poured off from the soil and set aside. On to the soil thus drained another quantity of water was poured, heated, and decanted as before, and so on for four times. The water from the four decantations was then mixed and filtered, and in the resultant fluid various seedling plants of Acacia arabica were placed, as nearly equal as possible in point of development, and their growth noted for a period of one month. The increase in the weight of the seedlings ranged from 0.36 gramme (1 gramme = 15 grains) to 0.19 gramme; the number of leaves from twenty-two to six, and the length of roots from 10 inches to 1¼ inch. It will be seen that this experiment is an application of the process of water-culture, now so largely followed in experimental laboratories, and by means of which the effect of any particular salt upon the growth of plants may be observed by adding the salt to, or abstracting it from, the solution in which the plant is grown. A comparison of the soluble chemical contents of the soil with those of the solution used in the water-culture experiments shows the suitableness or the reverse of the soil for the cultivation of any particular plant. Mr. Hight's experiments are very interesting and suggestive, but not as yet numerous enough to exclude or compensate sources of error, particularly that arising from natural variation in the vigour of individual plants from the same stock. How necessary this is to be attended to seems shown by the author's figures, which show in one case a variation in the same soil (experiments 4, 5, 6) of from 0.10 to 0.36 gramme, in number of leaves from thirteen to twenty-two, and in length of root from 2½ to 7½ inches. Nevertheless, we believe that a similar practical analysis of various soils carried out on a large scale would be productive of excellent results. We trust Mr. Hight may be encouraged to pursue his investigations in the future. Mr. Hight's paper is in the February part of the *Journal of the Chemical Society*.

—— The question, Which are the Best Late Grapes? is one of considerable importance, and one

to which an unanimous response can scarcely be expected. Some notes on this subject were published in our columns in January last, and Mr. Hill, of Keele Hall, whose name stands very high in the records of Grape-growing, has since then sent us some samples, accompanied by the following remarks:—

"I have grown a lot of different varieties of Grapes during the last twenty-eight years, grafted and otherwise, and have long since come to the conclusion that we have too many sorts. If I were asked to select six kinds for winter work I should name Lady Downe's Seedling, Alicante, and Mrs. Pince's Black Muscat as blacks; and Muscat of Alexandria, Mrs. Pearson, and Old Tokay as whites. The latter is a fine Grape when well done—far before Trebbiano or Raisin de Calabre. For summer and autumn work I should have, of blacks, Black Hamburgh, Snow's Muscat Hamburgh grafted on Black Hamburgh, and Black Prince; and of whites, Muscat, Foster's White, and Buckland Sweetwater. Chaptal also forces well. Were I tied down to four varieties only I should have Muscat of Alexandria, Black Hamburgh, Lady Downe's Seedling, and Alicante. The latter I consider a fine Grape. This and Lady Downe's keep longer bottled than any I ever tried—and we were among the first to bottle Grapes in this country. Those I send were cut from the Vines the first week in January."

This sample reached us about the end of February, and was in every way perfect as to outside appearance, the berries being mostly plump, and the quality excellent. Lady Downe's was the best sample, and was plump and good, retaining its full flavour and all its good looks. Mrs. Pince's Muscat appeared to us to stand next best, the berries being very rich, but a little shrivelled, so that the appearance was not quite equal to that of Lady Downe's. Then came the Alicante, again plump and good, as perfect as at any stage of its growth, and vying in quality with Lady Downe's. The Black Morocco which accompanied them was flat, being past its best, and deficient in flavour. The four samples were, however, taken altogether, as pretty an example of Grape-growing and Grape-preservation as one would meet with in a day's march.

—— Bad news for Cyclamen growers! It was stated at a recent meeting of the Central Horticultural Society of France that the cultivation of the Cyclamen had been nearly abandoned in Paris, owing to the attacks of a fungus, against which no remedy had been found to avail.

—— The Discovery of a New Conifer in Europe is as interesting as unexpected. It inhabits the mountains of those "unhappy" countries, Servia, Bosnia, and Montenegro, and Dr. Paucie is the botanist who, after much consideration and research, and after taking the opinion of the late A. Braun, K. Koch, and others, has described it as a new species under the name of Pinus Omorika. It belongs to the Abies section, and is most nearly allied to P. orientalis. Omorika is the Servian name of this tree, which Dr. Paucie describes as being of gigantic stature, equalling, if not exceeding, the loftiest of its European congeners. It is of slender habit, with relatively short branches forming a pyramidal crown; bark of the trunk brown-red, peeling off, the fragments often heaped up in great quantity around the base of the trunk. The lower branches pendent, with the extremities only directed upwards. Needles (leaves) of a silver-grey hue, small and short (about 5 lines long), usually obtuse; cones oval-oblong, 2 inches long, at first erect, gradually assuming a horizontal position, and finally pendent; when young of a beautiful violet colour, when mature reddish brown, with an intermixture of ash-grey. Scales of a roundish shape, faintly striated, and unequally toothed in the upper part. The foregoing particulars are from a lengthy article by Carl Bolle in the Berlin Horticultural Society's *Journal*. Dr. Reichenbach contributes some notes on the same subject to the *Botanische Zeitung*, n.s., 1877, from which it appears this tree—"whether species, variety, or climatic form"—is known by the name Omorika from the Adriatic to the Danube; and it is supposed that it was formerly more widely dispersed than appears to be the case at present. This is founded on the assumption that, because the name is so widely understood, the tree yields a valuable timber. Griesbach regards it as a variety of P. orientalis, but, whether distinct or not, it is none the less interesting, and another illustration of the distribution of Coniferæ as exemplified by the Cedars, Pinus Peuce of Griesbach, &c. Both Reichenbach and Bolle had specimens before them, as well as a paper on the subject by Paucie himself.

—— The International Congress of Horticulturists and Botanists, in connection with the great horticultural exhibition of Paris next year, is to be held on August 18 and eight following days. The head-quarters will be at the rooms of the Central Horticultural Society and of the Botanical Society, 84, Rue de Grenelle Saint Germain.

—— The Kirkby Malzeard Auriculas are now in fine condition, and the strong, stalwart trusses carry with them a rich promise of fine heads of bloom. A magnificent growth is the general characteristic—not a coarse, but a refined leaf development, and the Rev. Mr. Horner anticipates that some of the choicest varieties will be in fine character. They are now in a roomy lean-to south house, and during the recent cold weather the plants have had the benefit of a little fire-heat. At this time of year the Auricula is a greenhouse plant, and some warmth is absolutely necessary to the proper expansion and finishing of the pips.

—— The usual monthly dinner of the Horticultural Club took place on Wednesday, the 4th inst. There was a fair attendance. Mr. Cant, of Colchester, sent some dishes for the dessert of the Essex Spice Apple, in capital order, and a vote of thanks was given to Mr. Cant for his courtesy.

—— The *Revue Horticole* reports the Fruiting of four plants of Musa sinensis in the *Fleuriste de Paris*. They were planted out in the ground in a tropical-house in 1874, and in 1876 each of them showed an enormous inflorescence of more than 200 flowers, more than three-fourths of which set and ripened fruit. It is not stated what the quality of the fruit was, but the writer says that it is not only an exceedingly ornamental plant, but it may be profitably cultivated for its fruit.

—— In addition to the gentlemen already named, the following have accepted the office of local hon. secretaries of the National Rose Society:—Capt. Carter, for Horsham and West Sussex; J. L. Carter, Esq., for Chalton and neighbourhood; and —— Cheales, Esq., for Tring and neighbourhood.

—— At Chiswick House Bedding-out has already commenced. Mr. Edmonds finds it necessary to be early in order to have the beds well furnished by the time garden parties commence. Already the Calceolarias are bedded out, after having been duly hardened off, and then quite a fence of branches of evergreens are put round and about the beds. These serve to keep the plants quite snug, meanwhile they are making root, and rendered better able to withstand the wintry influences that invariably accompany the sunny month of May. Lines of Echeverias are also marking the marginal lines of beds and borders. The hardy plants are got out to supply the framework of the floral pictures; by-and-by, when fear of danger is well past, the tenderer plants fall in to impart their particular touches of colour, and the picture is complete.

—— Some huge plants of Richardia æthiopica are in fine condition in one of the glass structures at Chiswick House, and they are yielding an abundant harvest of their massive blossoms for Marlborough House. They are in the warmest part of a house, near the glass, and being abundantly supplied with water, alternated with occasional doses of liquid manure, the floral harvest is in keeping with the high cultivation. Mr. Edmonds states it is an invaluable flower-yielding plant for this season of the year. In the same house a remarkable plant of Fuchsia Dominiana has been in flower for a considerable time past.

—— The Berlin Horticultural Society has decided to hold no public exhibitions this year. In the first place the Society is poor, and it is the opinion of many of the members that flower and fruit shows are becoming too frequent to promote true horticulture, or benefit the public. The various committees will continue their labours, and there will be a private show on the foundation day. There is no doubt that flower shows, as a rule, do very little towards furthering horticulture, and it is a wise course not to spend the money of a society in the gratification of the outside public, because the public is a large body, and can afford to pay, and does pay, for the kind of recreation or instruction that suits its taste. Make your entertainment known, and then if the people do not come, you may guess there is a mistake somewhere—not far from home.

—— The last number of the *Revue Horticole* contains a coloured plate of a rare Brazilian Bromeliad, Lamprococcus Vallerandi, a tufted plant with the habit and foliage of a Pine-apple. The central panicle of flowers is provided with numerous bracts of a pale rosy colour and covered with greyish meal. Within the axils of these bracts are peduncles bearing five or six sessile flowers of linear oblong form. Both calyx and corolla are of a lilac colour.

—— We have frequently had occasion to mention the Pomological Institute of Proskau in Upper Silesia, Prussia, especially when the education of gardeners has been in question. Almost every gardener in this country who has attained eminence in his profession has done so by sheer perseverance and hard work in self-instruction, in gaining the theoretical knowledge necessary to enable him to carry out the higher flights of his calling; and it is the complaint of men like these that much of their time, and even health, was sacrificed in attaining their object. Yet this would have been comparatively easy had they had the advantage of the assistance of competent instructors. Although this is the case, it is not at all likely that we shall soon have a national educational (practical and theoretical) establishment in this country. It is urged by some that our large nurseries answer the purpose fairly well, but this is an obvious mistake, requiring no explanation for those who have given the subject a thought or experienced the difficulties of the position. This state of affairs is in striking contrast to the provision made for the thorough instruction of gardeners in Prussia, where they are now, as we lately reported, agitating for the foundation of a high school of horticulture. The establishment at Proskau, though called pomological, is so comprehensive in its scope that the students have the opportunity of obtaining an insight into every branch of learning necessary to enable them to become accomplished gardeners; and this without sacrificing the all-important practical acquaintance with details of ordinary operations. The pupils are lodged, boarded, and taught in the Institution on payment of a very small sum, and in return they receive no payment for their labour. At present it accommodates thirty-six young men, but as the applications are always in excess of the vacancies, it is intended to enlarge the buildings. The area of land now under cultivation is about sixty-five acres, ten of which are devoted to a nursery of fruit trees. A large extent of it is occupied with a collection of fruit trees planted in an irregular style, and termed the fruit park. Abutting on this is the stock collection, covering some 25 acres. The trees are all standards, and planted 24 feet asunder in the centre of grass strips, 8 feet wide. These grass strips are 30 feet apart, and the intervening tilled ground is devoted to the cultivation of various crops. Landscape gardening and flower gardening also form a part of the practical instruction; and there is a physiological and experimental department. As to the theoretical instruction, it would satisfy the wants of every branch of the profession.

—— On the occasion of the Spring Exhibition of the Newcastle-on-Tyne Horticultural Society on the 21st and 22d ult., an invitation was given to the whole of the public elementary schools in the town to pass through the exhibition on the morning of Thursday, the 22d ult., before the admission of the public. It was computed that some 2600 children were thus permitted to see the plants and flowers, and they all seemed much pleased with the treat afforded them. Through the forethought of the hon. secretaries, each child on leaving the building had placed in his or her hand a paper setting forth the objects of the Society, and the terms of membership. Members of the third class subscribe 5s. per annum, and have privileges framed in a liberal spirit.

As a considerable number of the operative and artisan classes in Newcastle-on-Tyne take considerable interest in flowers, this means of bringing the claims of the Society before them through the instrumentality of the children appears to be a step in the right direction. The promoters are evidently alive to the importance of popularising horticulture, and it is not unlikely that some societies struggling with difficulties might appropriately take a leaf out of their book. Some of the most flourishing societies connected with horticulture up and down the country are those who bid for popular support, and when this is done in a proper manner the appeal is rarely made in vain.

—— A very useful pamphlet, entitled *State Forestry: its Aim and Object*, has been published by Captain CAMPBELL WALKER, Conservator of the New Zealand forests. The pamphlet is based upon a lecture delivered at the Otago Institute, Dunedin, and though, so far as details are concerned, it is intended to apply to New Zealand, yet the general principles laid down apply to all countries. We do not know any publication, certainly none of so small a size, in which the objects to be attained, and the methods to be followed for that purpose, are so clearly and concisely laid down as in the pamphlet before us, which, it is to be hoped, may be reprinted, so as to obtain a larger circulation among foresters at home, in India and the colonies, than is possible under existing circumstances.

—— A specimen of CRINUM AQUATICUM, grown by Sir CHARLES STRICKLAND, from material obtained at Grahamstown, South Africa, was exhibited at the last meeting of the Linnean Society, Mr. J. G. BAKER, of Kew, remarking that this showy plant, one by no means difficult to rear, had seldom been seen in flower in Britain.

—— In a lecture on the METAMORPHOSES OF PLANTS, before the botanical section of the *Schlesischer Gesellschaft für Vaterlandische Kultur*, Dr. GOEPPERT mentioned, among other more commonly-known instances, a very striking Weeping Spruce Fir in the garden of the Villa Pallavicini, near Genoa, and a handsome weeping Deodar, 25 feet high, growing in the gardens of Baron FRANCESCONI at Intra, on Lake Major. Respecting the propagation of the so-called Snake Firs, he observed that seedlings raised from the seed of a specimen growing in Bohemia have altogether the normal growth and habit. A very remarkable Ivy, with an erect, unsupported stem 9 or 10 feet high, may be seen at Villa Pallavicini. The Irish Yew is of a more delicate constitution than the ordinary Yew, and is severely injured in very cold winters in Germany, whereas the common one is perfectly unsusceptible. Among recently noticed variegated and coloured-leaved trees and plants were Populus tremula, with dark purple foliage; and Platanthera bifolia, with white variegated leaves. Of abnormal flowers and parts of flowers, Dr. GOEPPERT described a specimen of Myosurus minimus, which had the receptacle of some of the flowers doubled, and in others forked, nearly to the base; also compound ears of Wheat and Barley. Flowers coloured green were observed on plants of Reseda Luteola, Lonicera grata, Erysimum Alliaria, Turritis glabra, Primula elatior, and two Dahlias, which latter, however, were not constant and soon reverted. The lecturer concluded with some remarks on unusual development of roots, alluding more particularly to the extraordinary masses of fine fibrous roots frequently found in drain-pipes. He had calculated the length, by weight, of a mass of roots of a Willow, probably of Salix alba, taken from a drain; it was about 4 feet long by 2 inches thick, and weighed a little over half a pound when dry. By selecting a number of the fibres, and taking their weight and measurement, the total length of fibres forming the mass was estimated at not less than 2000 yards. The foregoing particulars are from OTTO'S *Hamburger Gartenzeitung*.

—— Dr. TSCHAPLOWITZ, assistant in the physiological department of the Pomological Institute at Proskau, has been making some experiments on the EVAPORATION OF WATER BY PLANTS, the results of which he lately communicated to the Botanical Society of Berlin, from whose *Monatsschrift* we extract the particulars. A small plant frequently transpires daily more than its own weight. It has been generally accepted that the more a plant transpired the greater the increase of dry substance as compared to other individuals of the same species which have transpired less; but Dr. TSCHAPLOWITZ'S experiments go to prove that this is not necessarily the case—in fact the contrary was almost the rule, though the processes may go on actively at the same time. One set of experiments was with seedling Peas about an inch high at the commencement. These were placed in a vessel for water culture, which was filled with water, the necessary nutrient substances added, and the whole weighed. After carefully closing the vessel the height of the water was marked, and after the lapse of five days the apparatus was again weighed, and the loss reckoned as evaporated water. Then the vessel was filled up to the original height with water, and the whole again weighed, the excess being regarded as the increase in the weight of the growing plant. This operation was repeated every five days. Dr. TSCHAPLOWITZ is of opinion that the increase of dry weight moves subject to the same laws as the increase of the total weight.

—— From all that we can learn up to the time of going to press, there can be little doubt but that the EXHIBITION OF COVENT GARDEN PRODUCE, to be held at South Kensington on Wednesday next, will be a very successful affair. All the leading growers have signified their intention of showing the best examples they have of their special cultures; and we believe that the leading nurserymen also intend to contribute largely from their stores. We understand that Her Royal Highness the Princess MARY, Duchess of Teck, will open the exhibition at 1 P.M., and that in the evening the growers will dine together, at 7 o'clock, at the "Criterion."

—— The nineteenth *Report* of the East Kent Natural History Society has some excellent remarks on the proper function of local MUSEUMS as educational institutes, and not mere curiosity shops. A museum should, in some sense, be a better sort of text-book or library of reference on the subjects it professes to embrace. What should we say of a library half the books in which were irrelevant, as to subject, with the professed object of the collection, and wherein the remainder were ill-selected, worse assorted, and badly cared for? And yet this is the condition of affairs in most cases of the kind. The zeal of amateurs cannot be expected to last for ever, and their exertions are more likely to be discursive than systematic. What is wanted in most cases is a competent and well-paid Curator, with sufficient assistance at command, and with intelligent appreciation and encouragement to support him.

—— The relation which the various MINERAL INGREDIENTS OF PLANTS bear to the other constituents, and the office they fill, has received interesting illustration of late at the hands of M. BOEHM, who shows that, if lime be absent from the soil, the starch is less widely diffused and remains stored up in certain parts of the plant, instead of being generally distributed.

SHOBDON COURT.

SHOBDON COURT, the seat of the Right Hon. Lord Bateman, Lord-Lieutenant of Herefordshire, is much admired for its four handsome fronts, each varying from the other. It was built in the time of George I. by Viscount Bateman, in the Louis Quatorze style, but much more highly ornamented by the present Lord Bateman some fifteen years ago, with exceedingly handsome balustrades on the terraces at the east, south, and west fronts, and all round the eaves of the house. Here the geologist could at once remark upon the sad loss his lordship has sustained in listening in an evil hour to the persuasion of some architect or contractor to adopt Bath stone, which, on account of its more easy working, had been pressed upon him. It has already, and in so short a space, proved an easy prey to atmospheric influence, showing the noble proprietor that at vast expense the whole of this magnificent ornamentation must be renewed, next time most likely with the far more durable material dug from a quarry on the estate and without railway carriage.

The park is 3 or 4 miles in extent, and includes some very rich and picturesque scenery. Great admiration is always expressed at the size of the Spanish Chestnut trees, the Oriental Planes, the Cedars of Lebanon and the Atlas, one of the former measuring 18 feet in circumference, still in healthy growth, but its top gone with the hurricane, the other in stately growth and in full vigour, measuring 18 feet 10 inches; a splendid deciduous Cypress, and a fine yellow Chestnut, but unfortunately each damaging the other from proximity, the Chestnut tree having several large bunches of Mistletoe on its branches.

The old trunk of the Cedar tree on the lawn, some 20 feet high and still living, has a perfect bole, measuring at 4 feet from the ground 18 feet 2 inches in circumference. Another Cedar in the grounds below, at 5 feet from the ground gave the enormous circumference for a Cedar tree of 21 feet 8 inches. These trees are the finest in the country, and were probably planted about the year 1788.

The view engraved (fig. 72, p. 469), taken from the gravel-walk beneath the arched front of the south terrace, includes portraits of Lord and Lady Bateman, several members of the family, and the visitors staying in the house, assembled on the balconied terrace above. The members of the Woolhope Club are assembled below, ready to start for the park and woods, for the most part as pedestrians, some in a carriage, and his lordship soon following with a pony for the assistance of the Rev. M. J. Berkeley.

From the high ground at the top of Shobdon Hill, which rises above the deer park, in which is a large herd of deer, may be seen on the Herefordshire lookout the valleys of Teme, Lugg, Arrow, with the woods, hills, and dales around Ludlow, Leominster, Weobley, Hereford, and Kington—the Malvern, the Dinmore Hills, Garnston, Foxley, the Meerbatch Hills, Moccas country, and behind the two last-named the Black Mountains; glimpses, too, of the Abergavenny Hills, of the Brecon Beacon, and other prominent landmarks. When the summit is reached, and the eye gazes in the opposite direction on Radnorshire, Montgomeryshire, and Shropshire, the vales of Lingen and Presteigne lie just underneath, while the country of Caractacus' retreat, Wapley, Coxwall Knoll, Croft Ambury, Brandon Camp, Caer Caradoc, is all within range. Some there were who saw the Wrekin: enough for us that we saw the Clees over Ludlow, with Bringewood Chase and the High Vinnals a little nearer to our standpoint. The Church Stretton Hills, and Caradoc, and the Longmynds were clearly visible, and the road leading up to them, through a park of several miles, was bespread with fine Scotch Firs and other trees and innumerable fungi.

On the way from Kingsland station to Shobdon Court, at 2 miles from the former, near a milestone at the junction of four roads and the old hostelry named from the *locale*, is the pedestal which commemorates the bloody battle of Mortimer's Cross, fought here from morn till eve, on Candlemas Day, 1461, when the Yorkists defeated the Lancastrians under Tudor, Earl of Pembroke, and secured the ascent to the throne of the Earl of March. It was the last great battle fought within the county.

A very curious circumstance may be here mentioned in reference to the hawfinch. Just before the members of the Woolhope Club arrived at Shobdon last autumn Lord Bateman picked up at the front door, quite recently killed, a fine specimen of the hawfinch, which had flown against one of the plate-glass windows to its own destruction. This rare bird has not been unfrequently found, and breeds some years in Herefordshire. It is an inhabitant of the more temperate climates of Spain, Italy, and France, visiting this island occasionally, and most generally in winter. These birds vary in plumage very much, scarcely two of them being alike. It is hoped the specimen will find its way to the Hereford Museum.

The church stands near the mansion, on the site of the former edifice. The old church was built by Oliver de Merlimond about the year 1140. It is said that Hugh de Mortimer gave Shobdon to his chief steward, Oliver de Merlimond, in the reign of King Stephen (A.D. 1135—54), and that the latter immediately proceeded to build a church. A little chapel of wood was the only ecclesiastical building which had previously stood there.

The style of the architecture of this ancient church, and the peculiarities of its sculpture, differ from the general character of that which is known to be Norman. There is much more refinement in the design generally, and more truth in the sculptured forms of the different living beings represented, than is seen in the character of the Norman period, and there is a

high artistic feeling in the composition of the whole, as well as in all the leading features, which would induce us to conclude that it has more of the character of the very early Irish school of design, of which we have but few examples left. Oliver de Merlimond also founded a small priory for canons near the church, which was afterwards removed from Eye, and finally to Wigmore.

In 1753 the old church of Shobdon was pulled down to make way for the present modern structure, the old tower being the only part retained; but even then the sculptured columns and arches were considered so extraordinary that it was determined to preserve them, and they were re-erected in their present position in the park.

THE ROYAL HORTICULTURAL SOCIETY.

MANY times I have felt disposed to express the very decided views I hold concerning the present position of the Royal Horticultural Society, because I believe my views to be largely held, and to govern the action of lovers of horticulture throughout the country. A little while ago, when I saw that "last letters" were being written, I determined to hold my peace, but since then the letters of Mr. Gilbert, Mr. Veitch, and Mr. Wilson, have in a measure challenged the gardening public to say why they still decline to be charmed by the guinea membership. There is scarcely a village in England that does not contain one amateur gardener at least, and the Royal Horticultural Society should attract all these. How is it that it does not? I will shortly tell you. First let me ask what the Society does; and, secondly, let me point out what it ought to do. First, what it does.

1. It keeps up a fashionable and costly lounge at South Kensington.

2. It patronises and promotes flower-shows.

3. It gives prizes for new plants and for successful culture.

4. It keeps up an experimental garden at Chiswick. Now what are these doings worth? What South Kensington is worth we all know. It is a terrible drain upon the resources of the Society—a drain which diverts all its energies from its proper work and which will go on so long as the Society is controlled by the debenture-holders, who naturally decline to see that they have lost their money, and who, not very unnaturally, prefer the distant hope of a dividend to the immediate interests of horticulture. The debenture-holders decline to give votes to the "guinea men," because they know that the "guinea men" would vote for horticulture first, and for debenture-holders in the second place.

2. Flower shows, or "floral *fêtes*" as we now call them, may be valuable to horticulture, they are certainly valuable to large nurserymen, who very properly find in them their best advertisements. Most of us, however, think that it is this very tendency to catch at popular applause, to prostitute horticulture to gala purposes, which led to South Kensington, and which has wrecked the Society. We all know what large flower shows lead to—to the hacking about of huge plants from show to show, and to the encouragement, not of methodical gardening at home, nor of a genuine and wider love of the art, but of cultural quackery, and of the manufacture of "pot-boilers" for exhibition abroad. The Royal Horticultural Society has at South Kensington and elsewhere fanned the vulgar desire for these ostentatious galas, and now proposes to extend this policy.

3. The prizes and certificates are, on the whole, fairly and worthily given, and enable importers and growers to reach the public, but they could be given without a Royal Horticultural Society.

4. Chiswick.—I am sick of hearing of Chiswick. Chiswick is the one argument to silence us all. "Look at our experimental garden." Well, let us look at it! What has been done at Chiswick? Nothing. Some one lately dared derision by saying that Chiswick was not only justified in itself, but justified the Society in all its doings, because some one had classified some Apples there. All the world knows, or may know, that there is no method at Chiswick for which a trained man of science could profess the faintest respect, and as for the empirical art of horticulture, I do not hesitate to say that more experiments are made in a month by such men as Mr. Speed, Mr. Denning, Mr. Stevens, Mr. Ingram, and many like them, than are made at Chiswick in a year. So much for the "bread to the sack." Now what, on the other hand, do we expect of a Horticultural Society? Many things; here are some of them.

1. To hold meetings in London, such as are held by the other learned societies, for the reading of papers and discussion. This would lead, of course, to the publication of a proper series of valuable *Transactions*, and to the proper functions and management of a great special library.

2. To form and endow chairs for Professors of horticulture and allied subjects.

3. To establish in London or at Chiswick a system of lectures, which would soon lead to the formation of a horticultural board or college, whose certificates would be earnestly sought after by the younger professional gardeners.

4. To send lecturers in the winter months to deliver courses in other towns and at large establishments. Such lectures, I am in a position to say, would be cordially welcomed by the chief head gardeners in England.

5. To offer cups and prizes, not for gala competitions, but for those gardeners whose whole establishments, large or small, would best bear judging for general system, neatness, cultural excellence, and experimental results.

6. To hold a general summer gathering, like the gatherings of the Archæological and other societies, where the reading of papers and general discussions would be arranged, and where horticulturists would meet, compare notes, and form mutual friendships.

7. To hold fortnightly meetings, as at present, and to give medals and commendations, as at present.

In a word, the function of the Horticultural Society should be to promote high culture and the introduction of new plants, to reduce the empirical or rule-of-thumb knowledge now possessed by our chief gardeners to some kind of scientific system, and to educate the rising generation of gardeners in the science of botany and the art of horticulture. The journals week after week are full of the conflicting opinions of leading gardeners on the commonest subjects—such even as Grape growing. Methodical investigation should and could settle these doubts, and explain these difficulties once and for all. Can our Royal Horticultural Society point to one single doctrine ever discovered and settled by it since it was founded? My scheme will be said by your readers to be ambitious. It is. My horticultural aspirations soar beyond the successful management of a gala, and beyond the delights of a lounge in a fashionable garden. *T. Clifford Allbutt, Leeds, April* 6.

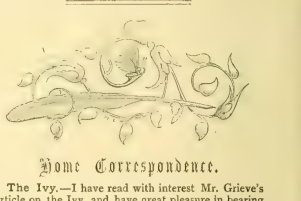
[We print this letter as we believe it expresses opinions which are prevalent in the country; but we do not agree in the writer's estimate of the value of the work done at Chiswick, though we would willingly see that improved. EDS.]

THE JERUSALEM ARTICHOKE.

I HAVE more than once given out intimations that I had reason to believe that this esculent originated in the valley of the Mississippi, from a species of Sunflower (called Helianthus doronicoides by Lamarck), which is common there. The reason is (1) that the foliage, flowers, and mode of growth of this wild species are much like those of the cultivated Artichoke, except that the tubers are long and slender—are commonly rootstocks rather than tubers. (2) But having planted these, and raised them in the garden for a dozen or fifteen years, I found that some tubers are long and narrow, and rather tough, while others are good "Artichokes." It is possible, however, that they had got mixed with the old cultivated plants, some of which grew near by. (3) But last autumn Professor John M. Coulter sent me, from Indiana, roots of the wild Sunflower in question; and I noticed that while some were quite like my original stock from Kentucky, others were shorter and thicker, and a few were to all appearance good Artichokes.

Now Linnæus, in the *Species Plantarum*, gives Brazil as the native country of Helianthus tuberosus, the Jerusalem Artichoke. We can trace the origin of this misconception, but, without entering into details, we will only say that these Artichokes no more came from Brazil than they did from Jerusalem. But Linnæus, in an earlier work (the *Hortus Cliffortianus*), says they came from Canada. That, on the other hand, seemed to be too far north; but I have thought it probable that they reached Europe by way of Canada, and Canada by way of the Great Lakes and the Mississippi or Ohio. But I had not ascertained that any of our Indian tribes knew of this tuber, and had ever cultivated or used it. That was because I had not investigated the question as I should a botanical point, and because I did not apply to the proper source for information. The reference to a statement in Palfrey's *History of New England* made it apparent that there was evidence upon this point somewhere in existence; and an inquiry made of our most learned scholar in Indian lore, Mr. J. H. Trumbull, of Hartford, Conn., now brings the facts to-light.

It appears that Sagard, in his *History of Canada* (1636) and in his *Grand Voyage*, mentions, as among the provisions of the Hurons, "roots that we call Canadiennes or Pommes de Canada, and that they call Orasquienta, which are not very common in their country. They eat them raw as well as cooked," &c. He mentions Potatos ("potates") which he had seen on board an English vessel, and which, "they say, if cut in pieces and planted in the earth, in short time grow and multiply, like the Pommes de Canada."—This seems to show that the Huron Indians had Artichokes in cultivation. Still earlier, viz., in 1612, Lescarbot, in his history, mentions roots found in the country of the Armonchiquois (Canada and Northern New England), as big as Turnips, which were excellent eating, of a flavour reminding one of Cardoons, and which, when planted, multiply in a marvellous fashion. Possibly these may be the tubers of Apios tuberosa, or ground-nut, but the account agrees much better with Artichokes. Now the evidence which the old herbalists furnish, and which Mr. Trumbull has looked up, make it clear that Jerusalem Artichokes went from Canada to Europe within a dozen years after the first settlement of Canada, viz., at Quebec. I cannot here enter into particulars; but suffice it to say, that the plant was received in England, "Anno 1617," and Italy, early enought to have got the name "Jerusalem Artichoke" established at the date of Johnston's edition of Gerard's *Herball*, 1633; for this Jerusalem is doubtless an English corruption of Girasol, sunflower; and the plant was at a very early date cultivated in the Farnese Garden. *Asa Gray, in the "American Agriculturist."*



Home Correspondence.

The Ivy.—I have read with interest Mr. Grieve's article on the Ivy, and have great pleasure in bearing testimony to its usefulness and beauty when associated with buildings. Here nearly half the Castle is covered with it, and the plan pursued is to drive into the wall, about 2 feet apart, large clout nails diamond pattern, and from nail to nail is worked copper wire, simply twisting it round the neck of the nail, and passing on to the next. The wire is thus about 2 inches from the wall. The variety used is what is known as the Irish Ivy, which is by far the best for lofty buildings. The Ivy loves good soil to start in, and plenty of moisture, when it will soon reach a great height, the same as it does here, and will look beautiful all the year, as well as toning down a great mass of masonry. It also unquestionably has a great tendency to render any building dry and warmer in winter. We cut the Ivy here annually the first week in April, with a sharp scimitar sort of hook, and the leaves cut off are carried to the deer in the park, who enjoy the change of food. In a very short time after cutting abundance of fresh leaves are formed, giving to the building a pleasing appearance all through the following summer and winter. The great advantage of the nails and wire as described is that it completely secures the plant to the wall, and although a "south-wester" comes up from the coast occasionally at the rate of 90 miles an hour, yet the Ivy is very seldom displaced, and looks after its washing as fresh as a Daisy, notwithstanding some of it being sixty years old. Some of the variegated varieties are very beautiful, and also many of the small green ones are very neat, but they are best for walls and buildings under 20 feet, and where their beauty is best seen when one is close to them. *J. Rust, Eridge Castle, Tunbridge Wells.* [We prefer algeriensis, as being, in our experience, the quickest grower. EDS.]

Orange Blossoms.—I saw a question asked a few weeks ago, relative to the origin of the custom of placing Orange blossoms in bridal wreaths, and think I can now throw some light on the subject; for the Rev. James Niel, author of *Palestine Re-peopled*, when giving a most excellent lecture at Petersfield a few evenings ago, told us that the "Apples" mentioned in Scripture as growing in Palestine were really Orange trees, and that the bride in the days of Solomon was decked with their blossoms; the figure "Apples of gold in pictures of silver," was also an allusion to the Orange, which bears fruit and blooms at the same time. *Helen G. Watney.*

Potato Planting. — I cannot say that Potato growers are having a good time yet. The winter proved to be an exceedingly trying one for keeping the tubers, and its comparative mildness induced a good deal of premature sprouting, much to the injury of the seed; and now that the planting time is upon us, and the fast passing days urge that the work should be done as speedily as possible, we are having heavy rains in such frequency that scarcely is the surface of the soil dry before it is wet again, whilst beneath it is still very heavy, wet, and cold. As the time is so desirable for Potato planting that it is better to wait a little than plant in the rain; but now the waning spring renders the planting a matter of necessity. Some persons who have no fear of late spring frosts before their eyes got in their tubers during the dry weather in March, and if no late frost come they will be fortunate people; but as we have late sharp frosts five years out of six, all Potato haulm through the ground at the end of April stands but a poor chance of escaping. All through the market gardens Potatos are being got in as fast as the weather will permit, the plough and the dibber being the most potent agents in planting. As fast as the ground is turned over men follow behind with the dibbers in every third furrow, and women drop in the seed. Others fill the holes in, and soon afterwards a harrow is sent over the ground, and all is finished. In this way a large breadth is soon got in. *A. D.*

Double Daisies.—Some of the most pleasing of spring garden flowers are found in the pretty double Daisies, a few of which may be found in almost every cottage garden in the kingdom. It is perhaps quite correct to say of the Daisy that it is too common and too easily cultivated, and, because of these simple advantages, it is perhaps somewhat despised by many gardeners. Yet there are properties in the Daisy that should render its cultivation more generally favoured; there is considerable variety in colour of the flowers, singular suitability in habit of growth for use as bedding, ribbon bordering, and edging, whilst in the majority of sorts the flowers are so double and of such excellent form as to present capital models for florists who may be striving to improve things which need development. The Daisy has in the White Globe and Giant White purity of colour that might vie with the snow-wreath, whilst in the Sweep and Bacchus are found sorts that in comparison are blood-red, and furnish a rich glowing tint that is of great effect amidst the too common pinks, yellows, blues, and whites of our hardy spring flowers. Although the Daisy does not depart from the two primary hues of red and white, yet in many flowers these are so blended as to produce some very charming shades of rose and pink, two of the very best of these mixed hues perhaps being found in Rosy Gem, a large flat-petalled kind, having white petals heavily suffused with rose, and Early Gem, a large quilled kind, in which the two colours are about equally blended and produce a lively pink. A batch of seedlings not infrequently give some excellent double flowers, and some of new form or colour. In this way persons may soon secure stocks of sorts quite new and distinct. The tendency of the Daisy to sport is found in the existence of the variegated kinds which have thus originated. *A.*

Waltham Cross Grape.—I would have written you in answer to "H. F. C. G.," but hoped that some one else would have had something to say on the subject. Your correspondent says that he knows "one or two noted Grape growers who have completely failed with it," but this information is of little value unless he would say in which way they had failed. He only gives us his own experience, and the fault with him is that Waltham Cross is a shy bearer. This statement surprises me, for here at Loxford Hall we have two rods of it, and for two seasons nearly, if not all the laterals bowed three bunches each, and such bunches they were, each from a foot to 18 inches in length. My own experience as I have seen it at Waltham Cross and here is, that it is one of the most free bearing sorts we have. It may not do well as a pot Vine, of that I have had no opportunity of judging, but from the drift of your correspondent's letter he has only grown one cane of it as a pot Vine, which did not show fruit. Surely this experience was not enough to condemn a new Grape upon. As Mr. W. Paul exhibited it at South Kensington, the Fruit Committee could not do less than grant it a First-class Certificate. I saw the bunch and tasted the fruit, and from that did not hesitate to order a cane. I believe the same bunch was figured in the *Florist and Pomologist*, and I should say that the artist has done it less than justice. As you have already alluded in flattering terms to the fruit grown at Loxford it does not become me to say more on that head, except that none of our bunches come near in appearance the noble one shown by Mr. W. Paul. Your correspondent also very kindly tells the Fruit Committee how they ought to do their work. "They should have grown specimens of the fruit before them." Surely if he is a practical man he must know this is impossible, unless the Vines are grown in pots, or unless the committee visited the garden where the fruit was growing. The first method would not do justice to the Grape, and no committee would undertake the other. Still, I believe many "noted growers" visited the nurseries of Mr. W. Paul, and were quite satisfied with the Vines at Waltham Cross. Further, the following valuable information is freely tendered to us:—"There are several good practical gardeners on the committee who could tell at a glance whether a Vine was likely to be fruitful or not." No gardener, or "noted grower" either, could tell this unless it was in fruit or showing, and then a child could tell just as well. *F. Douglas, Loxford Hall, Ilford, E., April 9.*

The Rose House at Gunnersbury.—In your issue of June 3 last, "R. D." describes a new Rose-house at Gunnersbury in which the plants are planted out in beds; it would be much to my interest just now to know what the results have been up to the present time, have the plants been forced at all, and if so, how does their produce compare with pot culture? Doubtless in quantity and quality they are equal if not superior, but are they as much under control? Can they be bloomed as early in the season? The relative qualities of the varieties grown would also much oblige. *An Amateur.* [In order to reply fully to the queries of "An Amateur" I have just inspected the Rose-house at Gunnersbury, and I am bound to say the floral sight is now a most attractive and instructive one. The house is yielding from 400 to 500 beautiful blooms per week, and cutting has gone on uninterruptedly since January. The Roses were pruned about December, the house was shut up close for a fortnight, and then fire-heat was employed, and it has been continued ever since. The produce compares in the most favourable manner with flowers obtained from plants in pots. While I was in the house I saw some splendid blooms of Maréchal Vaillant, Charles Lefebvre, Dupuy Jamain, Madame Victor Verdier, Gloire de Dijon, Bouquet d'Or, Madame Jules Margottin, Madame Faicot, President, and Cheshunt Hybrid, the last-named a splendid Rose for house-work. The plants are all planted out in raised beds 2 feet in depth, and though the roots may have gone away beyond the confines of the house in some instances they are perfectly under control. The constant cutting keeps the plants pruned to some extent, and, after the flowers are removed from the ends of the leading shoots, lateral buds break forth freely and produce blossoms. The Gunnersbury house is one of the most successful illustrations of Rose culture under glass to be met with around London. *R. D.*]

Lobelia Emperor William.—Permit me to say a few more words in reply to Mr. Bester's statement at p. 376, wherein he admits that I have given a true history as to the origin of this variety, and yet claims the credit himself of being the raiser of it, which I emphatically deny. He also infers that he gave Mr. Brownsell a pinch of the seed from which he raised it, which is an erroneous statement, as the packet of seed from which it originated was purchased by Mr. Brownsell for 1*s.* in February, 1872, which was two years and a-half previous to its gaining the certificate; and in the spring of 1873 myself and others in this neighbourhood were in possession of it before Mr. Bester had even seen it. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Lilium giganteum.—Though this Lily may be flowered in a pot, it is extremely doubtful whether so vigorous a growing plant can do as well under such treatment as when planted out. About three years since I bought two rather small bulbs, one of which was planted in an open border in light sandy loam with a spit or two of well-rotted manure dug in about 2 feet below the surface. It was then left undisturbed, and early last autumn the plant flowered, when the stem measured 7½ feet high and 11½ inches in girth at the base, bearing fifteen blooms. The bulb being completely exhausted, as I believe is invariably the case with this Lily after flowering, has left behind six offsets, and in removing two of them last year I found the roots of the old bulb were very large and penetrated deeply into the soil. The other bulb was potted, and though it has been throughout under the care of a most experienced gardener, is not yet sufficiently strong to bloom. *Charles T. Knight, Sevenoaks.*

Double Narcissi.—When I sent you the double and single forms of N. Telamonius on March 28, I promised to send you the double and single forms of N. Pseudo-Narcissus. These are collected bulbs, that is to say, the double and the single are found growing more or less together. You will see they are far removed from the Telamonius. I have only met with the double in any quantity in one part of England, but have had stray flowers found in the fields, sent from other correspondents, but so rarely, that one of my correspondents and his son searched for hours, and only succeeded in finding two. I may remark that, in cultivation—or, perhaps, I ought to say, on my soil—the plant loses that chasteness which it possesses in the wild state, from having the trumpet generally complete and full of petals. Indeed, the tendency in the wild state is to be semi-double, as in one of the accompanying specimens; whereas in my soil the tendency is to increase in doubleness, and to develope a rose flower instead of a trumpet. I find this the case also with the double form of Telamonius, and the double form of cernuus. This latter, growing on stiff loamy soil, invariably retains the trumpet perfect. The specimens I send of the double, Parkinson calls Pseudo-Narcissus anglicus florepleno—Mr. Gerrald's double Daffodil, who, Parkinson states, first discovered it to the world, finding it in a poor woman's garden in the west part of England, where a few years before the woman came to dwell there; and he goes on to say—"I have heard since it is natural to the Isle of Wight." The specimens sent are the most varied I could find, the semi-double ones being almost the only ones in the quarter semi-double. *P. Barr, 12, King Street, Covent Garden.* [In several of the specimens sent the flower is so completely full that the trumpet portion is altogether obliterated. Eds.]

The Wettertanne.—Some time since one of your correspondents asked the question, What sort of tree is the Wettertanne of the Alps?—to which, as far as I have observed, no answer has been given. Allow me to give in elucidation of this subject some extracts from a chapter on the Wettertanne in *The Alps*, by Berlepsch, translated by the Rev. Leslie Stephen. It will appear that the word does not signify a species of the Pine or Fir, but a Pine tree of peculiar shape and abnormal growing to resist, from the weather, combined with great innate vigour. "The higher boundary of the forest lies behind us. It reaches to 5000 or 5500 feet above the sea. Higher up the mountains are only fresh green alpine pastures, with short close turf, interrupted occasionally by scattered belts of wood and single Pines and Larches. To these bold outposts of the forest belongs especially the Wettertanne, or Weather-Pine. The Wettertanne, which rises in isolated positions on the alpine meadows at heights of 6000, and in the Grisons of 7000 feet, is a hermit grown up by itself . . . a solitary tree on an alpine pasturage, which, as implied by its name, has a thoroughly weathered appearance. It is generally a Pine, whose heavy and far-extended branches begin a few feet from the ground, and in the normal shape; the form is repeated by the young branches up to the top, forming a thickly wooded and sheltering roof. Often, however, it is a form which sets at defiance all common laws of growth . . . It does not look like one tree; it seems to be six or eight trees round one maternal stem—a true family of Pines. Here and there a light coquettish shaft has been metamorphosed into a rough knotted cylinder of compressed and deeply marked growth. Its noble striving after its law of vertical growth may still be traced, but its unfavourable outward circumstances—storms, avalanches, and thunderstorms—have pecked it about, broken it off short, and amputated its limbs, that it is covered over and over with rents and deeply scarred wounds, full of knots and malformations. But still he fights his way up with irresistible power of vitality—a noble fellow, full to the brim of energy, manly and inflexible, a character in whom every honourable man must take pleasure. And then the boughs, they have the same nature, the same push at all hazards as the stem. Every little twig stands up for his own independent rights, and will be a bit of a tree on his own account. It is an illustration of the proverb, *Wie die alten jungen, so zwitschern die jungen*—As the old ones sung, still twitter the young. Quite unlike the horizontal boughs of the lowland Pine, these boughs, after a short level shoot outwards, turn like a swan's neck upwards, and grow vertically, like a little Pine with its roots in the air. But the boughs do not stand equally all round the stem, but on one side, where the lightning has scored and crashed, or the storm cut out the limbs, they are wanting, whilst on the opposite side boughs and leaves grow more intensely and more closely packed. Here and there withered dead stumps of boughs strike out, and help, with the long beardlike lichens, to give a wilder expression to the whole

picture. . . . A colossal specimen, three-pointed, like a hand raised for an oath, stands in the Valzeiner Alps (at the entrance of the Prätigau, Grisons), whose stem, 44 feet from the ground, is 7 feet in diameter. . . . It is yet a benevolent, hospitable tree—a *hospice* erected by Nature, with shelter and asylum, to whose protection the cattle fly when sudden black storms are brewing, rain clouds discharging their burdens, or hailstorms rattling down in thick masses. But also in the sultry height of summer, when the sun is near the zenith, and over the whole broad alpine meadow no shady spot is to be found, the cattle intuitively seek the Wettertanne, and couch comfortably in its cool, refreshing shadows. To this double service in good and bad weather it probably owes its name as much as to its appearance." I have only to add to this extract that by "Pine" Berlepsch seems usually, and no doubt in this place, to mean in particular the Pinus Cembra. *John M. Gillington, Knap Hill, April* 9.

Mistleto. — Considering the interesting nature of this parasite, and its exceedingly ornamental character when seen clinging to the branches of otherwise bare, leafless trees, during the winter months, it is a wonder that worked plants of it are not more an article of commerce among nurserymen who make trees and shrubs a speciality of their trade. In parks and dress grounds a few trees having a certain portion of their branches laden with the above would be a most interesting feature, and as it is such a very easy matter to get it established, and the present the proper time to set about its propagation either by grafting or seed, any one desirous of introducing it should at once set about it by one or other of these methods. Although the Mistleto does best on the Apple, Pear, or Lime, it succeeds on many other kinds of trees, even to the Oak, but its presence on this appears to be of as rare occurrence now as it was in the time of the Druids, when it was held in such veneration. Where suitable trees abound, it might be found a very profitable plant to grow, thus combining utility with ornament, as there is always, and is ever likely to be, an immense demand for it, so largely is it used for decorative purposes at the festive season of Christmastide, when in certain circles it gives license to swains and blushing maidens, and causes a good deal of hilarity. In places where Mistleto once gains a footing the seeds are carried from tree to tree by the birds, who in devouring them frequently find themselves incommoded by the viscid flesh that sticks to their bills with glue-like tenacity, and to rid themselves of it they wipe their beaks on the branches, thus depositing any seed that may at the time be adhering to them. If we wish to introduce this novel plant we have only to imitate the sweet songsters of our woods, and stick the seed in like manner on any clean young branches of the particular tree on which we wish to have it grow. Success depends a good deal more on having the berries ripe than on anything else, as it is just as impossible for the seed of Mistleto to grow in an immature state as it is in the case of any other plant, and many have given up all attempts to get it established through repeated failures resulting from gathering the berries at the wrong time. One might as well collect those of the Holly while green, and expect them to grow, as to get the Mistleto before March, at which time they are fully ripe; and as the winter has been so exceedingly mild the berries have remained unmolested, so that the present season affords an excellent opportunity of obtaining them in a state in which they will be likely to germinate. Those who have to get them from a distance should see that they are sent just as they are gathered from the plant, and directly they arrive, at once placed in the branches of either a Thorn, Crab, Lime or Apple: but it is useless doing this on the thick hard bark, the cuticle of which the germ of the seed cannot penetrate. Choose, therefore, nice young branches on the most prominent part of the trees, and on these stick the berries by simply bruising the skin so that the viscid flesh may be rubbed on and cause the seed to adhere. If placed on the under sides of the large twiggy shoots, they are more safe from the keen eyes of birds, and it is quite as well to ward these off by tying a piece of thin muslin around the branch so as to cover the seed, thus making success almost a matter of certainty. It is very interesting to watch the swelling and germinating process through its various stages, so that, independent of the beauty of the plant and its novel character, there is much pleasure to be derived from it almost immediately after the seed is placed in a position favourable to its growth. Mistleto may also be propagated by grafting, which should be done in April or early in May, but as this is a difficult operation to perform, and there is not much gain in point of time, it is scarce worth the trouble unless any one attempting it is pretty well skilled in that branch of gardening. Like most parasites, the Mistleto is a great robber, living at the expense of the tree to which it attaches itself. It will therefore be advisable in introducing it to the Apple orchard to confine it to such trees as are not of much value, as their fruit-bearing powers will not be so great when they have to support a plant that causes such a drain on the sap and is constantly taxing their energies. *J. Sheppard.*

Potatos.—During the last season, an experiment as to raising the haulm from the ground succeeded so well (or, at least, a lesser quantity of disease coincided so completely with the Potatos treated), that possibly some of your readers may be inclined presently to try the plan. Looking at the influence which damp was shown to have on the spread of Peronospora, I had lines of strong tarred twine taken at about 22 inches from the ground between the rows of Potatos, the cords supported by stout pegs, so that the haulm was kept from lying on the ground during its whole life. The arrangement allowed warmth of sunshine and free passage of air between the rows for some weeks longer in the early stage of growth than is usually the case, and by occasionally nipping off some of the tips of the shoots they were kept in manageable length, and had healthy foliage (not disfigured as usual by yellow and decaying leaves in large numbers), till in the natural course of things it withered in autumn. At Christmas, when the few months of storing had tried the crop, the Potatos which had been grown as usual were for the most part diseased, but those which had been grown with the raised haulm had only a small percentage bad, and continue in excellent condition for household supply. The sorts experimented on were Paterson's Victoria (a kind particularly affected by disease in the same garden the previous year), and a few lines of Jersey Blues. Of course, the comparative absence of disease may be only from coincidence, but I hope to try the experiment again this year on a larger scale; and if some of your readers should be tempted also to experiment, and would kindly give the results, it would be of much interest. *O.*

Silene Hookeri × S. Elizabethæ.—I wrote on the evening before a meeting of the Royal Horticultural Society, for me to be submitted to the Scientific Committee, and in great haste to catch the post, a notice of the above hybrid, and of a cross I effected thereon, but without reading over what I had written. I found on reading it over in your publication of March 24, giving a report of the meeting, that, having left a word unfinished, I had made a mess of it; yet, as the sense was obvious, I did not think it worth troubling you to correct it. But there was a more important mistake, unintentionally committed, about which Mr. Thompson, of Ipswich, fortunately and justly finds fault, and asks me to get the same corrected in your columns. I had got the Silene Hookeri from Messrs. Backhouse & Son, and believing it to be so, I stated that it was an introduction of theirs from Oregon. Mr. Thompson writes:—"Now, as this plant was first introduced by myself from California, and supplied by me to them (Messrs. Backhouse & Son) on more than one occasion, I hope you will not think me unduly sensitive if I ask a rectification on the subject. I am aware that Messrs. Backhouse had, subsequently to my introduction, some plants sent to them, but I was informed that they arrived dead. As I was the first to raise and offer it for sale, I hope you will not think I ask too much in begging that this may be put on record in any way you may think fit. I did not know it occurred in Oregon, but it is certainly by no means improbable." I cheerfully comply with Mr. Thompson's request, and think it but common justice that he should have the credit of introducing the S. Hookeri as a living plant into this country; and all the more do I hold him entitled to this acknowledgment and correction, that in his annual catalogues I find the descriptions of his many very important introductions set down with exemplary modesty, and rarely, if ever, overstated. But the plant was no doubt found in Oregon; for Dr. Hooker, in his account of it (*Bot. Mag.*, tab. 6051), observes that it had been discovered some forty years ago in woods of the Wahlamet, in Oregon, and has been gathered repeatedly since by various collectors in different parts of Oregon and California; and he adds that Professor Bolander had sent seeds to Mr. Thompson, of Ipswich, who forwarded living specimens to Kew, which flowered there in May, 1873. With all its beauty it is, coming from California, rather delicate for our climate; and it is to be hoped that Mr. Thompson may succeed in getting it from Oregon, whose severer climate will insure greater hardihood. *J. Anderson-Henry, Hay Lodge, Trinity, Edinburgh, April* 11.

Rainfall in 1876 at Fota Island, Co. Cork.—The rainfall recorded here was:—January, 2.32 inches; February, 5.09; March, 3.59; April, 3.28; May, 0.11; June, 1.01; July, 1.39; August, 3.29; September, 6.83; October, 5.40; November, 7.25; December, 8.10—total, 47.64 inches. The number of days on which rain fell were:—January, 13; February, 20; March, 15; April, 13; May, 2; June, 9; July, 5; August, 11; September, 16; October, 16; November, 21; December, 24—total, 165 days. The coldest day was January 22, 19°; and the hottest, June 26, 90° in shade. Although we had a very dry summer the rainfall was over the average by several inches. *W. Osborn, Fota.*

Foreign Correspondence.

CAMBRIDGE, MASS.: *Acclimatisation.*—There can be, judging from past failures in acclimatisation, but little hope that plants can be accustomed, save by the very slow process of natural selection, to new conditions of temperature. But there is much to be gained by cultivators if it is borne in mind that individuals of widely spread species vary to a remarkable degree in their power to withstand cold, and that this power is increased in proportion to the distance at which the parent plant is found from the Equator, or above the level of the ocean.

But few references in garden literature to this subject have come under my notice. In the volume of the *Gardeners' Chronicle* for 1861, p. 239, the Editor, commenting on the severe winter of 1860 61, notices that in a lot of seedling Araucarias a portion have been killed, while the rest are uninjured. This is accounted for on the supposition that the seed from which these plants had been raised had been collected in widely different localities and elevations, and that those seedlings only which had been raised from seed collected at high elevations, or towards the southern limits of the species, had been able to withstand the severe ordeal of the English winter. In the same article importers of seeds of certain not very hardy plants are very sensibly advised to procure their supplies from the coldest regions in which these plants are known to thrive naturally.

In the volume for 1876 Mr. Maw calls attention to the fact that certain herbaceous plants, principally Sedums of the Mediterranean regions, are more hardy in his garden when brought from the coldest localities where they are known to exist, than are individuals of the same species collected in Barbary and Algeria.

I find no other allusion to this important subject, for the fact that seeds of certain trees, especially of the Scotch Pine and the European Larch, are more robust when collected under certain favourable circumstances, and which has been noticed by most recent writers on arboriculture, is hardly analogous, and can be sufficiently explained in other ways. It is well, then, to chronicle a conspicuous example of this power of certain individuals of a species to withstand a much lower temperature than others, which has come under the notice of American dendrologists. Experiments extending over many years have proved that two Conifers from the Pacific coast, Abies Douglasii and Abies Menziesii, were unable to withstand, with any certainty, the severe winter of the Northern Atlantic States, and their cultivation had practically been abandoned there. In 1862 Dr. Parry visited the mountains of Colorado, and sent here a large collection of plants and seeds of that region, and among them seeds of these two Spruces, which form vast forests on the eastern slopes of the Rocky Mountains, ascending to fully 9000 feet above the sea level.

The plants raised from this seed have now stood the test of a dozen years of exposure here without the slightest injury, although within that time several winters have occurred remarkably destructive to plant life. With a view of making the experiment as complete as possible these young plants have been widely distributed through several of the northern States, and without exception, so far as I have heard, not a single one has ever been at all affected either by the climate or the very different soils in which they have been planted. So then it is only necessary to go to the highest elevation where these trees grow, to collect the seed, and we add at once to the short list of Conifers capable of supporting the New England climate two trees of first-rate importance, although all previous efforts with these same species had been unsuccessful so long as the source of the supply of seed had been the lower elevation of the Pacific coast range. The importance of Dr. Parry's introduction can hardly be exaggerated. It has already supplied us with valuable and unhoped-for material for our plantations, but its true importance has a wider significance in the fact that it furnishes another indication that it is a general law of plant life that different individuals of

the same species vary remarkably in their adaptability to different climates—a law which, in imposing new duties on experimental horticulture, promises to its observers results of the greatest practical value. *C. S. Sargent, Cambridge, March*, 1877.

Notices of Books.

Die Pflanzen-Welt Norwegens, &c. (The Plant World of Norway.) By Dr. Schübeler. Christiania: Brögger. (Williams & Norgate.)

The first part of this very valuable contribution to the literature of cultural botany appeared some years since, and was issued in an English version, under the title of *Synopsis of the Vegetable Products of Norway*. In the present publication we have a systematic account of all the more important wild and cultivated plants of Norway. The subject is treated, not from the point of view of the descriptive botanist, as in the ordinary Floras, but in a form which will excite interest in the general student of natural history, and satisfy the wishes of the intelligent cultivator of plants or student of economic botany, as well as of the historian, the philologist, and the jurist. We have in this way an account of the general and topographical distribution of the more important species, details relating to the use made of them, the method of cultivation adopted, as well as historical details and other matters of interest. For instance, in the case of the common Elder, we are told that it grows wild as far as the 63° N. lat., while in a cultivated state, or as an escape from cultivation it extends to lat. 67°, flowering in the latter part of August or beginning of September. At Drontheim, in lat. 63°, it produces ripe berries. The largest Elder in Norway is in lat. 58°, on the S.W. coast. It is about 26 feet in height, with a diameter of head of 25 feet. The names of the cultivated varieties are then given. Under the head of Roses the author mentions a Rose which produced on the same shoot a white Moss Rose, and a second Rose, destitute of moss, and resembling a bloom of the common Rosa canina. This is by no means a solitary instance, but such cases are always deserving of record. Illustrations of some of the more peculiar varieties and forms of Conifers and other trees are given, which add greatly to the interest of the book, and bear witness to the almost unmatchable vitality of trees in certain cases. Some of the woodcuts showing trees which have been overthrown by the wind are instances in point. In some cases the felled or uprooted trunk has rooted at both ends, and from the centre have sprung "laterals" which have assumed large dimensions, and at the same time reproduced the form of the parent tree. In the appendices are given alphabetical lists of the plants, with their polar limits of distribution, other lists showing the period of opening of flowers for ten years, in various localities. Associated with these are various climatal details, information relating to the appearance of insects, the migrations of birds, &c. The whole is terminated by a full alphabetical index. We can only express our sense of the great value of this publication by hoping that it may speedily be rendered accessible to English students by means of as good a translation as its great merits call for.

Publications Received:—Science Gossip.—Popular Science Review.—Moniteur Horticole Belge.—Monatsschrift des Vereines zur Beförderung des Gartenbaues, &c., Berlin.—Journal de la Société Centrale d'Horticulture (Paris).—Revue Horticole.—Gartenflora.—Revue de l'Horticulture Belge.—Illustration Horticole.—Journal of the Society of Arts.—The Gardener.—Etude sur les Produits Commerciaux de l'Afrique Centrale, par M. Bernardin, R.I. (Ghent).—The Villa Gardener.—Miniature Fruit Garden, by T. F. Rivers (17th edition).—London Society (Sampson, Low & Co.).—Hardy Plants for Little Front Gardens, by S. Stackhouse (Warne & Co.).

Florists' Flowers.

Meal-leaved Auriculas.—When looking over the Rev. F. D. Horner's splendid collection of Auriculas at Kirkby Malzeard a few days ago, I was much struck with the exceeding beauty of the many varieties with handsome mealed foliage. One great attraction about the Auricula is the many changes of leaf garb it assumes during the year, but especially now when the flowers are being put forth. Then it is that the Auricula, when grown as Mr. Horner grows it, puts forth such a grandeur of leaf development, as if no dress was too good at the time of the birth of the flowers, or no leaf garniture too rich and exuberant so that the flowerets thereby attained a sweeter bloom.

The large majority of the Auriculas with mealed foliage are comprehended in the white-edged class. There are a goodly number of self flowers with mealed foliage, but there is no grey-edged with mealed foliage as one sees it in the case of Smiling Beauty—that exquisite queen of Auriculas—Taylor's Glory, Ne Plus Ultra, &c. In the case of some of the grey-edged flowers, there is just a dash of meal on the inner leaves in the form of a kind of thin-powdered flame up it, and this it takes on at flowering time, when the leaves are vigorous in development.

In the white-edged class we get varieties with leaves densely mealed above and below, overlaid with a farina of the most delicate character. The most striking are Smiling Beauty, Taylor's Glory, Taylor's Favourite, the leaves of which are toothed like a saw, and have in addition a dense beading of meal; Earl Grosvenor, Ann Smith, Catharina, Lady Sale, John Simonite, Trail's Beauty, Regular, Gaines' Model, and McDonald's Miss Arckley. There are a few white-edged flowers with mealed foliage that are apt to come grey on the edge, among them may be mentioned Trail's Beauty, True Briton, Maria, and Lady Sale. Trail's Beauty is a white-edged flower, so short of white on the edge as to be in the character of a whitish or heavy grey edge.

In the grey-edged class Colonel Champneys is perhaps the particular variety that has the most densely mealed leaves. Charles E. Brown, Privateer, and some others have the meal on their leaves as above stated.

There is no green-edged Auricula with mealed foliage, for as the old growers termed it, they have "green grass;" there may be sometimes a dash of meal about the buds, but none on the foliage.

In the self class there are a number of varieties with handsome mealed foliage, such as Pizarro, Duke of Argyle, Miss Brightley, Lord of Lorne, Vulcan, Charles Perry, Meteor Flag, Topsy, Fanny Crossland, Simonite's Yellow, Mrs. Sturrock, Petronella, Smith's Pensioner, Smith's Garland, Eliza, &c.

And one great attraction in a collection of Auriculas is the green-leaved forms alternating with those with mealed foliage. The self class illustrates this diversity in a remarkable manner, for of those having green foliage may be enumerated Othello, Ruby (this sometimes has a few grains of meal so delicately spread over the leaves, as if they had fallen from a fairy snow-cloud); Lord Lee, William Lightbody, Lord Clyde, Nimrod, Blackbird, Spalding's Metropolitan, and Lowe's Mazzini.

What is known as Primula Auricula var. marginata is one of the most handsomely mealed of Auriculas, and the young leaves are most richly powdered at mid-winter. It is a variety of the yellow Auricula, with flowers of a deeper and more golden yellow, and it is in every respect a most interesting and desirable plant for pot culture. *R. D.*

—— A variety of the Double Primrose, named Violacea, appears to be a welcome addition to this class of spring flowering plants. It is quite distinct in character, the flowers of a violet-purple colour, large and full, and it appears to be of vigorous growth. A collection of double Primroses now comprises a goodly number of varieties, for there are the white, blush, lilac, violet, rose, Scotch red, purple, crimson-purple, crimson, bright red, sulphur, Giant yellow, and Giantess yellow, in all thirteen sorts, and perchance this list may not exhaust all the known varieties that are in cultivation. It would be interesting to know to what happy circumstance we were indebted for the first double Primrose, and how the above large and varied collection has originated.

Forestry.

That branch of forestry comprising the relief of plants from everything that impedes their growth and development, is of such vital import that it demands more than a general remark or passing observation. Myriads of plants perish year by year, from no other cause than that of being choked with grass and other luxuriant herbage. It is often a subject of enquiry, and also of dispute, which season of the year is best for clearing forest trees of rank herbage, such as Furze, Bracken, Nettles, Thistles, and such-like, because on the one hand the sudden and severe exposure, caused by cutting down that which surrounded and confined the plants, is more felt in winter than summer, and on the other, some species of trees are so like the summer herbage in colour as to render the work of clearing them with sharp instruments extremely hazardous. The richest and best ground in a plantation is generally productive of such herbage as destroys the young trees, and instead of such districts producing timber trees proportionately valuable as the grounds on which they grow, the very reverse is the case, and there is frequently no crop at all. Such ground as produces strong herbage of rapid growth indicates the presence of a richness and fertility just in proportion, and but for the circumstance that the young plants are overgrown and destroyed in the first year of their growth, they would throughout their lives maintain their superiority. In such cases it is quite evident that unless the plants are cleared the first season before they complete their period of growth, the young wood is immature and unfit to withstand the winter when the herbage falls down and leaves them exposed. The kind of work most pressing at the present time is, in most cases, that of clearing last year's plants of the decayed grassy herbage that envelopes them, and excludes them from sun and air. Many plants, too, will be found lying flat upon the ground, and completely covered with grass as if to hide them entirely from view. Such plants, of whatever species, are unable to extricate themselves from their position, and only require one more year's growth to accumulate over them to complete the work of their destruction.

From the time I commence spring planting there are a number of boys and women employed putting in plants both in the forest and the nursery, and, as often occurs, there are intervals of frost, sometimes a whole day, and sometimes only part of a day. During such frosty weather, unless accompanied with snow, I employ the planters, under the superintendence of a competent man, to do the work of clearing young trees in the nearest plantations. In some cases the grass is best cleared off with the hand in a glove, as thereby no injury results to the plants, as sometimes happens with sharp instruments. In other cases a hooked piece of strong wire stuck into a wooden handle is used for drawing the withered grass away from the plants. These two processes of clearing apply only to decayed and tender herbage, and not to Whins, Heath, Brambles, and such-like, which must of course be cut with the hook-bill or handbill, an instrument I have often recommended for such work. When herbage of any kind is cut or disengaged from the plants the operator should give it a tramp down with the foot to prevent it from blowing about and adhering to trees, fences, &c.

In seasons such as this, when severe snowstorms have occurred, accompanied by winds and drift, much damage must have been done to trees and young plantations in ravines and sheltered places. It is not plantations of one, two, or three years' growth that suffer most from heavy lodgments of snow, but those of older growth, say from ten to twenty years. Trees of small and slender growth yield to the pressure, and, though buried for months underneath the snow, will rise and erect themselves as if nothing had happened. Not so, however, with older trees, they are often broken, bruised, and mangled to such a degree as never again to be restored. With regard to such damage all should be done that can be, leaving Nature to do the rest. Larch and hard woods where much injured should be cut over, the latter near the ground, if required, but the former will only reproduce a leader if a fair proportion of branches are below the fracture, and not otherwise.

Some trees can be put erect, and remain so, by simply putting a turf as a buttress to that side to which they incline. Others require a forked piece of wood, say a young tree with divided top, cut to the required length to form a prop or temporary support. Others require only to have their broken branches pruned off, and so on with others, treating each as the surgeon does his patients in the battle-field.

At this season of the year in particular the good old proverb should be borne in mind, "As the twig is bent the tree inclines." In a general sense every tree should be seen at this particular season of the year to be in its true and proper position, since in a short time its condition becomes fixed and established unalterably.

Since I began of late years to pay special attention to this particular branch of forestry, I have seen the

results to be good, and far beyond what the most sanguine could have anticipated. The expense per acre for clearing plants differs so widely from various causes that an estimate even the most general would do more to mislead than guide upon the subject. Sometimes a woman or lad will clear 1200 plants per day, while at other times, with equal diligence and application, they will not clear over 600.

At whatever cost or sacrifice, however, the work should be done, and should never be neglected. Better that only 100 acres be planted annually, and properly looked after and attended to, than 200 acres treated in the too common but profitless manner. As a rule, the soils and situations naturally most capable of producing good and profitable crops of trees of all others produce the worst, and often, indeed, none at all, an effect produced by the very obvious cause—the rank herbage choking the young and tender plants in their infancy, and no hand outstretched to save them.
C. Y. Michie, Cullen House, Cullen, April 7.



Profitable Gardening and Rotation of Crops.—Under this heading it is purposed to throw out a few suggestions to Villa gardeners as to a judicious selection of garden crops. It is a common practice to attempt too much—to crowd too many things, say, into a piece of kitchen garden, as if the cultivator were under the impression he must grow something of every article enumerated in a seed catalogue.

In cropping a piece of garden ground its size should be the first consideration in deciding on what should be grown. The ordinary wants of a family will pretty well determine what quantity should be sown of each article, and if it should happen that there is a superabundance of any particular thing—which is likely enough to happen with crops that come in with a glut, and go out of condition quickly—it is, after all, rather pleasant to be able to make a present to a neighbour while the produce is in its prime, which is far better than leaving the crop to run to seed or rot on the ground, and so become wasted.

Next follows a very useful rule, which can be heartily commended to Villa gardeners—make it a rule to clear off any crop as soon as it ceases to be useful; and if the ground is only of restricted size never attempt to grow anything respecting which there it is room to doubt it will not afford an adequate supply; therefore it is a good plan to grow only those things likely to be manageable and to furnish a fair return.

Most Villa gardeners who have a piece of kitchen garden like to grow a few leading things, such as Cabbage, Kale, Brussels Sprouts, Cauliflowers, and Sprouting Broccoli, as they are all good and useful vegetables. These seeds are sown in seed beds, and then planted out as soon as the ground can be cleared for the purpose. In planting out select the very best and strongest plants, and leave the worst behind, and give these good plants all the attention they deserve, and they will repay it. It is a common error to delay sowing these things till the end of April, which is much too late, for the plants can scarcely be planted out permanently before the dry weather sets in, and thus they do not get a good start, and grow into size by the winter. If it should be thought desirable to save a few plants for seed, let the very best plants of the truest character be set apart for the purpose, and be well attended to, so that the seed may become well matured.

In settling in one's mind what articles are to be grown, it needs to be borne in mind that Carrots, Parsnips, and Beet require a deep, friable, and rich mould, and if of a sandy character so much the better. Such a soil is necessary, that the growing roots may thrust themselves well down into it. Then Cabbages, Broccoli, Brussels Sprouts, Kales, &c., require a good rich loam and plenty of manure; it is almost a waste of time to put the plants into a poor soil. Beans prefer a clayey soil, and they are much grown in the open fields by farmers to prepare such soils for Wheat. If a piece of ground be broken up for the first time, it is always a good plan to grow crop of Potatos on it, for there is no crop that equals Potatos in commencing a course of culture with a view to mellowing and preparing a new soil, and fitting it for general culture.

In so far as it can be carried out in a restricted piece of ground, a proper rotation of crops is very important. It is an old adage among gardeners that a piece of ground will get tired of one crop in succession. They held that a change of crop was necessary to "clean the ground." "The best rule for a rotation course," writes an old gardener, "is never to follow across with another belonging to the same family. After Peas it would be a folly to plant Peas or Beans, though the sort might be different; after Cabbage, no Broccoli, Cauliflower or Kale should be planted; and it is not well to grow Potatos on the same patch two seasons running, though a course of winter culture and fair manuring may, in most cases, render the ground quite fit for Potatos again."

And in arranging crops it is very important to bear in mind the state of the ground in so far as it is affected by previous manuring, for it is a sheer waste to plant a crop that will do on poor soil in one that has been much enriched, merely for the sake of a change. Celery is always a favourite vegetable, and there is no Villa gardener but makes a point of growing a little Celery if he can possibly do so. Now, good Celery cannot be grown without abundance of manure, and when it is liberally given there is this advantage—that the ground, instead of being exhausted, is in excellent condition for growing Onions the succeeding year. Beet, too, is commonly grown, because so much esteemed for salading, but it does best on ground that has not been manured for two seasons, because it is not wanted large; the same with Onions for pickling, which should be sown on the poorest soil in the garden. After Peas and Potatos, Carrots and Parsnips may be grown; they would do better than as if they followed Cabbage and Broccoli on heavily-manured ground.

It has been laid down by old gardening authorities that it is advisable in all cases to succeed every spindle-rooted crop—such as Carrots, Parsnips, &c.—with one that has fibrous roots, such as Peas, Beans, &c., and *vice versâ*. Depend upon it, there is much reason and sound advice in this; it is one of those sensible suggestions that may be advantageously pressed on the attention of all gardeners.



Natural History.

Chafers.—Is it not a fact that the chafer is now much scarcer with us than it was thirty years ago?—at least such is my impression. I have a distinct recollection when a boy that, with others, we used to assemble in the road, armed with boughs, in the early summer evenings, when the chafers were on the wing, and invariably flying from west to east, and found it fine fun to knock them down wholesale as they passed over. The flight was regular in the evening, and literally in crowds; but now the chafer is almost a novelty, indeed it is quite a rarity in this part of the kingdom. At that time, living at the old nursery grounds at Hill, Southampton, my recollection is strengthened by the fact that the men used to be put to shake and beat the Beech and Hornbeam hedges that ran here and there across the nursery, and the insects lodged in them were so numerous that they were swept up in the pathways and thrown into a large tub of water to destroy them. The chafer, in its winged form, is a ravenous vegetarian, and does infinite mischief to those trees to the leafage of which it has special affinity. Why the appellation cockchafer is invariably given to this insect I cannot say, but I believe as boys we had no difficulty in deciding which in our naturalistic vocabulary were "cock" and which "hen" chafers. Perhaps the continuous war made upon the winged insect has done much to reduce its numbers, and it is equally probable that the enlightenment which, thanks to the Press, has spread amongst agriculturists has done something towards promoting greater toleration for that useful bird, the rook, the natural enemy of the chafer grub. If these birds are ills, to them the axiom most specially applies—

"Rather bear those ills we have,
Than fly to others that we know not of."

A. D.

Nightingales.—A friend of mine tells me that he heard two of these birds singing beautifully in Holt Forest, near Farnham, on the 5th; and another Liss resident says she heard the nightingale on the 4th in a small wood close to the village; so the "Eos," as we Welsh people call Philomela, has put in an appearance early this season. *Helen Watney, Liss.*



State of the Weather at Blackheath, London for the Week ending Wednesday, April 11, 1877.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 32 Years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 32 Years.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
April	In.	In.	°	°	°	°	°	°			In.
5	29.19	−0.55	56.8	40.0	16.8	46.5	+ 1.6	42.0	85	S.S.W. to S.	0.17
6	29.32	−0.42	56.5	39.1	17.4	45.4	+ 0.4	41.3	86	S.W.; S.S.E.	0.08
7	29.47	−0.26	57.0	37.4	19.6	45.5	+ 0.3	40.1	82	S.W.	0.04
8	29.46	−0.28	55.2	43.0	12.2	48.3	+ 2.9	43.5	84	S. to S.S.E.	0.89
9	29.25	−0.39	56.3	44.7	11.6	48.9	+ 3.3	44.9	87	S.W. to S.S.W.	0.17
10	29.37	−0.37	58.6	45.5	13.1	50.0	+ 4.3	44.9	83	S.W.; W.N.W	0.27
11	29.56	−0.18	56.0	43.0	13.0	47.9	+ 2.1	43.9	87	S.S.W.; N. to N.E.	0.10
Mean	29.39	−0.35	56.6	41.8	14.8	47.5	+ 2.1	41.9	85	S.; S.W.	sum 1.72

April 5.—Fine, but cloudy; frequent heavy showers of rain.
— 6.—A fine day, partially cloudy and showery.
— 7.—Fine, but cloudy day. Showers at times.
— 8.—A very dull day, rain fell continuously after 2 P.M., and very heavily in the evening.
— 9.—Fine, but cloudy and dull; rain fell after 8.30 P.M.
— 10.—Fine day, very cloudy till night, then cloudless. Rain fell heavily in morning.
— 11.—Dull and cloudy, fine at times. Thunderstorm, with rain in afternoon.

London: *Barometer.*—During the week ending Saturday, April 7, in the suburbs of London, the reading of the barometer at the level of the sea decreased from 30.07 inches at the beginning of the week to 29 inches by the afternoon of the 4th, increased to 29 inches by the morning of the 7th, and was 29.66 inches at the end of the week. The mean reading for the week at sea level was 29.56 inches, being 0.05 inch below that of the preceding week, and 0.37 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 67° on the 4th to 52½° on the 1st; the mean value for the week was 57½°. The lowest temperatures of the air ranged from 37½° on the 7th to 45¾° on the 1st; the mean for the week was 41¼°. The mean daily range of temperature in the week was 16¼°, the greatest range in the day being 22°, on the 4th, and the least 7°, on the 1st.

The mean daily temperatures of the air were as follows:—April 1, 48°; 2d, 45°.7; 3d, 49°.6; 4th, 53.1; 5th, 46°.5; 6th, 45°.4; 7th, 45°.5; and the departures in excess of their respective averages were :—7°.8; 1°.3; 5°; 8°.3; 1°.6; 0°.4, and 0°.3. The mean temperature of the air for the week was 47¾°, being 3° above the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 120° on the 4th, 116° on the 5th, 110° on the 6th, and 111¼° on the 7th; on the 1st the reading did not rise above 64°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 34¾° on the 7th, 36¼° on the 6th, and 37¾° on the 5th; the mean value for the week was 39°.

Wind.—The direction of the wind was variable, and its strength moderate. The weather during the week was frequently fine, though rain fell on every day. A *thunderstorm* occurred during the afternoon of the 4th, accompanied with very large hailstones and heavy rain.

Rain fell on every day in the week; the amount measured was 1.10 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 67° at Blackheath, 64½° at Leicester, and 63½° at Norwich; at Liverpool and Bradford 54½° was the highest temperature. The mean value from all stations was 59°. The lowest temperatures of the air observed by night were 32° at Hull, and 34° at Truro and Wolverhampton. The general mean from all stations was 36½°. The range of temperature in the week was the greatest at Blackheath, 29½°, and the least at Portsmouth and Liverpool, both 17°. The mean range of temperature from all stations was 22½°.

The mean of the seven high day temperatures was the highest at Blackheath, 57½°, and the lowest at Bradford, 51°; the mean from all stations was 54°. The mean of the seven low night temperatures was the lowest at Eccles, 38½°, and the highest at Brighton and Plymouth, both 44°; the mean value from all stations was 41¼°. The mean daily range of temperature in the week was the least at Plymouth, 10½°, and the greatest at Blackheath, 16½°; the mean daily range of temperature from all stations was 12⅞°.

The mean temperature of the air for the week from all stations was 46½°, being 4° lower than the value for the corresponding week in 1876. The highest was 48° at Brighton and Cambridge, and the lowest 44°, at Wolverhampton.

Rain fell on every day in the week at Blackheath, Wolverhampton, Nottingham, and Eccles, and on five or six days at most other places. The amounts measured varied from 1¼ inch at Truro to half an inch at both Brighton and Newcastle; the average fall over the country was 1 inch nearly.

The weather during the week was wet and dull, and the sky cloudy. A *thunderstorm* occurred generally over the country on the 4th inst.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 57¼° at Edinburgh, to 51⅓°, at Aberdeen; the mean value from all stations was 54½°. The lowest temperatures of the air varied from 31°, at Edinburgh, to 33½°, at Aberdeen; the mean from all stations was 33°. The range of temperature in the week from all stations was 21⅓°.

The mean temperature of the air for the week from all stations was 44¼°, being 6¾° lower than the value for the corresponding week in 1876. The lowest was 42½° at Paisley, and the highest 44⅓° at Edinburgh, Dundee, Aberdeen, Greenock, Leith, and Perth.

Rain was measured at each of the above-named stations. The amounts varied from 1⅓ inch at Greenock, to three-quarters of an inch at Paisley. The average fall over the country was 1 inch.

DUBLIN.—The highest temperature of the air was 59½°, the lowest 29°, the range 30½°, the mean 45°, and the fall of rain 0.94 inch.

JAMES GLAISHER.

Reports of Societies.

THE INTERNATIONAL HORTICULTURAL EXHIBITION AT AMSTERDAM.

OUR correspondent at Amsterdam writes, under date April 10:—It is much too early to attempt to give a precise report of this Exhibition, indeed it would be impossible to do so at present, when the preparations are so incomplete and many plants not yet unpacked; nevertheless, we may briefly advert to a few of the more prominent features.

NEW PLANTS, &c.

As a collection of six new hothouse plants, not yet in the trade, Mr. B. S. Williams exhibits Adiantum palmatum, Panax laciniatus, Dennstædtia Youngi, × Sarracenia Williamsi, Croton mutabilis, and a new long-leaved yellow variegated form, dubbed Prince of Wales. For one new plant in flower, introduced since January, 1876, the same exhibitor shows Pultenæa rosea. In the class for twelve new plants introduced since 1876, Mr. Williams shows Eranthemum Eldorado, a yellow variegated-leaved plant of no great promise; Phegopteris Dianæ, Croton Mooreanus, Aralia elegantissima, Pritchardia filamentosa, Croton Disraeli, Cibotium nigrescens, Lomaria gigantea, Maranta Massangeana, Acalypha musaica, apparently a form of A. tricolor, with smaller undulate leaves; and Dieffenbachia marmorata, with broad green leaves and white marbled variegation; and lastly, the fine Cycas called C. intermedia, the true position of which is doubtful. For the most part these are plants now well known in England. The same exhibitor has a large miscellaneous group, and a set of Cyclamens, while his Orchids we must mention under another head.

M. Servais de Beucker, of Antwerp, has a new Bromeliad from the Rio Pardo, province of Bahia, Brazil, apparently a Pholidophyllum. Its leaves have a broad base narrowing into a short stalk, the blades being lanceolate, green, slightly marbled with white, covered with a thin coating of white meal, and with finely serrated edges. The plants are small, but bid fair to be pretty. A new Maranta and a new Gesnerad from the same locality, exhibited by the same gentleman, have not so much promise in them, and may be passed with the mere mention. Madame Legrelle d'Hanis shows a remarkable collection of seedling Aralias, showing how variable these plants are, and how difficult to define. An interesting exhibit is that of M. Kluppel, of Amsterdam, who shows a dozen stove climbing plants, mostly with variegated foliage, such as Pothos argyræa, Cissus discolor, Clerodendron Thomsonæ, &c.

M. Linden, of Ghent, shows a fine lot of new and interesting plants. Among them are Aralia filicifolia, A. elegantissima, A. gracillima, and others; Maratta alsophilifolia, a Fern with a frond closely resembling the leaf of an Amorphophallus; the new Anthurium Dechardi, unfortunately not yet expanded, but which has the appearance of a Spathiphyllum; A. crystallinum, Pritchardia macrocarpa, Pinyliotænium Lindeni, Curmeria picturata, Philodendron glaucescens, elevate-leaved species, with a central white stripe on a deep green ground, but which at present does not justify the eulogiums passed on it by its discoverer; Caraguata musaica, and C. hieroglyphica, the latter species in the way of C. musaica, but of more robust habit, and with finer and more distinct markings; the new Pancanus Pancheri, from New Caledonia, compared to a waterfall by its discoverer, but too small as shown to give any proper idea of its merits; Kentia Lindeni, a species the young leaves of which are beautiful in their pinkish-bronze tint; also K. rupicola and gracilis. A new Araliа from New Caledonia is very striking, and is perhaps the most remarkable plant in the Exhibition. It is a shrub whose branches and leaf-stalks are spotted with small dark spots. The leaves themselves are alternate horizontal, about 12 to 18 inches long, bipinnate, with opposite pinnæ, the primary nodes, as well as the secondary ones at the base of the pinnæ, being thickened. The leaf-segments are ovate-lanceolate, irregularly lobed and finely serrulate at the margin. Besides these M. Linden shows Acalypha macrophylla, Cochlostema Jacobianum, Croton Andreanus and Vervaeti, Dieffenbachia autioquiensis and imperialis, Dracæna neocaledonica, Genoma princeps and gracilis, Lomaria neo-caledonica and ciliata, Pritchardia filifera and aurea, Phœnix rupicola and a new species, Tillandsia fenestrata, Lesseliata, and sanguinolenta, Vriesea princeps, Zamia Lindeni, and Cocos Weddelliana, making a group of forty new and rare plants of remarkable interest.

ORCHIDS.

Of these Mr. Williams shows a group of twelve and of six respectively, and but for which this family would scarcely be represented. The plants comprise a nice pan of Cypripedium niveum, a good plant of Masdevallia ignea, M. Lindeni, Pendrobium Wardianum, Odontoglossum Pescatorei, Cypripedium villosum, Odontoglossum triumphans, a fine spike; Phalænopsis Schilleriana, Oncidium sarcodes, Odontoglossum Alexandræ, &c.

PALMS AND CYCADS.

There are some fine examples, chiefly from the Botanic Gardens of Amsterdam, but as they are still unarranged it is difficult to appreciate them; and the same remark applies to Cycads. Among the latter we noticed from the collection of M. Ghellinck de Walle, of Ghent, Cycas neo-caledonica, Zamia Lindeni, Z. Roezlii, and a very elegant pinnate-leaved Macrozamia Macleaniana, with long slender segments. M. Adolphe d'Haene, of Ghent, also shows good Cycads, among which a variety of Z. Caffra called cornuta, with very broad coarsely-toothed segments, is a very distinct form.

SELAGINELLAS, &c.

Of these there are two or three very fine and well-grown collections, from Messrs. Kluppel, Willinck, and Voûte, of Amsterdam, chiefly well-known sorts. M. Witte, of Leyden, sends Lycopodium Hippuris, a species well named, from its resemblance to our Horse-tail.

CALADIUMS.

M. Kluppel, of Amsterdam, sends a remarkably fine group of these handsome plants, but possessing little absolute novelty.

BROMELIADS

constitute one of the most remarkable features of the show to English eyes. The chief exhibitors are MM. Dudok de Wit, of Amsterdam, and Albert Van den Wouwer, of Antwerp. They form one of the prettiest features of the show, with their coloured bracts and marbled leaves. Professor Morren has been good enough to furnish us with the following memoranda respecting them:—

"The Bromeliaceæ are numerous and choice, but as usual they bear many false and contradictory names. They are exhibited in a hothouse specially constructed for them. There are two large and grand collections. The first belongs to M. Groenewegen, of Amsterdam. In this I have counted thirty species, amongst which the Tillandsias are the most remarkable: for example, T. pruinosa, streptophylla, juncea, fasciculata, Schlumbergeri (Ed. Morr. ined.), argentea (Koch), complanata, &c. The plant most worthy of remark is a specimen of Disteganthus scarlatinus. The second collection is that of M. C. A. A. Dudok de Wit, an amateur of Amsterdam. It comprises 104 species, amongst which there are Ananas and many Billbergias. The most rare plant is the Tillandsia (Pityrophyllum) ionantha. There are two collections of twelve plants, the 1st prize being awarded to M. Albert Van den Wouwer, of Cappellen, near Antwerp. These plants are in good health, and the collection is especially strong in Vrieseas. The V. Malzinei is in flower, which is also the case with the Encholirion (?) corallinum and E. (?) roseum. These two plants are very near together; the first has the leaves reddish beneath, the bracts of the stem reddish-brown and glaucous, the floral bracts largish, and the calyx rose; the second has the leaves green, glaucous beneath, the bracts of the stems half green half red, the floral bracts short, and the calyx yellow. I notice also Tillandsia Lindeni in flower and a beautiful Vriesea princeps. The 2d prize for twelve goes to M. Dudok de Wit, who exhibits here a fine specimen of Tillandsia argentea (Koch), a well-flowered Caraguata lingulata, &c. For a collection of six plants, M. Dudok de Wit has received the 1st prize. There are here two pretty and beautiful plants—a Hohenbergia sp., which appears to be identical with the Æchmea Mariæ Reginæ (Wendl.) of Mr. Williams; and a Billbergia marmorata, which appears to me to be quite a new thing. It forms a glaucous green, marbled with deep green, and glossy. In the class for one new Bromeliad, M. Servais de Beucker, of Antwerp, shows a plant collected on the borders of the Rio Pardo, in the province of Bahia, Brazil. It is of warnish habit, with stalked leaves, spiny at the base, and marbled with deep green. It has the appearance of a Disteganthus, and appears to me to be the Ronnbergia Morreniana of MM. André and Linden. It notices in full in relation to the Bromeliaceæ exhibited, a plant in the collection of Mr. Williams, which is very beautiful. It has silvery foliage, and belongs to the genus Tillandsia."

The exhibitions of Amaryllids, Gesnerads, Dracænas, and Marantas, present nothing worthy of special note. The chief exhibitors of the latter groups were M. Adolphe d'Haene, of Ghent, and M. Kluppel, of Amsterdam. The groups of Coleus and of Begonia were of an ordinary character.

NEPENTHES AND CROTONS.

Mr. Williams shows medium-sized plants, mostly well furnished, of Nepenthes Hookeri, Rafflesiana, intermedia, rubra, hybrida maculata, ampullacea; also a good selection of the best Crotons.

GREENHOUSE AND CONSERVATORY PLANTS.

These are so scattered that in the present state of things it is all but impossible to find them. Among them one is pleased to find some of the old favourite greenhouse specimens still in existence, such as Metrosideros floribunda, Chorozema splendens, Kennedya rubicunda, Banksia Cunninghamii, Diosma ericifolia, &c. The principal exhibitors in this class are M. Glijm, of Utrecht; and M. Van der Mersch-Mertens, of Antwerp.

VARIEGATED PLANTS, &c.

Of these there are some good collections too numerous to detail, chiefly from Messrs. Glijm, of Utrecht; Muller, of Bremen; Siebold, of Leyden, &c. The last-named firm exhibit a rich series of Japanese plants, which are deserving more notice than we can now give them. M. Kluppel, of Amsterdam, shows a similar smaller collection, illustrative of the flora of New Holland, comprising various species of Banksia, Boronia, Metrosideros, Chorozema, &c.

ACACIAS.

These form one of the notable features of the show—grown in good sized tubs they make noble conservatory plants. Here again M. Kluppel, of Amsterdam, takes high rank; his Acacia verticillata is a fine shapely bush, well-clothed leaves or phyllodes, and a profusion of long yellow racemes. His A. obliqua? is still larger, and has lanceolate phyllodes and long racemes of flowers. A. spiralis is another noteworthy specimen. At present these fine plants are stowed away in a dark shed where their beauty can but poorly be appreciated.

SUCCULENTS, CACTI, &c.

Echeverias are largely represented by M. A. Van den Wouwer, of Antwerp. E. secundigera is of good habit, with glaucous pink-edged leaves, regularly and evenly cupped. × E. amabilis is a hybrid between this and E. roseo-cincta. E. candicans is one of the white-leaved section with wavy edges to the leaves. E. navicularis is remarkable for its dark foliage; but among so many there are several it would be well at once to discard. Of Cacti there are one or two good

collections, including a lot of nice plants of Echinocactus cylindraceus. H.R.H. the Prince Henry of the Netherlands has a collection of Agaves, but, so far as we remember, not so large a collection as at Cologne.

HARDY SHRUBS.

Conifers and Hollies are shown in great numbers by MM. Albert, Ottolander, and other Boskoop nurserymen, and mostly in good specimens, but present no novelty or special feature. A collection of Azaleas and Rhododendrons from Mr. Wills has not yet arrived. Neither in Camellias or in the members of the genus Citrus is there anything special to record. Messrs. Von Siebold & Co. show a fine lot of varieties of Phormium tenax, P. Cookii, Colensoi, and others.

FRUIT TREES.

Trained fruit trees, as usual, constitute a feature, and if all were as neatly trained and as full of flower as those shown here, it would be saying much for training and pruning.

FRUIT AND VEGETABLES

are conspicuous, if not for their absence, at least for their scarcity. A good set of Oranges, Citrons, &c., deserves notice, also an exhibit of Potatos, but these for their want of the qualities fitting them for the exhibition table! Under this head may be mentioned an interesting exhibit of tubers of various kinds, including those of the Dahlia, Boussingaultia baselloides, Jerusalem Artichoke, Apios tuberosa, Tropæolum tuberosum, and Dioscorea Batatas.

Next week we hope to be able to fill up some of the vacancies in this hurried enumeration.

Variorum.

FARMING IN THE CARSE OF GOWRIE.—Writing to Mr. Falconer King, Lord Kinnaird says:—"No doubt we have had bad seasons for keeping clay land during the last six or seven years, but the Low Carse has suffered of late years, and is still suffering, more from wisky than from water. For the last few years I have had no farms to let except from this cause, or the death of the tenant without an heir to carry on the farm, while on the other hand a remarkable change has been effected in the peasantry, who are now a sober, well-conducted class, owing to the removal of temptation, public-houses being considerably reduced in number, and no spirits sold at the toil-bars. It is only where the sale of spirits is continued that drunkenness is now to be met with. The Carse of Gowrie is not high-rented, nor has there been any rise of rent except in some superior farms in good condition of perhaps a bushel of grain for half a century. The great rise took place at the end of last or beginning of this century, and continued till 1824. These were halcyon days for farmers. I paid for many years £500 per annum to a life-renter to give up his farm. Fortunes were made, land bought, large houses built, and an extravagant style of living adopted, the result being that all these estates have become the property of merchants, or those who made money in trade. The climate, however, of the Carse has completely changed for the worse within the last fifty years. I remember when the Highlanders might be seen trooping over the hills to the sound of the bagpipes to cut down our crops, returning in time to their glens to reap their own harvest. Our harvest being early, there was never any anxiety about the result. Things are much changed for the worse in this respect."

CINCHONA.—According to the official reports, the results of the working of the cinchona plantation during 1875-76 differ materially from those obtained in any previous year. Hitherto the establishment has been employed first in experimental cultivation, and afterwards in systematic planting, while the yield of bark has been comparatively small. In the past season no addition has been made to the permanent plantation, and the main work of the year has consisted in gathering a crop of 211,931 lb. of red bark, the produce of Cinchona succirubra. This out-turn exceeds by 62,000 lb. the amount estimated by the Government of India in their letter No. 208 of June 21, 1873, as the probable yield of the plantation in 1877. The statement of the quantities of bark collected yearly since the establishment of the plantation shows that the yield of 1875-76 is more than five times as great as that of the previous year. On three plots of land, where the trees had become luxuriant and required space for growth, thinning and pruning have been largely resorted to; while in eight other places the plants were either coppiced or uprooted in such proportions, and with such arrangements for filling the vacant spaces, as seemed likely to furnish the most ample facilities for comparing the merits of these two modes of gathering bark. At the same time, much valuable experience has already been gained. The practice of uprooting the entire tree was adopted in order to save the loss of bark which arises from the fact that after coppicing a certain proportion of the stools fail to shoot. Mr. Wood's analysis further shows that the root-bark thus made available for manufacture contains about 8 per cent. of alkaloids, or 1 per cent. more than the finest stem bark. The cost of uprooting slightly exceeds that of coppicing; but as the process thoroughly turns up the soil, it is hoped that it will answer to replant the same ground immediately with Cinchona, and "thus to secure gratuitously the advantage of a very complete kind of digging."

MURRAY VALLEY VINEYARDS.—We learn from the *Sydney Morning Herald* that on the occasion of a visit of Sir H. G. R. Robinson, Governor of New South Wales, in October last, to the town of Albury, N.S.W., situated in a Grape-growing district, which is described as the Rhineland of Australia, the subject of Australian vineyards and vintages was not overlooked. After paying various ceremonial visits, and receiving sundry ceremonial addresses, the Vice-regal party paid a visit to Mr. Fallon's wine-cellars, where, as our antipodal contemporary states:—

"They had an opportunity of forming some idea of the importance of the wine-growing industry in the valley of the Murray. Fallon's wine-cellars form an immense vault, 240 feet in length by 60 feet in breadth, with casks varying in size from 500 to 2000 gallons, packed as closely as space will permit, while the narrow passages between the monster casks, the darkness being made dimly visible by innumerable lighted candles, the Governor and the members of his party made their way to a small recess where a table had been set out with the choicest vintages of the Murray Valley. Mr. Dignam—the representative of Mr. J. T. Fallon who is absent in Europe endeavouring to open up a market for the wines of Australia—and Mr. Frere, the manager of the cellars, did the honours. His Excellency spoke in high terms of the excellence of the wines, more especially of a Tokay, the product of the Murray Valley Vineyard. Champagne of rare excellence, manufactured by M. Frere from the Grapes of the Murray Valley, was also much admired on account of its fragrance and bouquet, although it yet wants age to develope its excellence. Champagne-making was tried as an experiment by M. Frere little more than twelve months ago, and the experiment promises to prove most successful. Excepting that it wants the sparkle that age alone can give, the Murray Valley champagne would pass muster even with connoisseurs for Widow Cliquot's. In the opinion of competent judges it is a grand wine; and the experiment of its manufacture having proved a success, it will in time become an important and profitable industry in the district. Ingenious machines for corking the champagne bottles, and wiring them when corked, were inspected with admiration, and the excellent brandy made by M. Frere was also tested, and a very favourable opinion expressed of its quality. After leaving the cellars, and their vast store of wine, amounting to something like 150,000 gallons, the Vice-regal party returned to the Globe Hotel, and in the afternoon a visit was paid to the famous Murray Valley Vineyard, the property of Mr. J. T. Fallon. This vineyard is beautifully situated on a hill, or rather domeshaped mound, that rises in the middle of the valley, about 4 miles from Albury, and the drive from the town to the homestead on the summit is a delightful one at all seasons of the year, but more especially in spring or early summer. The summit gained, a grand panorama is unfolded to the view. In the far distance the forests of the alpine chain, speckled here and there with patches of the winter snow, are faintly distinguishable from the fleecy clouds that rest on their tops. In the middle distance sloping ranges, clad with somber forests, are relieved by bright spots of greenness, and pleasant homesteads standing in their midst. In the foreground, and on either side, on innumerable slopes, waving cornfields, and other gratifying signs of industry and progress. The vineyard occupies a block of 640 acres, for the most part of rich red clay soil, that experience has proved to be admirably adapted for vine cultivation. There are about 140 acres of the property under Vines; and at the homestead are Grape-mills, wine-presses, and all the other requisite appliances, on a scale commensurate with the scale on which Vine culture is carried on—the Murray Valley being the largest amongst many large vineyards in the district. Under the guidance of Mr. Curley, the manager of the vineyard, his Excellency and the other members of the party were initiated into the mysteries of wine making, in so far as could be done at a season of the year when there are no rich ripe clusters of Grapes to be squeezed. Having inspected the immense vats into which the must is conveyed as it issues from the wine-press, and seen the working of Grape-mills and powerful lever presses, the Vice-regal party took their departure for Albury. On their return journey they visited the vineyard, which is finely situated at the base of the hill, with its Vine-covered slopes."

Obituary.

We deeply regret to have to announce the death of Mr. M. SAUNDERS, the well-known and widely-respected head of the firm of SAUNDERS & SONS, which took place at his residence, Friars' Walk, Cork, on the 3d inst. Few men in the nursery trade in Ireland were more widely esteemed than Mr. Saunders. His upright character, and his genial hospitality, which was liberally extended to all whom he came in contact with, secured him a great number of friends, particularly in the South of Ireland, where he had a large connection and carried on an extensive and growing trade. For the past two or three years, owing to failing health, the deceased gentleman ceased to take any active part in the management of the business, in which he is succeeded by his son, Mr. David Saunders. The late Mr. Saunders was the founder of the business at Friars' Walk, which was commenced by him over half a century ago. During these years he did much to foster and encourage horticulture, and was ever ready with his purse and his counsel to promote the interests of the craft he was proud to be a member of. *Gardeners' Record.*

Enquiries.

He that questioneth much shall learn much.—BACON.

181. THE CATERPILLAR OF THE APPLE MOTH.—Being a grower of Apples to the extent of about 60 acres, and noticing the caterpillar already appearing in the bud, will some of your readers kindly offer any suggestions as to the most efficacious means of destroying the insect? *A Subscriber.*

Answers to Correspondents.

AIR ROOTS ON VINES: *A Subscriber.* The production by Vines of air-roots is generally believed to result from the border in which their natural feeders are growing being too wet and too cold to allow of their proper development at the same time as the foliage. A superabundance of moisture in the house will also produce a like result. As to which of these alternatives are the cause in your case you should be the best judge.

AMATEUR OR NURSERYMAN: *W. B. S.* We cannot possibly draw a line to indicate the point where a gardener in a private place (with his employer's consent) can sell plants, without being disqualified to exhibit as an amateur. If he sells openly and "freely his surplus stock of plants to any one willing to buy," he certainly becomes a trader.

ANTS: *G. Harwood.* A correspondent writing in our pages for September 4, 1875, says:—"I procured some camphor, and having broken it into small pieces, I distributed it in the frame by merely laying it in different parts on the surface, and immediately shut up the frame for twenty-four hours, and upon opening it I was delighted to find that the enemies had decamped bag and baggage." Another correspondent recommends the use of carbolic acid, "rubbing it in their lurking places and traffic ways, and stuffing up all their roads of entrance with cotton-wool soaked in the same." Perhaps this information will be of use to you and others.

HOLLY HEDGE: *G., Bath.* Cut back to the height of from 1 to 2 feet at once, and if the roots are in a vigorous condition the plants will soon break.

HOMALOMENA, NOT HOMALONEMA: *B. A.* Because Seboth wrote it so, and gives his reasons either in his *Genera Aroidearum*, or in his *Icones*, we do not remember which at the moment, and cannot refer.

HOT-WATER PIPES: *M. S. B.* Cast-iron pipes are the best, and the larger the surface, within reasonable limits, the better, whether for plant-houses or schoolrooms.

INSECT IN BEANS: *J. H. G.* The insect is Bruchus rufimanus. The grub feeds on the Bean, passes into the pupa there, and only makes its way out as the perfect insect. *E. M.*

IRESINE: *W. P.* Your new sport from I. Lindeni is a very distinct novelty, and will be likely to prove an acquisition if it grows as freely as the original. The leaves are green, with a crimson midrib and yellow lateral veins. It may well be called I. Lindeni tricolor.

NAMES OF PLANTS: *G., Bath.* The specimen received is the adult form of Cupressus funebris. Being a dioecious species it is difficult to name it, as both the adult branchlets when rooted and growing freely assume the baby state of seedlings, showing that the change of form in the leaves is due to the amount of vigour.—*G. A. H.* 1, indeterminable without more matured specimens; 2, Lastrea Sieboldii.—*T. H.* 1, Brassia brachiata; 2 and 3, Crotons, but these are so variable that we cannot attempt to name them from single leaves—3 may be angustifolius; 4, Pteris cretica; 5, too immature; 6, Pleopeltis pustulata; 7, Blechnum brasiliense.—*J. King.* 1, Chorozema Henchmanni; 2, next week.—*H. E. Watney.* Ornithogalum nutans.

PELARGONIUMS: *W. B. S.* The Zonal and the Ivy-leaved Pelargoniums originate in two perfectly distinct species, and form two perfectly distinct vars. Consequently, whilst this grouping is recognised the varieties of the one group cannot be substituted for those of the other. The group of Zonals comes from Pelargonium zonale (zo-na-le, not zo-nale), and that of the Ivy-leaved from *P. lateripes.*

PHYLLONERA: *M. G. F.* The pest might, no doubt, be present and unsuspected until its effects on the Vines became visible, but for how long we could not say. Few gardeners, we suppose (fortunately for them), have any practical knowledge of the insect, and would not easily find it even when present, as it requires very close search to hunt it out.

PLANT COMMON IN CORNWALL: *X. Y.* Mesembryanthemum acinaciformis is probably the plant alluded to. It is almost naturalised along the south coast of Cornwall, but we are not aware of its being carrot-scented. The latter would rather refer to Samphire, Crithmum maritimum, which grows on every rock.

SUMMER-HOUSES: *F. C. O.* Write to Mr. J. Caven Fox, at the Royal Horticultural Society's Garden, South Kensington.

POISONOUS SHRUBS: *R. D.* Rhododendrons and Cherry Laurels are at least suspicious, and had better be guarded against; but Holly and Laurustinus are not injurious.

VINES: *G. K.* The cause of your Vines developing bunches at the seventh and even the ninth eye from the base of the shoot is no doubt to be found in their not having been thoroughly ripened last year. The better the wood is ripened the nearer to the main stem are the bunches shown.

WOODLICE: *E. Nott.* Pour scalding hot water into their runs, and trap them with Potato peelings, &c. If you persevere with either plan the enemy will soon be driven off.

☞ FOREIGN SUBSCRIBERS sending Post-office Orders, payable at the post-office, King Street, Covent Garden, London, are requested to be good enough to write to the Publisher, at the office of this paper, 41, Wellington Street, Covent Garden, at the same time, to inform him of the fact.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.*

CATALOGUES RECEIVED.—W. Potten (Sissinghurst, Staplehurst, Kent), Select List of Pelargoniums and other Bedding Plants.

COMMUNICATIONS RECEIVED.—J. L. T. (many thanks).—R. G.—C. J. K. (thanks. We shall be glad to hear from you at any time).—Mr. F.—A. M.—B. L.—J. N.—W. H.—H. C. O.—J. T. L.—W. E.—D. T. F.—J. S.—R. S.—J. R.

Markets.

COVENT GARDEN, April 12.

A better tone has pervaded our market during the week, and all kinds of hothouse fruits have met with a more ready sale, prices being well maintained. Cucumbers are selling badly, while new Potatoes have experienced a further fall. A few consignments of Apples are still arriving from America, but reach us in very bad condition. *James Webber, Wholesale Apple Market.*

VEGETABLES.

	s. d.	s. d.
Artichokes, per bush.	4 0	6 0
— Eng. Globe, doz.	4 0	6 0
Asparagus, fr., bundle	0 0	0 0
— English, p. bun.	8 0	10 0
— Fr., natural, bun.	2 6	6 0
— Sprue, bun.	1 6	2 0
Beans, French (new), per 100	1 6	2 0
— French, Long-pod, ½-bushel	3 0	—
Beet, per doz.	1 0	2 0
Brussels Sprouts, bush.	1 0	2 0
Cabbages, per doz.	1 0	2 0
Carrots, per bunch	0 4	0 6
— New Fr., p. bun.	2 0	—
Cauliflowers, per doz.	2 0	4 0
Celery, per bundle	0 6	1 0
Chilis, per 100	3 0	—
Cucumbers, each	0 6	1 0
Endive, per doz.	1 0	2 0
— Batavian, p. doz.	2 0	3 0
Garlic, per lb.	0 6	0 8
Herbs, per bunch	0 2	0 4
Potatos.—Kent Regents, £5 to £6; Essex Regents, £4 10s. to £5; Kidneys, £8 per ton.		

FRUIT.

	s. d.	s. d.
Apples, per ½-sieve	3 0	8 0
Cobs, per lb.	1 0	1 6
Grapes, per lb.	3 0	6 0
Lemons, per 100	4 0	10 0
Oranges, per 100	4 0	10 0

CUT FLOWERS.

	s. d.	s. d.
Azaleas, 12 sprays	0 6	2 0
Bouvardias, per bun.	1 0	4 0
Camellias, 12 blooms	2 0	3 0
Carnations, per dozen	1 6	4 0
Cyclamen, per doz.	0 3	0 9
Daffodil, double, 12 bunches	3 0	9 0
— single, 12 bun.	1 0	6 0
Epiphyllum, 12 blms.	0 3	0 6
Eucharis, per doz.	6 0	12 0
Euphorbia, 12 sprays	2 0	9 0
Gardenia, per doz.	4 0	12 0
Heliotropes, 12 spr.	0 6	1 0
Hyacinths, 12 bunch.	4 0	12 0
Lily of the Valley, 12 sprays	4 0	12 0
Lily, Tiger, 12 blms.	0 6	1 0
Marguerite, 12 bun.	2 0	4 0
Mignonette, per doz.	1 0	2 0
Narcissus, 12 sprays	0 3	0 6
Pelargoniums, 12 spr.	1 0	2 0
— zonal, 12 sprays	0 6	1 0
Primroses, per dozen	0 6	2 0
Primula, dbl., p. bun.	1 0	2 0
Roses, indoor, p. doz.	3 0	12 0
Sprays, 12 sprays	1 6	4 0
Stephanotis, 12 spr.	9 0	15 0
Tropæolum, 12 bun.	1 0	6 0
Tulips, per dozen	0 6	2 0
Violets, 12 bun.	1 0	4 0
Wallflowers, p. doz.	3 0	9 0

PLANTS IN POTS.

	s. d.	s. d.
Azaleas, per dozen	24 0	60 0
Begonias, per doz.	6 0	12 0
Bouvardias, do.	12 0	24 0
Calceolaria	12 0	24 0
Cineraria, per doz.	9 0	18 0
Clematis	24 0	60 0
Coleus, per dozen	3 0	9 0
Cyclamen, per doz.	9 0	21 0
Cyperus, do.	6 0	12 0
Dracæna terminalis	30 0	60 0
— viridis, per doz.	18 0	24 0
Ferns, in var., p. doz.	6 0	30 0
Ficus elastica	6 0	15 0
Fuchsias, per dozen	9 0	18 0
Genista	9 0	18 0
Heaths, variety, doz.	9 0	24 0

	s. d.	s. d.
Heliotropes, per doz.	6 0	12 0
Hyacinths, per doz.	8 0	18 0
Hydrangeas, per doz.	12 0	30 0
Lily of Valley, each	1 0	3 0
Mignonette, per doz.	5 0	9 0
Myrtles, do.	3 0	9 0
Palms in variety, each	3 0	21 0
Pelargoniums, scarlet, per doz.	4 0	12 0
Primula sinensis, do.	4 0	9 0
Richardia æthiopica, per doz.	9 0	18 0
Spiræa, per doz.	12 0	30 0
Tulips, per dozen	8 0	12 0
Valotta purpur., doz.	12 0	18 0

SEEDS.

LONDON: *April* 11.—The recent excessive downfall of rain has retarded agricultural operations, and there is, consequently, just now less demand for other seeds than is usual at this time of the year. As a natural result of this stagnation, values of most descriptions stagger somewhat; and, to effect sales, holders are willing to make concessions. The prevailing and long-continued dullness of the London market is further increased by the absence of the customary competitive demand from those counties which (instead of being buyers) have this season grown enough for their own local requirements. The tendency to lower rates is observable not only in the principal kinds of Clovers, but also in Trefoils, Alsikes, &c. Imported Italian and Pacey Rye-grasses are in good request at fully last week's currencies. For spring Tares, notwithstanding their present extreme cheapness, but little is doing in the inquiry. Lucerne and Sanfoin move off slowly on former terms. As regards Canary seed, there is no quotable variation, but Hemp seed is drooping. Mustard and Rape seed are both steady. *Thos. Gibbs & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday the trade for Wheat was decidedly firm, and an advance of from 1*s.* to 2*s.* per quarter was reported, the higher figure applying solely to red foreign produce. Malting Barley was firm; grinding parcels were quoted 6*d.* lower than on Monday se'nnight. Malt 2*s.* 6*d.* dearer. In Oats, sound corn was quite as dear, if not somewhat dearer than a week previous. Maize, Beans, and Peas were quiet on former terms. Flour was firm, with an upward tendency.—Owing to the critical aspect of political situations, the corn market showed increased firmness on Wednesday. For certain qualities of Wheat an advance of quite 1*s.* per quarter on the rates of Monday was realised. Factors are now very firm in their demands for more money, and were not anxious to sell at this improvement. Barley was quoted 1*s.* per quarter dearer, while in Oats and Maize there was an advance of from 6*d.* to 1*s.* per quarter. Beans and Peas were much the same. Flour was more in request, and prices were 6*d.* to 1*s.* higher.—Average prices of corn for week ending April 7:—Wheat, 51*s.* 5*d.*; Barley, 41*s.* 11*d.*; Oats, 25*s.* 5*d.* For the corresponding week last year:—Wheat, 45*s.* 2*d.*; Barley, 33*s.* 10*d.*; Oats, 25*s.* 11*d.*

CATTLE.

At Copenhagen Fields on Monday the demand for beasts of fine quality was good and in some instances rather over our top quotations was realised. The trade in sheep was not quite so active, but prices scarcely altered. The price of lambs fell from that current on Thursday last, nearly 4*s.* per head. Other stock came in demand, being scarce, but trade for them was generally worse. Quotations:—Beasts, 4*s.* 4*d.* to 5*s.*, and 5*s.* 4*d.* to 5*s.* 10*d.*; calves, 5*s.* 8*d.* to 6*s.* 8*d.*; sheep, 5*s.* 8*d.* to 6*s.*, and 6*s.* 4*d.* to 6*s.* 8*d.*; lambs, 8*s.* to 8*s.* 10*d.*; pigs, 4*s.* 4*d.* to 5*s.*

HAY.

The Whitechapel market report for Tuesday states that there was a full supply of fodder at market, and with a dull trade prices were with difficulty supported. Prime Clover, 100*s.* to 128*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 123*s.*; inferior, 70*s.* to 85*s.*; and straw, 40*s.* to 55*s.* per load.—On Thursday there was a moderate demand and fair supplies. Quotations:—Clover, best, 100*s.* to 128*s.*; inferior, 85*s.* to 95*s.*; hay, best, 100*s.* to 122*s.*; inferior, 65*s.* to 80*s.*; and straw, 40*s.* to 54*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 132*s.* to 138*s.*; inferior, 110*s.* to 120*s.*; superior Clover, 130*s.* to 140*s.*; inferior, 115*s.* to 126*s.*; and straw, 52*s.* to 58*s.* per load.

POTATOS.

The Borough and Spitalfields markets report state that the demand for Potatos was steady without being good, and prices remain much at their previous level. The supplies are moderate. Kent Regents, 90*s.* to 115*s.* per ton; Essex do., 80*s.* to 105*s.*; Scotch do., 90*s.* to 120*s.*; flukes, 130*s.* to 155*s.*; Victorias, 120*s.* to 160*s.*; kidneys, 100*s.* to 120*s.*; and rocks, 80*s.* to 100*s.*—The imports into London last week consisted of 36,410 bags from Hamburg, 20,134 Antwerp, 6942 Bremen, 3872 Colberg, 1586 Ghent, 814 Brussels, 200 Harlingen, 187 sacks Malta, 167 Dunkirk, and 100 tons Rouen.

COALS.

There was a steady demand in the market on Monday at previous currencies. Wednesday's market was a quiet one, at the following quotations:—East Wylam, 17*s.* 8*d.*; Walls End—Hawthorns, 17*s.* 0*d.*; Lambton, 19*s.* 6*d.*; South Hetton, 20*s.*; Tees, 19*s.* 9*d.*

Sole Medallists for the Best Hot-Water Apparatus at the United States Centennial International Exhibition, Philadelphia.

By Royal Her Majesty's Letters Patent

WRIGHT'S ENDLESS-FLAME-IMPACT HOT-WATER BOILERS.

GUARANTEED

The most Powerful, the most rapid, the most Economical, the Simplest, and the Cheapest in the World.

"The '**Boiler of the Future.**' I have no doubt about this."—WM. THOMSON, *Tweed Vineyards.*

From the "Gardener," March, 1877.

WRIGHT'S PATENT

ENDLESS FLAME-IMPACT BOILER.

"This boiler is attracting a good deal of attention in the horticultural world at the present time; and as I have just had one of their largest-sized ones fitted up here, and have now got it well tested, perhaps a few lines from me upon its capabilities may not be without some advantage to some of your numerous readers. I have had some experience as to the annoyance and extra labour caused by badly-constructed boilers, and any improvement effected in these to lessen the labour and fuel demands the attention of all interested parties.

"To give your readers a better idea of the work this boiler has to do, I may begin by stating that our hothouses consist of a range having a total length of 192 feet, a ridge-and-furrow-roofed greenhouse being in the centre, from which Vineries on each side, with Camellia-house and general plant-house at each end; on opposite side of wall we have a Fern-house, partly lean-to and partly span, 90 feet in length, varying in width from 20 to 30 feet. Attached to end of boiler-house is our laundry, with a drying chamber fitted up with about 250 feet of 4-inch piping.

"The whole of the above houses are heated with hot water, and have a total of about 3000 feet of 4-inch piping. We had formerly two oval flue boilers, one being 4 feet 6 inches long, the other 4 feet long. With these two boilers kept hard fired we always found great difficulty in keeping up the temperature during frosty weather, and had frequently to lose a night's sleep attending to the fires. On the last day of last year the larger boiler came to grief—the bottom from it dropped out in fire; and in taking down some of the brickwork it was found to have cracked beyond repair. To be thus left in the middle of winter with only the one boiler was no joke. I had to look out for another without delay. I have given a good deal of attention to the construction of hot-water boilers, and I must say I had never seen one that came up to my idea of what a boiler should be until some time ago my attention was called to a drawing of Wright & Co.'s, which appeared in the *Gardeners'.*

"After talking the matter over with my employer, W. S. Mitchell Innes, Esq., he at once granted permission to get the boiler I had formed under an opinion of. I at once put the order into the hands of Messrs. Meikle & Philp, hothouse builders and hot-water engineers, Torphichen Street, and they have fitted it up and attached the piping in the most complete manner. I also got some additional tight valves attached, so that if anything should at any time go wrong it can be attended to without disturbing the piping.

"And now as to the capabilities of the boiler for the work. As formerly stated, I had considerable difficulty in keeping up the heat with the two oval flue boilers kept hard at work. I now find that with the remaining oval flue boiler idle, I can heat up the whole of the houses and the laundry to a degree that never were before, and that with much less coal than it took to fire one of the oval flue boilers.

"Our chimney consists of a flue 79 feet long, led horizontally through centre of back wall, with 18 feet of a perpendicular stalk. Some doubt was expressed that a flue required a chimney pipe attached to boiler about 6 feet long, there would be deficiency of draught; but we have found the opposite to be the case. I notice that the boiler has had 6-inch iron pipe, with elbow at boiler, and cleaning door on the angle, and as I found the draught very strong I got a throttle-valve damper fitted into the bend of elbow at chimney, and am able so regulate the fire to a nicety, and by banking-up the fire at 10 P.M., and turning the damper fully half round, I can leave it to its work with the greatest confidence that it will keep up a temperature in the house the following morning; and instead of, as formerly, having to sit up firing the fire all the night through, and sometimes whole ones, we can retire to rest in a reasonable hour, confident of sleep being undisturbed by unpleasant dreams of plants and fruits going to ruin. In concluding my remarks I may say that not the least of the good qualities of this boiler is its portability. We had not the slightest difficulty in putting it down in our contracted stoke-hole, and through door of same, which is 2 feet broad, and fitting it up in a recess 4 feet square, and I am confident that with the assistance of two men I could take the whole to pieces and have it again in full working order in two hours. I have no hesitation in saying that for rapidity of circulation, small consumpt of fuel, portability, and cleanliness, it has no rival, and have no doubt this boiler will win its way; and where coals are high in price it will effect a considerable saving, and as there is a good fire space in it it will be found a capital boiler for burning wood and other fuel."—J. CLARK, *The Gardens, Parson's Green, Edinburgh.*

[We have a very high opinion of this boiler, and predict that it will take a foremost place in heating hothouses and all other buildings, and shall have some further remarks to make about the principles of it next month.—ED. *Gardener.*]

"I think yours the most perfect '**Heat Trap**' yet invented.—DAVID THOMSON, *Drumlanrig Gardens.*"

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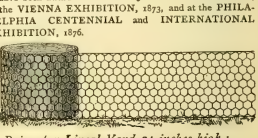


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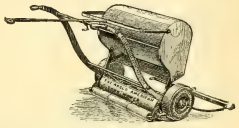
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WANTED, as GARDENER, a single Man, who understands the Management of Flower and Kitchen Gardens, and can Prune, Graft, Bud, Layer and Propagate. Kitchen Gardening, and Glass.—Address, stating fullest part culars, to T. W. H., Post-office, Basingstoke, Hants.

WANTED, MAN and WIFE, without incumbrance, as Gardener and Laundrywoman. Good character indispensable. Apprentice, coal, and gas found.—Apply, by letter, stating last employment and wages expected, to R. B., Point House, Blackheath, S.E.

WANTED, as UNDER GARDENER, a single Man; must understand Cows. Lodging found.—G. HOWARD, 20, Oaklands, Cricklewood, Kilburn, N.W.

WANTED, a Young MAN, with some knowledge of the Propagation of Camellias, Azaleas, Epacris, &c., and to take Charge of the House Department.—MANAGER, Heath Nursery, Moortown, near Leeds.

WANTED, a PROPAGATOR, that can undertake to strike Heaths in large quantities; a young man not objected to. Character and abilities will be strictly investigated.—B. MALLER, Lewisham, Lee, S.E.

WANTED, Two Young MEN, accustomed to Indoor Nursery Work. Preference given to those who have a desire to engage for two or three years. References required from last situation. State age and wages expected to Messrs. FISHER, HOLMES, AND CO., Handsworth Nursery, Sheffield.

WANTED, a Young MAN, in the Houses. Quick at Potting, &c.—E. COOLING, Mile Ash Nurseries, Derby.

WANTED, in a Garden, TWO YOUTHS, about 17 or 18, who wish to improve.—Address, with full particulars, to ALPHA, Post-office, Stokenchurch, Oxon.

Knifeman.

WANTED, a practical Man, as KNIFEMAN, for a Provincial Nursery. Good wages given to a suitable person.—J. P., *Gardeners' Chronicle* Office, W.C.

WANTED, a MAN, competent to Overlook and take Charge of the Painting and Glazing Department. One with a knowledge of other duties connected with Repairs and Alterations in a large Nursery would be most competent. Several pairs of hands would help under him (Carpenters kept independent of his department).—E. G. HENDERSON AND SON, Pine-apple Nursery, Maida Vale, London, N.W.

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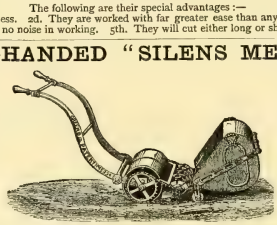
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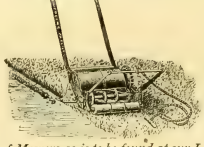
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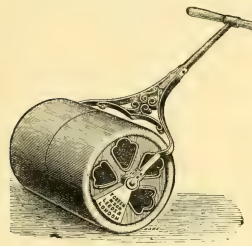
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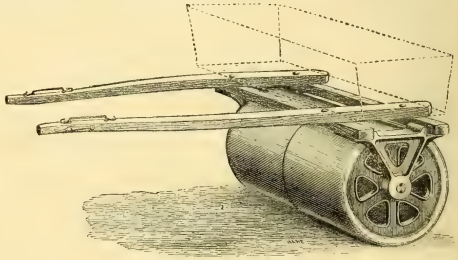
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THE

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ROYAL MANCHESTER BOTANICAL and HORTICULTURAL SOCIETY.—AURICULA SHOW, at the Town Hall, Manchester, on April 27. The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1877 (ONE THOUSAND POUNDS in Prizes) will open on May 23. Special SHOW of ROSES, TULIPS, DINNER-TABLE PLANTS, on May 25 and 26. ENTRIES close on May 20. For Schedules apply to

BRUCE FINDLAY, Curator and Secretary.
Royal Botanic Gardens, Manchester.

GRAND FLOWER SHOW will be held by the Orleans House Club, Twickenham, on FRIDAY and SATURDAY, May 25 and 26. The Show will be under the entire superintendence of Mr. Thomas R. Rollisson. Schedules and full particulars can be had of WILLIAM ROLLISSON and SONS, The Nurseries, Tooting, S.W.
Assistant H. WOMBWELL, Manager and Secretary.
Offices, 14, Waterloo Place, S.W.

BURTON-ON-TRENT FLORAL and HORTICULTURAL SOCIETY.—The FIRST EXHIBITION of the Season of PLANTS, FLOWERS, FRUITS and VEGETABLES will be held in the Hay, Burton-on-Trent, on WEDNESDAY, June 27, 1877. £60. £10, and £5 for the best TWELVE STOVE or GREENHOUSE PLANTS, &c.
SCHEDULES of PRIZES and any information may be obtained from the Secretary, to whom Nurserymen and others wishing to become Subscribers should apply.
F. S. DUNWELL, Secretary.
10, Market Place, Burton-on-Trent.

TORBAY HORTICULTURAL SOCIETY, Torquay, JUNE 27 and 28.
SUMMER SHOW of PLANTS, FRUIT, VEGETABLES, &c., Prizes ONE HUNDRED POUNDS; and a Grand ROSE SHOW, Money Prizes upwards of SIXTY POUNDS, and Five Silver Cups. For 72 varieties, one truss each, 1st prize, Cup, value £8; 2d prize, £5; 3d prize, £2. For 12 Tea and Noisette Roses, one truss each (Amateurs), 1st prize, presented by Messrs. Harris, Sanford & Co., Cup, value five guineas Entries close Thursday, June 21. Schedules, &c. ready.
W. FANE TUCKER, Capt., Hon. Sec. T. H. S.
Braddon Tor, Torquay.

FROME ROSE CLUB.—The ANNUAL SHOW of the above is fixed for THURSDAY, June 28, ONE HUNDRED POUNDS will be given in Prizes, besides Silver Cups, &c.
A. R. BAILY, Hon Sec.

COLCHESTER and EAST ESSEX HORTICULTURAL SOCIETY.—The SHOWS are fixed for MAY 24 and JULY 19. Prize Lists, &c., to be had of Mr. W. L. STANEY, Sec., Colchester.

THE INTERNATIONAL POTATO EXHIBITION will be held at the Royal Aquarium, Westminster, S.W., on October 3, 4, and 5, when Prizes amounting to upwards of ONE HUNDRED and TWENTY POUNDS will be awarded. SCHEDULES are now ready, and may be had on application to
Mr. J. A. McKENZIE,
1 and 2, Great Winchester Street Buildings,
April 7, 1877. London, E.C.

PROTHEROE and MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 58, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

NURSERYMEN COMING to HOLLAND during the International Horticultural Show at Amsterdam, in April, 1877, are kindly requested to Visit my Nursery.
A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

NEW REGAL PELARGONIUMS (Two of the Gems of the Season).
"PRINCE OF WALES" and "PRINCESS OF WALES."
Price 1 guinea each.
To be sent out the first week in May by
WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Special Offer.—150,000 Vesuvius.

WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, 10s. per 100; or from store-pots, 8s. per 100, 75s. per 1000, package included. Terms Cash.
Cemetery Nursery, Gravesend, S.E.

Pelargoniums.

CHARLES TURNER can supply strong healthy plants of all the classes; they will have a good head of bloom this season.
The Royal Nurseries, Slough.

Gentiana acaulis.

OSBORN and SONS can supply fine Clumps of the above at 6s. per dozen, 30s. per 100. Trade price on application.
The Nurseries, Fulham, London, S.W.

To the Trade.

MANDEVILLA SUAVEOLENS.—Strong and thoroughly healthy plants, 8s. per dozen, or £3 per 100.
FRANCIS R. KINGHORN, Sheen Nurseries, Richmond, Surrey.

EARL BEACONSFIELD FUCHSIA is the greatest novelty of the year. Two First-class Certificates. (See *Gardeners' Chronicle*, April 7, p. 436) 5s. 6d., post-free Special Trade offers.
JOHN LAING AND CO., Stanstead Park, Forest Hill, S.E.

Verbenas, Verbenas, Verbenas.

WILLIAM BADMAN offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, at 12s. per 100; or turned out of pots, 10s. per 100. Good rooted Cuttings, 6d. per 100, 50s. per 1000, package included. Terms Cash.
Cemetery Nursery, Gravesend, S.E.

VERBENAS, VERBENAS, VERBENAS.—Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6s. per 100, 50s. per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, for 8s. Terms cash.
H. BLATCHFORD, The Dorset Nurseries, Blandford.

SPIRÆA PALMATA.—Fine Crowns for Forcing, 75s.; smaller, 25s. to 50s. per 100.
CHARLES NOBLE, Bagshot.

CENTAUREA CANDIDISSIMA.—Nice plants, in single pots, 20s. per 100, package included. Terms Cash.
JOHN HOUSE, Eastgate Nurseries, Peterborough.

Carnations, Picotees, and Cloves.

CHARLES TURNER can supply the above in great variety. Now is the time for planting them out.
The Royal Nurseries, Slough.

Clematis Roots for Grafting, 30s. per 1000.

CLEMATIS.—Finest named kinds, spring and autumn flowering, any number at very reduced prices.
CHARLES NOBLE, Bagshot.

New Spring Catalogue

CHARLES TURNER'S CATALOGUE of PLANTS is now ready, and may be had free on application. The Royal Nurseries, Slough.

Scarlet Runners. English-saved.

TO MARKET-GROWERS and LARGE GROWERS.
JAMES FARRAR AND CO. offer a very fine lot of the above, on moderate terms.
Seed Warehouse, 15, Golden Lane, Barbican, London, E.C.

English Scarlet Runner Beans.

H. AND F. SHARPE have a few Bushels of the above more than they require, and offer them to the Trade at a very reasonable price.
Seed Growing Establishment, Wisbech.

Gentlemen's Gardeners, Amateurs, and Others REQUIRING

GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mere.
Price List on application.

WANTED, 400 nice Plants of SEMPERVIVUM CALIFORNICUM. State lowest price for Cash with order or reference.
RODGER, MCCLELLAND AND CO., Seed Merchants, Derby.

MRS. POLLOCK, or OTHER TRICOLOR GERANIUMS. Parties having such to Dispose of will oblige by communicating. State quantity, size, and price.
R. AND F. ALLUM, The Nurseries, Tamworth.

WANTED, Robinson's Champion Scotch and Red Pickling CABBAGE PLANTS.
Must be strong.
Send sample, and lowest cash price to
B. T. PIERPOINT AND CO., Horse Market, Warrington.

ASPARAGUS, Giant, 3-yr. and 4-yr., fine, price 3s. per 100.
R. BATH, Crayford, Kent.

To the Trade.

ASPARAGUS, Giant, 1-yr., 2-yr., 3-yr., and 4-yr., fine.
JAMES BIRD, Nurseryman, Downham.

ASPARAGUS.—Now is the best time for Planting. Strong plants, at 2s. 6d., 3s. 6d., and 5s. per 100; 20s., 30s., and 40s. per 1000.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

NEW POTATO, 1877.—Lowe's Late Keeping Forfyfold, a much heavier cropper than Early Rose, fleshy very white and good. Single Tubers, 6d. each.
J. AND G. LOWE, Uxbridge.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application
Mr. WEBB, Calcot, Reading.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Vines, Vines, Vines.—The Planting Season.

THE COWAN PATENTS' COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Canes of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when canes are preferred. Trade supplied.

Grape Vines.

B. S. WILLIAMS has still on hand a large stock of MUSCAT of ALEXANDRIA and SCOTT'S MUSCAT, strong Planting or Fruiting Canes, 5s. each. Early orders respectfully solicited.
Victoria and Paradise Nurseries, Upper Holloway, N.

Tea Roses on Seedling Briar.

EDWIN HILLIER offers the above, in splendid plants and best varieties, by the dozen or 100; also New H.P. ROSES in 1876. Price LISTS on application.
Nurseries, Winchester.

All the Best Selected

NEW CONTINENTAL ROSES for 1877. Fine plants of the above now ready.
Descriptive CATALOGUES on application.
WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

NEW 1877 ROSES.—Our Plants are now fine and strong. Early orders are respectfully solicited. LISTS on application.
The New CLEMATIS LIST will be ready in May.
EWING AND COMPANY, Royal Norfolk Nurseries, Eaton, Norwich.

BEGONIAS, tuberous-rooted. — Strong seedlings, just starting into growth, fine for Planting Out this summer, 9s. per dozen, 60s. per 100.
RODGER MCCLELLAND AND CO., 64, Hill Street, Newry.

ORANGE TREES.—Seventeen, in good healthy condition, have not been grafted on, for Sale.
D., Captain A. P. Traherne, Sarn, Bridgend, South Wales.

MYRTLES, Large.—For Sale Seven, in pots and tubs, from 6 to 10 feet high, price £8.
Mr. FLETCHER, Darby Lodge, Sunbury-on-Thames, Middlesex.

HOLLYHOCKS.—Lists of Varieties, with their colours and price, on application; also TEA ROSES, in pots.
L. WOODTHORPE, Glazenwood Nursery, Braintree, Essex.

To the Trade.

PINUS INSIGNIS, 1-yr., in single pots, 8s. per 100, 90s. per 1000.
IVY, Irish, 1-yr., 8s. per 1000, 70s. per 10,000; 2-yr., about 1 to 1½ feet, 80s. per 1000.
RODGER MCCLELLAND AND CO., 64, Hill Street, Newry.

Special List of Choice Orchids (No. 33).

THE NEW PLANT AND BULB COMPANY beg to announce that the above is now ready, and will be sent post-free on application. It also contains a List of New Ferns, Beautiful Foliage Plants, Eurycles australasica, &c., all at low prices. Lion Walk, Colchester.

Centaurea candidissima or ragusina, PACKAGE FREE.

WOOD AND INGRAM offer fine plants of the above, thoroughly established in single pots, at 20s. per 100, or £5 per 1000. Not less than 50 will be sold at the 100 price, or 500 at the 1000 price.
The Nurseries, Huntingdon.

SALES BY AUCTION.

Valuable Imported Orchids.—(No. 4937)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 23, at half-past 12 o'Clock precisely, a fine importation of RARE ORCHIDS, collected and sent home by Mr. F. Klaboch, consisting of a large quantity of the rare Uropedium Lindeni, in first-rate possible health, continuous masses of altogether unusual size, freely breaking and growing: a fine lot of the beautiful Pescatorea Dayana, and the rare Batemannia Wallisi major, in finest condition, many large Plants of Bollea coelestis, Odontoglossum Rezelii, and Odontoglossum vexillarium, from a new district, together with a great quantity of Odontoglossum Krameri, and Odontoglossum cirrhosum: also the new Maxillaria speciosa, described by Professor Reichenbach, *Gardeners' Chronicle*, August 12, 1876: a new Oncidium in the way of O. Weltoni, and a quantity of Established and Cool Orchids.

On view the morning of Sale, and Catalogues had.

Hardy Plants and Bulbs.—(No. 4939.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, April 25, at half-past 12 o'Clock precisely, HARDY HERBACEOUS PLANTS, ROSES, RHODODENDRONS, YUCCAS, SHRUBS, CLIMBERS, GREENHOUSE PLANTS, LILIES, GLADIOLI, RUSTIC GARDEN WORK, MOWING MACHINES.

On view the morning of Sale, and Catalogues had.

Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 26, at half-past 12 o'Clock precisely, a large importation of plants of CYMBIDIUM EBURNEUM, also a large quantity of plants of the handsome and rare CŒLOGYNE BARBATA, one of the handsomest Cologynes known, giving snow-white flowers in the way of Cologyne cristata, but with, erect spikes and the flowers not way, the lip bordered with ciliate fringes: and a quantity of plants of the beautiful DENDROBIUM FREEMANII, a large number of plants of AERIDES FIELDINGII (Foxhush), DENDROBIUM HOOKERIANUM, D. NOBILE WALLICHII, VANDA STRATA, DENDROBIUM DENSIFLORUM, D. JENKINSII, and others: good plants of the rare ARUNDINA BAMBUSÆFOLIA, which gives large Cattleya-like flowers of a light purple colour, and the rich violet-purple labellum: also some good plants of ODONTOGLOSSUM PESCATOREI, O. CORDATUM, O. CRISPUM (Alexandræ), and O. TRIUMPHANS, &c.

On view the morning of Sale, and Catalogues had.

Imported Disas.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 26, at half-past 12 o'Clock precisely, a quantity of good Clumps, each containing a number of tubers just starting into growth, of DISA GRANDIFLORA; and at the same time a large number of the blue-flowered DISA, D. HERSCHELLII.

On view the morning of Sale, and Catalogues had.

Stove and Greenhouse Plants.

MR. J. C. STEVENS has been favoured with instructions from Leigh Pemberton, Esq., M.P., of Torry Hill, near Sittingbourne, to offer for SALE by AUCTION, on the Premises, on FRIDAY, May 11, at 1 o'Clock precisely, the fine Collection of STOVE and GREENHOUSE PLANTS formed by the late Lord Kingsdown, and which have been exhibited most successfully for the last ten years. The Collection comprises Camellias, Azaleas, Palms, Dracænas, Cycas, Stephanotis, Francisceas, Orchids, &c, of the finest sorts, and will be sold without the least reserve.

On view the Day prior and morning of Sale, and Catalogues had of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

N.B.—A conveyance will be provided at Sittingbourne to meet the 10.10 train from Victoria.

Bucclecote, between Gloucester and Cheltenham.

Valuable FREEHOLD HORTICULTURAL GARDENS, with extensive VINERIES and GREENHOUSES, and ACCOMMODATION and BUILDING LAND.

BRUTON, KNOWLES AND BRUTON have received instructions to SELL by AUCTION, at the New Inn Hotel, Gloucester, on MONDAY, April 23, at 7 for 7.30 in the evening, in Six Lots, the well-known Hucclecott Gardens, laid out and arranged some years ago by G. S. Wintle, Esq., and now in the occupation of Mr. John Barnes, Nurseryman and Florist.

Lot 1.—HUCCLECOTE GARDENS, embracing an area of 1a. 2r. 4p. of highly productive Garden Land and Orcharding, planted with fruit Trees of the choicest kinds, with well-arranged Greenhouses, Vineries, Peach-houses, and Forcing Pits (capable of being rented at three feet of glass), comfortable Dwelling-house, Barn, Stables, store-rooms, and other Outbuildings belonging thereto.

Lot 2.—SITE OF BUILDING LAND, as now staked out, adjoining the above, containing about 2r. 28p., having a frontage to the road leading to Lot 1 of about 100 feet.

Lot 3.—A similar Lot, adjoining the last mentioned.

Lot 4.—A similar Lot, adjoining the last mentioned.

Lot 5.—A piece of valuable BUILDING LAND, adjoining the last mentioned Lot, and having an important frontage to the public road leading from Gloucester to Birdlip, containing about 1a.

For further particulars apply to Mr. P. COOKE, Solicitor, Gloucester; or of the Auctioneers, Albion Chambers, Gloucester, where a Plan of the property may be seen.

WANTED, a Small FLORIST'S BUSINESS. In the neighbourhood of London preferred. Address, with particulars,

M., 393, Liverpool Road, Islington, N.

FOR SALE, TYNEVILLE VINERIES, St. Aubin's Bay, Jersey, consisting of handsome Gothic Residence, and Gardener's Cottage in keeping: also Outhouses, and between 9,000 and 10,000 superficial feet of Glass, heated and fitted up with latest improvements and every convenience for saving labour. About 2000 superficial feet of Glass for early Potatos. The whole has been erected within the last six years, and is now in full and early bearing. Such an opportunity of profitable and safely investing seldom occurs. Satisfactory reasons given for selling.

Full particulars of the owner at the above address.

Nursery.

TO BE SOLD, a flourishing, extensive, and old-established NURSERY, occupying a first-class position near London. Capital House, Stables, &c. Suitable for either a private Gentleman or a Business Man. Satisfactory reasons for disposal.

Address, in first instance, by letter only, E. W., care of Messrs. Kingsbury & Co., London House, George Yard, E.C.

To Nurserymen and Florists.

TO BE LET, 4 miles north of London, in a first-class position, a comfortable old-fashioned COTTAGE, in its own Grounds of about 2 acres. An excellent opening for a Florist. Close to station and Market. Apply to R. R. B., 56 and 58, Praed Street, Paddington, W.

To Nurserymen, Seedsmen, and Florists.

FOR DISPOSAL, a BUSINESS, fine large HOUSE and SHOP, small compact NURSERY close to, three Greenhouses well heated with hot water, and sixteen Frames, fully stocked with saleable Bedding Plants. Good Jobbing connection, and every chance of greatly increasing it. Shop in first-class position. Long Lease and moderate rent. Apply for further particulars on the premises,

3, Swiss Terrace (adjoining Swiss Cottage Station, Metropolitan Railway), Belsize Road, St. John's Wood, N.W.

Hothouse Plants and Ferns.

TO BE DISPOSED OF, by Private Treaty, and in One Lot, in consequence of intended Conversion of Hothouse to Vinery, about 150 fine healthy EXOTIC PLANTS and FERNS. For particulars apply, and offers to be made to

Mr. HENRY C. WEAVER, Auctioneer, Taunton.

Offices, 1, Bath Place, Taunton, April 21.

Transfer of Business.

MESSRS. J. CROUCHER and H. BOLLER beg to inform their Friends they have TAKEN THE BUSINESS lately carried on by C. PFERSDORFF, at 75, South Row, Kensal New Town, and hope to receive the continuance of those who patronised the late C. Pfersdorff; also the Public generally.

All orders for any Succulent Plants, both miniature and others, will receive prompt attention.

Messrs. C. & B., having had great experience in this class of plants, can guarantee correct names. The Trade supplied.

To the Trade.

J. L. WATSON, Lower Road Nursery, Gravesend, is now offering:—LORELIA, Bluestone, 4s.: CALCEOLARIA, Golden Gem, 6s.: HELIOTROPE, dark, 6s.: light, 4s.: FUCHSIAS, 5s. per 100: including packing for Cash.

Special Trade Offer.

SEAKALE, good Planting, 20s. per 1000. 3s. 6d. per 100: CUTTINGS, fit for Planting, 7s. 6d. per 1000: for Cash with orders.

RICHARD LOCKE, Redhill, Surrey.

Verbenas, Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other mixed sorts, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, packing included. Cash to accompany all orders.

Islington Nursery, Park Street, Islington, N.

PRICKLY COMFREY — The most Productive and Permanent Forage Plant grown.—Cut Five times a year. Extract from Report of Trials produced in one season: Sets, 60z. per 1000, or strong plants £4 per 1000, carriage paid by rail

C. R. FREEMAN, Economic Seedsman, Norwich.

Spring, 1877.

WOOD AND INGRAM'S New Priced Descriptive SPRING CATALOGUE of BEDDING and OTHER PLANTS is now ready, and will be sent free on application to Nurseries, Huntingdon.

Herbaceous and Alpine Plants (Illustrated).

THOMAS S. WARE'S CATALOGUE of the above for the present year is Now Ready, and includes Forty Pages of Choice Perennials, Bamboos, and Ornamental Grasses, Bog Plants, and Aquatics; also, a few Bulbs. Post-free on application.

Hale Farm Nurseries, Tottenham, London.

The Lily Nursery, Ghent, Belgium.

J. VANDER SWAELMEN'S English CATALOGUE for 1877 is now ready, containing one of the largest collections of Lilies, with descriptions: Azaleas, Camellias, &c.: Japan Maples, Rare Plants, Orchidaceæ Ferns, Hardy Cypripediums, Trilliums, Winter and Spring Flowering Plants, &c. Grains and post-free.

Agents:—Messrs. C. J. PEACOCK SMITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

To the Trade—Turnip Seeds.

H. AND F. SHARPE are prepared to make Contracts with the Trade for their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application to

Seed Growing Establishment, Wisbech.

Gentlemen about Planting Beds of Lily of the Valley.

W. F. BOFF has to offer a quantity of imported Clumps, that have been used for cut flowers during the past year. They are the best Dutch variety. Price 25s. per 100, free of packing.

203, Upper Street, Islington, N.

Large Camellia.

JOHN CARTER, Nurseryman, Keighley, has to offer a grand plant of CAMELLIA CHANDLERII ELEGANS, suitable for large Conservatory or Winter Garden; height upwards of 15 feet, and 8 feet through: it is in a large tub and fine health. Also strong Purple VERBENAS, from cutting pots, 4s. per 100.

Special "Reduced" Offer for Cash

OF SUPERIOR NEW ENGLISH SCARLET RUNNER BEANS, selected as the greatest croppers in cultivation: can be highly recommended and sure to give satisfaction: price 2s. per bushel. Fine Early Longpods, at 6d. Common Windsors, nice sample, at 8s. 6d.; selected Broad Windsors, at 12s. per bushel. Bushel Bags, 6d. each: Half-bushel Sacks, 4d. each. Terms Cash with orders. F. Gee has now only a few quarters of each of the above left, therefore to ensure a supply early orders are requested

FREDK. GEE, Seed Grower, &c., Biggleswade, Beds.

ROYAL BOTANIC SOCIETY OF LONDON.

SECOND SPRING EXHIBITION, April 18, 1877.

AWARDS OF PRIZES.

12 STOVE and GREENHOUSE PLANTS.

1st, Mr. George Wheeler, Gr. to Sir F. H. Goldsmid, Bart.

6 HEATHS.

1st, Mr. George Wheeler, Gr. to Sir F. H. Goldsmid, Bart.

12 HARDY HERBACEOUS PLANTS, 6 varieties.

1st, Mr. W. P. Roberts, Gr. to W. Terry, Esq., Peterborough House, Fulham, S.W.

3 ROSES in Pots. (Nurserymen.)

1st, Messrs. Paul & Son, Cheshunt, N.

2d, Mr. Charles Turner, Slough.

6 NEW ROSES in Pots. (Nurserymen.)

1st, Mr. Charles Turner, Slough.

6 GREENHOUSE AZALEAS. (Amateurs.)

1st, Mr. A. Ratty, Gr. to R. Thornton, Esq., The Hoo, Sydenham

2d, Mr. J. James, Gr. to W. F. Watson, Esq., Isleworth.

3d, Mr. George Wheeler.

6 GREENHOUSE AZALEAS. (Nurserymen.)

1st, Mr. C. Turner, Slough.

2d, Messrs. Jas. Ivery & Son, Dorking.

6 AMARYLLIS.

1st, Mr. W. Knowles, Gr. to H. Little, Esq., Hillington Place.

2d, Mr. W. P. Roberts, Gr. to W. Terry, Esq.

12 BULBOUS PLANTS, Hyacinths, Tulips, and Crocuses excluded.

1st, Mr. W. P. Roberts.

9 CINERARIAS.

1st, Mr. James, Isleworth.

2d, Mr. J. Ford, Gr. to F. G. Megaw, Esq., Upper Norwood.

6 EARLY FLOWERING STOVE PLANTS.

2d, Mr. George Wheeler.

12 AURICULAS.

1st, Mr. Charles Turner, Slough.

6 OLD-FASHIONED HARDY PLANTS, in flower.

1st, Mr. W. P. Roberts, Gr., Peterborough House, Fulham.

MISCELLANEOUS.

EXTRA PRIZES were awarded as under:—

Messrs. James Veitch & Son, Chelsea, S.W., for a group of Roses in pots.

Mr. H. Heims, Gr. to F. A. Philbrick, Esq., Avenue Road, for a collection of Orchids.

Mr. James Walker, Nurseryman, for a collection of Cyclamens.

Mr. George Wheeler, for a collection of Stove and Greenhouse Plants.

Mr. B. S. Williams, Holloway, N., for a collection of Stove and Greenhouse Plants.

Mr. J. Walker, Nurseryman, Thame, Oxon, for a collection of Cut Roses

Mr James Ford, Gr to F. G. Megaw, Esq., Isleworth, for 2 Clerodendron Balfourianum.

BOTANICAL CERTIFICATES OF MERIT.

Messrs. James Veitch & Son, for Acalypha musaica, Coleus multicolor, Croton Macarthuri, and Philodendron Hollonianum.

Mr. B S. Williams, for Adiantum neo guineense.

Mr. Roberts, Peterborough House, Fulham, S.W., for Hæmanthus Terryi.

FLORICULTURAL CERTIFICATES OF MERIT.

Mr. J. James, Isleworth, for Cinerarias Sarah Winter and Lord George Hamilton.

Messrs. Paul & Son, Cheshunt, N., for H.P. Rose Margaret Brassac.

LYCOPODIUM.—10,000, well grown, for Sale: also a quantity of anonymous DAHLIA ROOTS, as lifted. No reasonable offer refused.

J. BERKLEY, Hope Nursery, Deptford, S.E.

PONTICUM RHODODENDRONS —for Cover.—2½ to 3 feet, fine, £8 per 1000

J. JACKSON, Nursery, Kidderminster.

GIANT ASPARAGUS PLANTS, the best 1 and 2 years, 9s. per 100, 60s. per 500, 90s. per 1000. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LIST, free.

Extra Strong SEAKALE, 2s. per dozen.

RICHARD SMITH, Nurseryman, Worcester.

Pelargoniums, Pelargoniums.

JAMES KELLER AND SON have a fine healthy Stock of the above to offer, at the following low prices for Cash, viz., 35s. per 100, distinct sorts, hamper and package included; also extra strong plants, in 32-pots, 18s. per dozen, in 48-pots, 9s. per dozen, 60s. per 100, basket and packing extra. Crown Nursery, Reading.

To Pine Growers.

QUEEN PINES.—The Advertiser, who is giving up Pine Cultivating, has to Dispose of the following, viz.; 13 to Fruit this Summer, 18 to Succeed, and 7 Newly-potted Suckers; all in healthy condition. Apply, by letter only, to

H. B. GARLING, Esq., Southborough Hall, Tunbridge Wells.

VERBENAS.—Strong, spring-struck Plants, beautifully clean and free from disease, are now being sent out by S. Bide, at 6s. per 100, or in pots, at 8s. per 100, consisting of Purple, White, Scarlet, Pink, and many other shades of colour, all true to name.

CALCEOLARIA, Golden Gem and other varieties, good sturdy plants, 8s. per 100, 6s. per 1000.

HELIOTROPE (light and dark) 6s. per 100.

COLEUS VERSCHAFFELTII, 10s. per 100.

BEDDING and other GERANIUMS, Plain and Zonal, in good variety, 10s. per 100.

MRS. POLLOCK GERANIUMS, established in single pots, 20s. per 100.

CRYSTAL PALACE GEM, established in single pots, 15s. per 100.

All the above package-free for Cash.

S. BIDE, Alma Nursery, Farnham, Surrey.

Strawberries.

CHARLES TURNER can supply strong Plants of the following popular varieties :—

AUGUSTE NICAISE,	PRESIDENT,
ELTON PINE,	ROYALTY,
FROGMORE LATE PINE,	SABREUR,
KEENS' SEEDLING,	SIR JOSEPH PAXTON,
NEWTON'S SEEDLING,	STIRLING CASTLE.

The Royal Nurseries, Slough.

Cheap Plants —Special Offer.

WILLIAM BADMAN offers, as under, all healthy strong stuff :—

VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 100 per 100 ; well-rooted cuttings, 6s. per 100, 50s. per 1000 ; 12 choice named sorts, 2s. per 100.

CALCEOLARIA, Golden Gem, 5s. per 100, 40s. per 1000.

LOBELIA, speciosa (true), 3s. per 100, 20s. per 1000 : Blue-stone and pumila grandiflora, all from cuttings, 5s. per 100, 40s. per 1000.

PELARGONIUMS, Vesuvius, from stores, 8s. per 100, 75s. per 1000 ; Jean Sisley, 10s. per 100 ; Madame Vaucher, 10s. per 100 ; Master Christine, 12s. per 100 : all from single pots.

,, Tricolor, Mrs. Pollock, 20s. per 100 ; Crystal Palace Gem, 12s. per 100 ; Flower of Spring, 12s. per 100.

HELIOTROPE, finest dark, good bushy plants, 12s. per 100 ; rooted cuttings, 6s. per 100.

AGERATUM, Imperial Dwarf, blue, fine bedding plant, 5s. per 100 ; 40s. per 1000.

IRESINE, Lindeni and COLEUS VERSCHAFFELTI, crimson leaf, 6s. per 100 ; 50s. per 1000.

CENTAUREA CANDIDISSIMA, fine silver leaf, 3s. per dozen ; 20s. per 100.

Packing included. Terms, cash.

Cemetery Nursery, Gravesend, S.E.

SURPLUS STOCK OF SEED POTATOS.

	Per Bush. of 56 lb	Per Cwt.	Per Sack of 2 cwt
	s. d.	*s. d.*	*s. d.*
Imported Snowflake ..	12 0	22 0	42 0
Red-skinned Flourball ..	4 0	7 6	14 0
Hundred-Fold Fluke ..	4 6	8 6	16 0
Undermentioned all sized size.			
*Paterson's Victoria ..	5 0	9 0	17 0
Dalhousie	4 6	8 6	16 0
*Regents	3 6	6 6	12 0
*Walker's Regents	4 0	7 6	14 0
Round Fluke	4 6	8 6	16 0
Rocks	3 0	5 6	10 0

* Prices per ton on application.

Bags gratis. Remittance to accompany all orders.

CHRISTMAS QUINCEY, Potato Grower and Merchant, Peterborough.

TO THE TRADE and Large Buyers.

FUCHSIAS, CHRYSANTHEMUMS, COLEUS, HELIOTROPES, SALVIAS, HEARTHEMUMS, in all the best sorts, 15s. per 100.

PINKS, PENTSTEMONS, PHLOXES, PANSIES, 20s. per 100.

PYRETHRUMS, PÆONIES, CARNATIONS, PICOTEES, 35s. per 100.

IRESINE, AGERATUMS, LOBELIAS (from cuttings), CALCEOLARIAS, MESEMBRYANTHEMUMS, 5s. per 100.

GERANIUMS, Zonal and Nosegay, in great variety, 15s. to 20s. per 100 ; Bicolor, 20s. per 100.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

ALTERNANTHERAS, and other CARPET BEDDING PLANTS.—At 2s. 6d. per dozen, 8s. per 100, 70s. per 1000 :—Alternantheras of all the varieties, Antennaria tomentosa, Arenaria balearica, Iresine Lindeni, Lysimachia aurea var., Lobelia pumila magnifica (true), from cuttings, the best bedding Lobelia in cultivation ; Mentha pulegium gibraltaricum, Sagina procumbens. At 4s. per dozen, 15s. per 100, 80s. per 1000 :—Achillea umbellata, Coleus Verschaffeltii, Kleinia repens, Leucophyton Browni, Santolina incana. At 12. per dozen, 5s. per 100, 40s. per 1000 :—Cerastium arvensis (green), tomentosum (white), Lobelia pumila grandiflora (true), from cuttings ; Sedums of all varieties best suited for Carpet Bedding.

For cash with order, packing included.

WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

CHARLES NOBLE, Bagshot, offers the following :—

RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 15s to 2 feet, 21s. per dozen, 150s. per 100.

,, ,, ,, ,, for immediate effect, 2½ to 4 feet, and same through, 40s. per dozen, 300s. per 100.

,, Seedling, 1½ to 3½ feet, 24s. per dozen, 200s. per 100.

,, PONTICUM, 1½ to 2 feet, bushy, 6s. per dozen, 35s. per 100.

KALMIA LATIFOLIA, 1 to 1½ foot, buds, for potting, 75s. and 100s. per 100.

ANDROMEDA FLORIBUNDA, buds, for potting, 75s. and 100s. per 100.

ERICA CARNEA, very fine, 21s. per 100.

To Parties Furnishing New Houses.

H. WALTON begs to intimate to the above that he has for sale an unrivalled collection of FLOWERING and FOLIAGE PLANTS of extra, London suitable for immediate effect, which must be cleared out to make room. Also an immense stock of STOVE and GREENHOUSE PLANTS of all the newest and approved varieties.

H. W.'S CATALOGUE is now ready, and will be forwarded post-free on application to

H. WALTON, Edge End Nurseries, Brierfield, near Burnley, Lancashire. Edge End is distant from Burnley, 3 miles ; Accrington, 4 miles ; Colne, 14 miles ; Bradford, 30 miles ; Manchester, 30 miles ; Huddersfield, 30 miles ; Leeds, 35 miles ; Wakefield, 40 miles.

Southport Winter Gardens.

EXHIBITION of NEW SWEET-SCENTED RHODODENDRONS, &c.

ISAAC DAVIES, Brook Lane Nursery, Ormskirk, is now exhibiting at these Gardens magnificent plants of his new Scented RHODODENDRONS, AZALEA MOLLIS, and other Novelties, which are now a mass of blooms and deliciously fragrant, and are well worth the attention of lovers of this class of flowers. Admission to the gardens as usual.

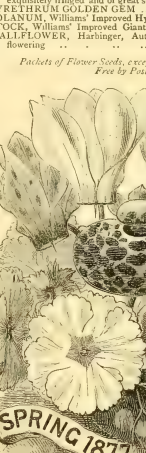


CHOICE

FLOWER AND VEGETABLE SEEDS FOR 1877.

	Per packet.	*s. d.*
BALSAM, Williams' Superb Strain ..	*2s. 6d.* and	1 6
BEGONIA FROEBELII		2 6
BEGONIA SEDENI SEMI-PLENA		2 6
BEGONIA, Hybrid, finest mixed ..	*2s. 6d.*, and	1 6
CYCLAMEN PERSICUM GIGANTEUM.—This is a great improvement on the old type, the flowers being thrown well above the foliage, each flower measuring from 2 to 2½ inches in length ; pure white, with a fine bold violet-purple eye	*5s.* and	2 6
CYCLAMEN PERSICUM, Williams' Superb Strain,	*5s., 2s. 6d., 2s. 6d.*, and	1 6
CELOSIA PYRAMIDALIS PLUMOSA		1 0
CALCEOLARIA, Williams' Superb Strain,	*5s., 3s. 6d.*, *2s. 6d.*, and	1 6
CINERARIA, Weatherill's Extra Choice Strain,	*5s., 3s. 6d., 2s. 6d.*, and	1 6
GLOXINIA, Finest Drooping Varieties		1 6
Finest Erect Varieties		1 6
PRIMULA, Williams' Superb Strain, Red, White, or Mixed	*5s., 3s. 6d., 2s. 6d.*, and	1 6
PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance ..		5 0
PYRETHRUM GOLDEN GEM		1 0
SOLANUM, Williams' Improved Hybrids ..		1 6
STOCK, Williams' Improved Giant Scarlet Brompton		1 6
WALLFLOWER, Harbinger, Autumn and Winter flowering		1 0

Packets of Flower Seeds, excepting heavy kinds, Free by Post.



VEGETABLE SEEDS.

	Per packet.—*s. d.*
BEANS, Williams' Early Prolific Dwarf French—per qt.	3 0
BRUSSELS SPROUTS, Welch's Giant, one of the finest in cultivation .. .. per packet	1 0
CUCUMBER, Walker's Hero (New)	2 6
Osmaston Manor	2 6
ENDIVE, Williams' Gloria Mundi	1 0
MELON, Osmaston Manor Hybrid	2 6
,, Laura's Beauty, (New)	2 6
,, Surprise (New)	2 6
ONION, Williams' Magnum Bonum	1 6
PEA, Williams' Emperor of the Marrows .. per quart	2 6
TOMATO, The 100 Days .. .. .. per packet	1 6

** *All seeds amounting to 20s. will be delivered free carriage to any Railway Station in England.*

☞ ILLUSTRATED SEED CATALOGUE gratis and post-free to all applicants.

VICTORIA & PARADISE NURSERIES UPPER HOLLOWAY, LONDON, N.

RICHARD WALKER can still supply any quantity of Enfield Market CABBAGE PLANTS, 2*s. 6d.* per 1000 : Red Dutch, for Pickling, 5*s.* per 1000. I am bound to sell cheaper than any man in Biggleswade. I have 500 of the best forcing SEAKALE in the country, at 10*s.* per 100 ; best Sovereign RHUBARB ROOTS in cultivation, good clumps, 6*s.* per dozen, planting 04*s.* 12*s.* per dozen ; ASPARAGUS PLANTS, 2*s. 6d.* per 100 ; LEMON THYME, 8*s.* per 100 : PENNYROYAL 8*s.* per 100 ; BLACK THYME, 5*s.* per 100 ; Scarlet King and pink DAISIES, 5*s.* per 100 ; splendid double white ROCKETS, 8*s.* per dozen ; PYRETHRUM, 2*s.* per dozen ; PHLOXES, 2*s.* per dozen ; new DELPHINIUMS, mixed colours, 2*s.* per dozen ; white Spanish ONION SEED, all new and genuine, and intermediate, at 2*s. 6d.* per lb. Terms cash.

Market Gardens, Biggleswade, Beds.

Verbenas, Verbenas, Verbenas.

FRANCIS C. BOFF offers White, Purple, Scarlet, Pink, Rose, Crimson, Maroon, Mulberry, true to name and colour. Also FUCHSIAS, HELIOTROPES, light and dark, all at 6*s.* per 100, or 50*s.* per 1000.

LOBELIA PUMILA and MAGNIFICA, 5*s.* per 100, or 40*s.* per 1000, all good, strong, clean and, bushy.

Terms—Cash with all Orders.

MAGDALA NURSERY, UPPER HOLLOWAY, N. (Late of Northampton Park Nursery, Canonbury.)

N.B.—Address, 17, Magdala Road, Upper Holloway, N.

WILLIAM POTTEN can supply :—

12 ZONAL GERANIUMS, choice new, of 1876, for 10*s.*

12 ,, ,, ,, 1875, for 5*s.*

12 LITTLE TROT, the best dwarf, silver variegated, for 3*s.*

12 KŒNIG ALBERT, the best dwarf, ivy-leaf, for 3*s.*

12 CHRYSANTHEMUMS, good large flowering, for 3*s.*

PETUNIA ROMULUS, a beautiful double pink, 3*s.* per doz.

,, NEPTUNE, good double white, 3*s.*

The above strong healthy plants, post-free.

W. P. has a large stock of fine healthy plants, including the best varieties in cultivation. CATALOGUES free on application.

Camden Nursery, Sissinghurst, Staplehurst, Kent.

Presented (by post) on application,

NEW CATALOGUE for 1877.

MESSRS. CLIBRAN AND SON will have great pleasure in sending their PRICED DESCRIPTIVE LIST for this Spring, free by post on application. Their stock of Florist Flowers, Bedding and Soft-wooded Plants generally is unusually fine, if not either in extent or quality, all the newest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to Purchasers is that none of the plants offered are taken directly from a warm propagating house and sent off, but are all carefully hardened and most of them potted off singly, and are thereby fitted to travel either by rail or post without the slightest injury. A great proportion are autumn struck plants, and many of the undermentioned can be sent by post :—

Abutilons, in variety, 3*s.* per dozen.

Achimenes, in variety, 3*s.* per dozen.

Ageratums, in variety, 8*s.* per 100, 2*s.* per dozen.

Begonias, tuberous, 6*s.* and 9*s.* per dozen.

,, non-tuberous, 4*s.* per doz.

Caladiums, 12*s.* per dozen.

Calceolarias, Golden Gem, &c., 6*s.* per dozen.

Camellias, 30*s.* and 42*s.* per dozen.

Carnations and Picotees, 12 plants, 6*s.* ; 12 pairs, 10*s. 6d.*

Carnations, tree, in variety, 9*s.* per dozen.

Centaurea ragusina, 3*s.* per dozen.

Chrysanthemums, near 10,000 now ready, 20*s.* per 100, 3*s.* per dozen.

Cinerarias, 40*s.* per 100, 6*s.* per dozen,

,, to name, 9*s.* per dozen.

Clematis, in variety, 60*s.* per 100, 9*s.* per dozen.

Coleus, in variety, 20*s.* per 100, 3*s.* per dozen.

Cyclamens, in variety, 6*s.* and 9*s.* per dozen.

Dactylis elegantissima, 3*s.* per 100, 1*s.* per dozen.

Dahlias, 25*s.* per 100, 4*s.* per dozen.

Delphiniums, splendid sorts, 9*s.* to 12*s.* per dozen.

Epiphyllum, 9*s.* to 18*s.* per dozen.

Ferns, stove and greenhouse, 9*s.* to 18*s.* per dozen.

Fuchsias, 20*s.* per 100, 3*s.* per dozen.

Gardenia florida, 6*s.* to 12*s.* per dozen.

Greenhouse Plants, 9*s.* to 18*s.* per dozen.

Geranium, Tricolor, 3*s. 6d.* per dozen.

,, Bicolor, 20*s.* per 100, 3*s.* per dozen.

,, Silver-edged, 3*s. 6d.* per dozen.

,, Double, 20*s.* per 100, 3*s.* per dozen.

,, Zonals, for bedding, 15*s.* per 100, 3*s.* per dozen.

,, Zonals, for pot culture, 3*s.* to 6*s.* per dozen.

Gladiolus, to name, 6*s.* to 9*s.* per dozen.

,, splendid seedlings, 20*s.* per 100, 3*s.* per dozen.

,, Brenchleyensis, 6*s.* per 100, 1*s.* per dozen.

Helianthemums, 2*s. 6d.* per dozen.

Herbaceous Plants, 20*s.* per 100, 3*s.* per dozen.

Heliotropes, in variety, 2*s. 6d.* per dozen.

Hepaticas, 4*s.* per dozen.

Iresine Lindeni, 10*s.* per 100, 2*s.* per dozen.

Iris, German, 3*s.* per dozen.

Ivies, in variety, 6*s.* per dozen.

,, Irish, 3*s.* per dozen.

Lantanas, 3*s.* per dozen.

Lobelias, 8*s.* per 100, 2*s.* per dozen.

Mesembryanthemum cordifolium fol. var., 10*s.* per 100, 2*s.* per dozen.

Mimulus, in variety, 3*s.* per dozen.

Myosotis, 6*s.* per 100, 1*s.* per dozen

Pæonies, white, blush, crimson, and other splendid shades, 6*s.* to 9*s.* per doz.

Pansies, Show, 25*s.* per 100, 4*s.* per dozen.

,, bedding (about 20,000 to select from), 12*s.* per 100, 4*s.* per dozen.

Pentstemons, 25*s.* per 100, 3*s. 6d.* per dozen.

Phloxes, 25*s.* per 100, 3*s. 6d.* per dozen.

Pelargoniums, Show, Fancy, or French, 6*s.* to 9*s.* per dozen.

Pinks, 25*s.* per 100, 4*s.* per doz.

Potentillas, double, 9*s.* per doz.

Polyanthus seedlings, 25*s.* per 100, 12*s.* per dozen.

,, to name, 2*s. 6d.* each.

Primroses, double, 4*s.* to 9*s.* per dozen.

,, old double velvet, 12*s. 6d.* each.

,, single assorted colours, 2*s.* per dozen.

Pyrethrums, double, 6*s.* to 9*s.* per dozen.

,, in great, established, 12*s.* per dozen.

Rock plants, 15*s.* per 100, 3*s.* per dozen.

Salvias, in variety, 3*s.* per doz.

Saxifragas, in variety, 3*s.* per dozen.

Sedums, in variety, 3*s.* per doz.

,, acre, acre, elegans, glaucum, &c., 8*s.* per 100, 12*s. 6d.* per dozen.

Stove Plants, 9*s.* to 18*s.* per dozen

Succulents, 4*s.* to 6*s.* per dozen

Tropæolums, 3*s.* per dozen.

Veronicas, 3*s.* per dozen.

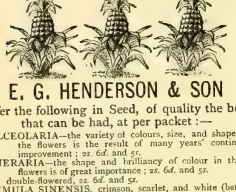
Violas (an immense stock of all the best sorts), 8*s.* to 12*s.* per 100, 2*s.* per dozen.

Vines, all the leading kinds for planting and fruiting, 30*s.* to 60*s.* per dozen.

Strawberry runners : our collection contains sixty-five sorts : 2*s. 6d.* per 100.

Apples, Pears, Plums, and Cherries, pyramids, 12*s.* to 18*s.* per dozen ; dwarf trained, 24*s.* to 30*s.* per doz.

The Oldfield Nurseries, Altrincham.



E. G. HENDERSON & SON

Offer the following in Seed, of quality the best that can be had, at per packet :—

CALCEOLARIA—the variety of colours, size, and shape of the flowers is the result of many years' continual improvement ; *2s. 6d.* and *5s.*
CINERARIA—the shape and brilliancy of colour in these flowers is of great importance ; *2s. 6d.* and *5s.*
" double-flowered, *2s. 6d.* and *5s.*
PRIMULA SINENSIS, crimson, scarlet, and white (better cannot be had), separate or mixed, *2s. 6d.* and *5s.*
" double-flowered, true from seed, *2s. 6d.* and *5s.*
CYCLAMEN PERSICUM GRANDIFLORUM—brilliant colours, with large-size petals and perfumed flowers, is the quality here offered ; *1s.* and *2s. 6d.*
BEGONIA, tuberous-rooted (our collection is unequalled), *1s.* and *2s. 6d.*
" tuberous-rooted, double-flowered, mixed colours, *2s. 6d.*
BALSAM—we trust to none but our own saving—mixed, *1s.* ; nine colours, *2s. 6d.*
PINK, from named collection, *1s.* and *2s. 6d.*
CARNATION, mixed, *2s. 6d.* See Catalogue for separate sections.
MIMULUS, superb strain, same as exhibited every year at the Royal Horticultural Society, *1s. 6d.*
LOBELIA, Brilliant Improved, White Brilliant, Mazarine Gem, speciosa—from pot plants, pumila grandiflora, Lustre Improved, Defiance—the best red, Bluestone, and Magnifica, *1s.* each.
PANSY, English, show flowers, *1s. 6d.*
" French, blotched, *1s. 6d.*
PETUNIAS, very beautiful, saved in pots, in separate sections at their Wellington Road Nursery, *1s.*
" double flowered, *1s.* and *2s. 6d.*
SWEET WILLIAM, extra fine, *1s.*
" from named flowers, *1s.* and *2s. 6d.* [each.
STOCK, East Lothian, scarlet, white, and purple, *6d.* and *1s.*
" Intermediate, Brilliantissima, and others. See Catalogue.
AURICULA, extra choice alpine varieties, *2s. 6d.*
SOLANUM, Improved Hybrid, as grown for the London Market, *1s.*
" HENDERSONI, conical-shaped berries, *1s.*
GLOXINIA, drooping and erect, *1s. 6d.* each ; mixed, *2s. 6d.*
HOLLYHOCK, from named collection, *1s.* and *2s. 6d.*
PRIMROSE, POLYANTHUS, and OXLIP, best quality, mixed colours of each, *1s.*
WALLFLOWER, double German, mixed colours, *6d.* and *1s.*

PINE-APPLE NURSERY, MAIDA VALE, LONDON, W.

THE NEW ENGLISH ROSE, QUEEN of BEDDERS (Noble).

Coloured Plates of this Magnificent

BEDDING ROSE,

Drawn by Mrs. DUFFIELD, may be had for 12 stamps each.

CHARLES NOBLE, BAGSHOT.

CRANSTON'S NURSERIES.

ESTABLISHED 1785.

SPECIALITIES.

ROSES, FRUIT TREES, CONIFERS.

Address — CRANSTON & CO., KING'S ACRE, near HEREFORD.

GODETIA, LADY ALBEMARLE.

First-class Certificate Royal Horticultural Society, August 2, 1876.



A magnificent new variety, growing 1 foot high. Flowers 3½ to 4 inches across, and of the most intense glowing rose-crimson colour, which being produced in wonderful profusion give the plants the most charming appearance. This is the finest annual ever sent out, and being extremely hardy and easy of cultivation, should be in every garden.

Seed, with full cultural directions, per packet, *1s. 6d.*, post-free.

"We have scarcely any plant of such a lovely shade of colour."—*The Villa Gardener, September*, 1876.

"An extremely beautiful variety bearing flowers quite 4 inches in diameter, of a glowing crimson colour."—*Gardeners' Magazine, August* 5, 1876.

"A remarkable and splendid variety, far superior to any other of the family."—*Journal of Horticulture, Aug.* 3, 1876.

May be had of all Seedsmen, and Wholesale and Retail of

DANIELS BROS.,
THE ROYAL NORFOLK SEED ESTABLISHMENT, Norwich.

TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.

WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above ; also of his

MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

NEW PELARGONIUM, DUCHESS OF BEDFORD.

MESSRS. BECKWITH & SON,

TOTTENHAM, N.,

Have much pleasure in offering the above Pelargonium as the best White ever sent out, and having a large Stock can offer it at once.

It has received a First-class Certificate from the Royal Horticultural Society.

Price for Strong Plants, in 5-inch pots, coming into flower, 7s. 6d. and 10s. 6d. each ; a few Large Specimens, in 24-size pots, 2 guineas each.

TOTTENHAM NURSERY, TOTTENHAM, N.

VALUABLE IMPORTED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 23, at half-past 12 o'Clock precisely, a fine importation of RARE ORCHIDS, collected and sent home by Mr. F. Klaboch, consisting of a large quantity of the rare UROPEDIUM LINDENI, in finest possible health, containing masses of altogether unusual size, freely breaking and growing ; a fine lot of the beautiful PESCATOREA DAYANA, and the rare BATEMANNIA WALLISI MAJOR, in finest condition ; many large plants of BOLLEA CŒLESTIS, ODONTOGLOSSUM ROEZLII and O. VEXILLARIUM, from a new district ; together with a great quantity of ONCIDIUM KRAMERI and ODONTOGLOSSUM CIRRHOSUM. Also the new MAXILLARIA SPECIOSA, described by Professor Reichenbach in the *Gardeners' Chronicle*, August 12, 1876 ; a new ONCIDIUM, in the way of O. WELTONI, and a quantity of Established and Cool ORCHIDS.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

IMPORTED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 26, at half-past 12 o'Clock precisely, a large importation of Plants of CYMBIDIUM EBURNEUM, also a quantity of Plants of the handsome and rare CŒLOGYNE BARBATA, one of the handsomest Cœlogynes known, giving snow-white flowers in the way of Cœlogyne cristata, but with erect spikes and the flowers not wavy, the lip bordered with ciliate fringes ; and a quantity of Plants of the beautiful DENDROBIUM FREEMANII, a large number of Plants of AERIDES FIELDINGII (FOXBRUSH), DENDROBIUM HOOKERIANUM, D. NOBILE WALLICHII, VANDA STRIATA, DENDROBIUM CARINIFERUM, D. JENKINSII, and others ; good Plants of the rare ARUNDINA BAMBUSÆFOLIA, which gives large Cattleya-like flowers of a light purple colour, with rich violet-purple labellums ; also a quantity of good Clumps, each containing a number of tubers, just starting into growth, of DISA GRANDIFLORA ; and at the same time a large number of good Tubers of the blue-flowered DISA, D. HERSCHELLII ; also some good Plants of ODONTOGLOSSUM PESCATOREI, O. CORONARIUM, O. CRISPUM (ALEXANDRÆ), and O. TRIUMPHANS, &c.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

LYE'S FAVOURITE. — The handsomest and best Potato ever offered. Indispensable for Exhibition. This variety will be the greatest Prize Winner of the season. We have purchased the entire Stock of Mr. James Lye, Clyffe Hall, Market Lavington, and parties wishing to grow this remarkably handsome and beautiful variety should order at once, as the stock is getting very limited. It can only be obtained direct from us. Price 5s. per lb. Orders of 20s. and upwards carriage free.

DANIELS BROS., The Royal Seedsmen, Norwich.

Cheap Bedding Geraniums.

ALFRED FRYER offers the following good Beddars at per dozen for cash:—Golden Tricolors: Peter Grieve, 12s.; Prince of Wales, 6s.; Lady Cullum, 3s. 6d.; Sir Robert Napier, 3s. 6d.; Mrs. Pollock, 3s.; Sophia Dumaresque, 3s.; Silver Tricolors: Lass o' Gowrie, 4s. 6d.; Queen of Hearts, 4s. 6d.; Miss Burdett Coutts, 3s. 6d.; Mrs. John Clutton, 3s. 6d.; Prince Silverwings, 3s. Double flowered: Marie Lemoine, 3s.; or one of each for 5s. No charge for packing, if empties are returned at once; also post-free for 6d. per dozen extra. For Priced LISTS apply to

ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

AVENUE TREES.

PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 8 inches at 4 feet from the ground.

LIMES, 12 to 20 feet high, and girthing 6 to 10 inches at 4 feet from the ground.

POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 6 inches at 4 feet from the ground.

ANTHONY WATERER

Has to offer many thousands of the above. They may be seen growing at Knap Hill. They are straight, handsome, and well rooted, and altogether the finest Trees of the kind to be found in any nursery in Europe.

KNAP HILL NURSERY, WOKING, SURREY.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Extra strong plants, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.

RICHARD SMITH, Nurseryman, Worcester.

New Bedding Tropæolum, "Hunteri"

DOWNIE AND LAIRD have much pleasure in offering for Spring delivery the above Tropæolum, which has been raised by Mr. Andrew Hunter, gardener to Lord Shand, New Hailes House, near Edinburgh. This is an excellent Bedding Tropæolum, surpassing its parent Cooperi, being of a dwarfer habit, and we can with perfect confidence recommend it. The Editors of the *Gardeners' Chronicle* say, "It grows about 6 inches high, is very neat and compact in habit, and a most profuse bloomer, the flowers being of medium size, nice form, and of a bright scarlet colour." Price, per dozen plants, 12s.; each, 1s. 6d. Usual discount to the Trade.

West Coates Nursery, Edinburgh.

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18s. to 30s. per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or £5 per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded, £5 to £7 10s. per 100, or 18s. per dozen.

ANTHONY WATERER,
KNAP HILL NURSERY, WOKING, SURREY.

FIFTY THOUSAND MAGNIFICENT DWARF ROSES, in POTS.
ROSES for BEDDING, at 12s. to 18s. per dozen, 100s. per 100.
TEA-SCENTED ROSES, superb, established in 6-in. pots, adapted for greenhouse or conservatory, 30s. per dozen, 200s. per 100. Descriptive CATALOGUES on application.
WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

PEAT.—A few hundred Tons of superior Peat, delivered at the Farnborough Stations on the South-Western or South-Eastern Railways, at 17s. per ton.
W. TARRANT, Basingbourn, Surrey.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17s. per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5s. 6d. each.
Fresh SPHAGNUM, 10s. 6d. per sack.
WALKER AND CO., Farnborough Station, Hants.

COCOA-NUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand testimonials. Four-bushel bag, 1s., bag included; truck-load, loose, free to any Rail, 35s.
POTTER OYLER, Spitalfields Market, N.E.

COCOA-NUT FIBRE REFUSE, newly made.—Reduced price, 20 bushels, 6s. 8d.; 100, 20s.; or Truck-load, 40s. Delivered free to any rail in London.
J. STEVENS AND CO., Fibre Works, Greyhound Yard, 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE, as supplied to Carter, Veitch, Wills, Bull, Daniels, Laing, Henderson, Dickson, &c., 34s. per bushel, 100 bushels for 20s.; truck, 35s., free to rail or wharf. PEAT, LOAM, SAND, LEAF MOULD, &c., per bushel, bag, or truck. Fresh SPHAGNUM, 2s. 6d. per bag.
M. H. BENTOTE, Nunhead, S.E.

ODAMS' MANURES,
FOR ALL CROPS.

Manufactured by the NITRO-PHOSPHATE and ODAMS CHEMICAL MANURE COMPANY (LIMITED), consisting of Tenant-Farmers occupying upwards of £50,000 acres of Land.
Chairman—ROBERT LEEDS, Keswick Old Hall, Norwich.
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Particulars will be forwarded on application to the Secretary, or may be had of the Local Agents.

MILLER AND JOHNSON (ESTABLISHED 1835)
Manufacture the highest quality of
ARTIFICIAL MANURES
For ROOT, CORN, and GRASS CROPS.
36, Mark Lane, London, E.C.

EWING'S MILDEW COMPOSITION, in Bottles, 1s. 6d. and 3s. each. One Gallon Cans (to make 10s gallons of mixture for syringing), 12s. each; Two Gallon Cans, 20s. each.
Mildew or Red Spider are effectually prevented or destroyed by merely painting the hot pipes with the composition mixed with white-wash. No direct application to the foliage is then necessary.
Royal Norfolk Nurseries, Eaton, Norwich.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blights, in solutions of from 1 to 9 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

SIMPSON'S RED SPIDER, THRIPS, &c. ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6s.; per pint, 3s. 6d. Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardeners'*, and by many first-class Gardeners.
Prepared by JOHN KILNER, Wortley, near Sheffield.

BEST & CHEAPEST INSECTICIDES

Duty Free, under permission of the Hon. Board of Customs.

THE "LONDON" TOBACCO POWDER,
"Horticultural" Tobacco Juice, also
TOBACCO PAPER, CLOTH and CORD.

Particulars on application,
CORRY & SOPER,
BONDED TOBACCO STORES, SHAD THAMES, LONDON, S.E.
All Proprietary Insecticides and Manures kept in stock.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60s. to 100s. per 100; superior close-wove, 40s., 50s. and 55s. per 100; Packing Mats at 20s., 30s., and 35s. per 100; and all other descriptions of Mats at equally low rates, at
J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

Wholesale Russia Mat Merchants.

MARENIN AND FISHER, 3, James Street, Covent Garden, W.C., Importers of RUSSIA MATS, RAFFIA FIBRE, &c. Large stock of TANNED GARDEN NETTING, RABBIT NETTING, TIFFANY, &c., at wholesale prices for a quantity.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post-free on application.
JAS. T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.C.

SPECIAL NOTICE.

APRIL and MAY the best Season for Transplanting HOLLIES.

WM. CUTBUSH & SON

POSSESS MANY THOUSANDS OF

VARIEGATED AND OTHER CHOICE HOLLIES,

AT THEIR "BARNET NURSERIES,"

varying from 2 to 6 feet, bushy, all transplanted in 1874, and will move with splendid roots.

An Inspection invited, or Prices, &c., sent on application.

EXTRA STRONG IRISH and OTHER IVIES.

WM. CUTBUSH & SON have a very large Stock of IVIES in Pots, which they are offering at low prices, to be had on application—specially low to the Trade.

HIGHGATE NURSERIES, N., OR BARNET, HERTS.

THE NEW ROSE,

QUEEN OF BEDDERS (NOBLE).

Perhaps the Finest Rose for Bedding ever sent out.

COLOUR OF "CHARLES LEFEBVRE."

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that a plant 18 inches high had 84 Buds and expanded Roses upon it on the 6th September, 1876, and flowered continuously from June until November, on the 20th of which month (1876) it was still in bloom.

Good Plants will be sent out, in strict rotation, at 10s. 6d. each,
COMMENCING FIRST WEEK IN MAY.

CHARLES NOBLE, BAGSHOT.

MR. POSTANS' PELARGONIUMS FOR 1877.

CHARLES BURLEY

Has much pleasure to announce that he is now prepared to distribute part of those magnificent new Zonal and other Pelargoniums purchased by him of R. B. Postans, Esq. The following form part of the collection, and are the magnificent varieties spoken of so highly by the Editor of the *Gardeners' Magazine*, as being "matchless in form and colour." The whole have large trusses, and with flowers of perfect form.

To be sent out in May in good strong plants.

The "Gardeners' Magazine," April 29, 1876, speaks as follows:—

"Mr. R. B. Postans' collection of Seedling Pelargoniums, Hybrid Perpetual and Tea Roses, &c., have passed into the hands of Mr. Charles Burley, of the Paradise Nursery, Brentwood. We have before us a box of flowers of Mr. Postans' latest Seedling Zonals, and they are certainly remarkable for quality. We see amongst them huge single flowers of faultless form, and of the most glorious crimson and scarlet colours, and a double white which ought—as we now judge it by trusses only—to sweep all other double whites out of the market. The name of this is Bridal Bouquet."

BEETHOVEN.

A magnificent variety, velvety crimson upper petals, lower petals purple-magenta, with shades and streaks of claret; large flower, of perfect form, immense trusses standing erect over a beautiful green zonate foliage. *Price 6s. 6d. each.*

CHARM.

A grand variety with globular trusses of immense size, bearing beautiful round flowers of perfect form, of purple-cerise shaded carmine, upper petals shaded crimson, trusses standing well up over a neat dark green zonate foliage; branching habit, free bloomer. This variety was awarded a Floral Certificate at the Royal Botanic Society, Regent's Park, in June, 1876.

Price 7s. 6d. each.

HOGARTH.

Fine large well-formed flowers of crimson-maroon, shaded carmine and purple-magenta, with veins of claret in lower petals; the flowers are of a thick leathery substance, borne on fine large globular trusses, standing on thick footstalks well up over a remarkable good branching habit of good zonate pleasing foliage. *Price 5s. each.*

MAGNIFICENT.

Fine shaped flower of soft rosy purple, upper petals shaded crimson-maroon with shades of carmine round the edge of petals, with a striking white eye; flowers of great substance and of the true florist's form, on fine bold trusses of great size, standing well over a fine dark zonate foliage; the habit is all that can be wished for in a Zonal Pelargonium.

Price 5s. each.

MOZART.

Large trusses of fine shaped large flowers of great substance, each petal overlapping; colour dark plum, upper petals maroon-crimson with shades of purple-magenta. Beautiful neat branching habit, dark green foliage with nice well defined zone. This is a magnificent variety, of great beauty and very floriferous, and must be welcomed by all.

Price 7s. 6d. each.

POLYPHEMUS.

Soft scarlet, flowers of good size and shape, borne on medium sized trusses: the most remarkable feature of this variety is its large pure white eye, about the size of a threepenny piece—the largest eye by far, so much so that, even at a good distance, the eye is very conspicuous. There is every reason to believe this will make a good bedder; the habit is robust and branching, good zonate foliage.

Price 5s. each.

SIR EDWIN LANDSEER.

This is without exception the darkest of all the Zonal Pelargoniums; the plant is very dwarf and branching, foliage dark green, slightly zonate, throwing up a profusion of good trusses of well-formed flowers of a dark claret; to say the least, it is a grand acquisition.

Price 5s. each.

TOM BOWLING.

Fine noble flowers of great size and substance, colour soft orange-scarlet, large globular trusses with extra long pip-stalks; the plant is of very pretty growth, will make a grand exhibition variety. There are some fine varieties of scarlets, but they must be good if they beat this in size and shape; it is more like the Show Pelargonium in size of flower than a Zonal.

Price 7s. 6d. each.

NEW BEDDING ZONAL PELARGONIUMS.

PURPLE KING.

This is a plant of dwarf branching habit, with small foliage of dark green, slightly zonate, flowering freely, throwing up nice trusses with round flowers of a marvellous colour, blue-magenta, edges of petals shaded carmine; it is, without exception, the finest colour in this way, and a good bedder. *Price 5s. each.*

WHITE UNIQUE.

This variety is different in every way from the ordinary Zonal Bedding Geraniums: in the first place it is a remarkably dwarf branching habit, with small foliage of dark green, with a golden marbled star in centre of each leaf, similar to Happy Thought but not so plain, throwing up a profusion of medium trusses of pure white flowers; as a bedder it is remarkably useful, and no doubt will be used for that purpose. *Price 5s. each.*

The above set of Ten Varieties for £2 10s.

NEW BEDDING PELARGONIUMS WITH WHITE VARIEGATED FOLIAGE.

MRS. J. C. QUENNELL.

A splendid silver-edged variety of great beauty; the plant is of free growth and makes wood freely, growing like an ordinary scarlet Geranium, with fine large globular-shaped leaves, very broad white leaf margin, centre emerald-green, producing nice trusses of a splendid bright pink; flower of good shape.

This is a grand variety for bedding purposes as well as pot-work.

Awarded a Floral Certificate of Merit by the Royal Botanic Society of London, June, 1876. *Price 10s. 6d. each.*

MRS. HANBURY.

A handsome silver-edged Pelargonium, of great merit. A remarkable free grower, with pure white broad leaf-margin, the centre of leaf dark green, throwing up a profusion of good trusses of nice shaped pure white flowers, with bright pink eye or centre; this is the finest in this direction yet seen.

Price 10s. 6d. each.

In June, 1876, when exhibited at the Royal Botanic Society's Gardens, Regent's Park, some Plants of the above two Pelargoniums were stolen from my van on its way home. Any one giving information that will lead to the conviction of the thief, shall receive a reward of £5.

NEW SILVER TRICOLOR PELARGONIUM OF THE SEASON 1877.

MRS. R. B. POSTANS.

Somewhat similar to Proteus and Lady Dorothy Nevile in leaf marking, but much more colour, of free growth, with splendid round leaves of good size. Models of perfection.

Price 15s. each.

NEW DOUBLE WHITE PELARGONIUMS.

"BRIDAL BOUQUET."

This is a charming variety, and described by the editor of the *Gardeners' Magazine* as a miniature bridal bouquet. The plant is of moderate growth, and resembles a common Zonal Pelargonium, with round leaves and branching habit, throwing up good trusses of magnificent flowers of pure white, each pip resembling a miniature bridal boquet; the lower petals are of fine substance and form, quite round, while the centre is raised oval, the exact shape of a bridal bouquet. Single flowers of this beautiful variety, when a piece of Maidenhair Fern is placed behind it, makes a pretty buttonhole.

The *Gardeners' Magazine*, April 29, 1876, speaks as follows:—"Mr. R. B. Postans' collection of Seedling Pelargoniums, Hybrid Perpetual and Tea Roses, &c., have passed into the hands of Mr. Charles Burley, of the Paradise Nursery, Brentwood. We have before us a box of flowers of Mr. Postans' latest seedling zonals, and they are certainly remarkable for quality. We see amongst them huge single flowers of faultless form, and of the most glorious crimson and scarlet colours, and a double white which ought—as we judge it by trusses only—to sweep all other double whites out of the market. The name of this is Bridal Bouquet."

Plants in May, 15s.

"WHITE WONDERFUL."

Habit that of an ordinary Zonal Pelargonium, with medium-sized dark green foliage, with a pleasing dark zone; growth very compact, throwing up trusses of good sized double white flowers of rare substance and shape; each flower is remarkable for its peculiar form, and may fairly be said to be strictly novel inasmuch that it is a good shaped flower with five petals, then comes another layer of petals of not quite the same size, and then a few irregular centre petals; it is a pure white and a fine variety. Every one who has seen the plant in bloom has been delighted with it.

A truss was sent to Mr. C. Turner, who writes as follows:—"The Royal Nurseries, Slough, August 11, 1876.—Many thanks for truss of your double white Geranium White Wonderful, a very good name, for it is a wonderful good variety, the best I have seen by far. Will it be sent out next spring?"

Mr. R. S. Williams, of Victoria and Paradise Nurseries, Upper Holloway, writes, August 10, 1876:—"Your box containing flowers of Geraniums to hand. It is the best thing in that way I have yet seen. White Wonderful."

Price 10s. 6d. each, in May.

"BELLE OF THE BALL."

This is a free flowering distinct variety, and remarkable for its great beauty. The habit is very compact, of the ordinary zonal type, dark green foliage with good well defined dark zone, throwing up nice trusses of really good double flowers of pure white with bright pink centre; the single pips are famous for bouquets, the effect is charming. There is but little doubt that this variety is a step in the right direction. *In May, price 10s. 6d. each.*

USUAL ALLOWANCE TO THE TRADE.

DESCRIPTIVE CATALOGUE FREE.

NURSERIES, HIGH STREET, BRENTWOOD.

By Royal Her Majesty's Letters Patent

RENDLE'S
PATENT
SYSTEM OF GLAZING
CONSERVATORIES, PLANT-HOUSES,
Orchard-houses, Greenhouses, Rose Temples
And other Horticultural Structures.

Under the Patronage of
His Royal Highness the Prince of Wales
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Metropolitan Board of Works
Commissioners of Sewers
Corporation of Birmingham
His Grace the Duke of Rutland
His Grace the Duke of Portland
His Grace the Duke of Sutherland
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The Most Noble the Marquis of Exeter
Most Noble the Marchioness of Anglesey
The Right Hon. the Earl of Stamford and Warrington
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And One Thousand of the Leading County Families in the United Kingdom.

SPECIAL ADVANTAGES
OR
Rendle's Patent System of Glazing.

This system is now being universally adopted by *Her Majesty's Government*, several of the *leading Railway Companies*, some of the *principal Corporations*, including the *Metropolitan Board of Works, Commissioners of Sewers*, and the *New Winter Garden Companies* throughout the country.

There will be an *enormous saving in the Maintenance and Repairs of Roofs on this System—say from 80 to 90 per Cent.—and there is no reason why a roof should not be as perfect in 20 years* as the first week, because all the *perishable materials, such as wood, iron, or paint, are completely covered by the glass from the destructible influences of the weather.*

Another grand recommendation is, that there is no breakage from *contraction or expansion either from heat or cold*, as the glass has full play in every direction. Tens of thousands of squares are broken from this cause every year. Nor is there any breakage from *vibration of large Railway Roofs* in heavy gales of wind, or from the *passing of express or fast trains.* Indeed, it is well known that a puttied roof is never perfect in a station where express trains run through.

In adopting this System, all the *everlasting expenses of re-painting, re-puttying and re-glazing are completely done away with;* and if it were now in use throughout several of the Great Railway Companies, such an enormous saving would be effected *that it would have a considerable influence in supplying an addition to the year's dividends.*

Summary of Special Advantages.

1.—Saving of from 80 *to* 90 *per Cent.* in maintenance and repairs.
2.—No breakage from contraction or expansion, from heat or frost.
3.—No breakage from vibration caused by heavy winds or passing trains.
4.—Squares of glass can be instantly replaced.
5.—The construction is very strong and durable.
6.—The glass can be put on in *one-fourth* the time of the old plan.

For all the other advantages see Illustrated CATALOGUES and BOOKS of DESIGN, which can be obtained from the Inventor and Patentee—

WILLIAM EDGECUMBE RENDLE,
3, WESTMINSTER CHAMBERS, VICTORIA ST., LONDON, S.W.

SUTTON'S
CHOICE FLOWER SEEDS,
FREE BY POST OR RAIL.



Sutton's Improved Miniature Aster.

A profuse flowering variety, of dwarf compact habit, remaining in bloom for a considerable period, hence it is invaluable for growing in pots for conservatory or drawing-room decoration. We have this season succeeded in saving six distinct colours, which greatly increases the value of this beautiful Aster for bedding purposes.

Price per Packet, mixed, 2s. 6d.
Six varieties, separate, 5s.

SUTTON'S
COLLECTIONS of CHOICE FLOWER SEEDS,

To produce a beautiful and continuous display during Summer and Autumn.

	Free by Post or Rail.	£	s.	d.
No. 1 Collection of Flower Seeds		2	2	0
No. 2 Collection Ditto		1	11	6
No. 3 Collection Ditto		1	1	0
No. 4 Collection Ditto		0	15	0
No. 5 Collection Ditto		0	10	6

Small and useful Collections can also be had, from 2s. 6d. to 7s. 6d., free by post.

Full particulars may be had, gratis and post-free, on application.

TO OBTAIN THE
Best Garden Lawns and Croquet Grounds
SOW
SUTTON'S
LAWN GRASS MIXTURE,

Which forms a close velvety turf in a very short time.

For making New Lawns or Croquet Grounds 3 bushels, or 60 lb., is required per acre, or 1 gallon to every six rods (or perches) of ground.

For improving those already in turf, 20 lb. should be sown per acre.

March, April, and May are the best months for sowing.

Price, 1s. 3d. per lb., 22s. 6d. per bushel, carriage free.

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds Gratis and post-free.

Suttons Sons
THE QUEEN'S SEEDSMEN,
READING, BERKS.



SATURDAY, APRIL 21, 1877.

THE AMERICAN FRUIT SUPPLY.

FOLLOWING rapidly the new project of supplying England with fresh American meat has come the extensive development this winter of the fruit trade with that country, specially in Apples. For the past twenty-five or thirty years American Apples have found their way to the English market, but only in comparatively small quantities. One difficulty was the ocean transportation. Fruit that would keep well in America for months, was found rapidly to deteriorate when barrelled and stowed away in the hold of a vessel, even during the short time occupied in making the passage. The only variety that for a long time was supposed to possess the necessary keeping quality, was the Newtown Pippin, but as this Apple was expensive, and some seasons poor in quality, the shipments were very limited. In 1866, however, experiments were made with Spitzenbergs, Baldwins, and Greenings, which proved successful, as the fruit arrived in good order. For six years shipments of these varieties were made, more or less financially successful.

In the fall of 1873 our Apple crop was almost a total failure, while that of the United States and Canada was unusually abundant, with consequent low prices. Shipments to this country proved very remunerative, and the quantity sent over that year was greater than the total shipments of the previous ten years. From that period, however, up till last autumn, the shipments of Apples from America have been light, as our orchards have yielded fairly. Last season our crop of Apples again failed, while that of the United States and Canada was enormous, and of excellent quality, excepting the Newtown Pippin. The American fruit trade has thus received a new impetus, and been placed this winter upon a more systematic and permanent basis than has hitherto governed it. A large New York produce house has taken up the shipment of fruit to this country. One of the firm has spent this winter in England attending to the reception and sale of Apples shipped from that port. The other member of it has attended to the selection of the fruit in America, its packing and shipment in proper condition. The results so far are stated to have been most successful, and what has hitherto been regarded as a hazardous series of ventures is now put on a firm and solid business footing.

From the middle of October until the end of March almost every steamer leaving New York for Liverpool or London has carried shipments, varying from 500 to 3000 barrels. In December alone no less than 90,000 barrels of Apples were landed at Liverpool. From this port Manchester, Birmingham, Hull, Bristol, and the metropolis have been supplied. The fruit has found much favour with consumers, and its abundance has kept down the prices to such a figure as to extend the demand largely.

During the cold weather but little difficulty is experienced in transporting the fruit. With the approach of warm weather, however, certain means must be employed to protect it during the sea voyage. Arrangements for this purpose have now been made, and the fruit for the future is to be conveyed as the fresh beef is—in compartments of steamers properly refri-

gerated. The first shipment in this manner was made on the *Algeria*, of the Cunard line, which brought over a fortnight ago 2300 barrels, and landed them at Liverpool in perfectly good order. Large shipments were made also to Glasgow and London. From Canada unusually large shipments were made, from Montreal, Quebec, and Portland, and the quality of the fruit was excellent. New England fruit found its outlet to us at Boston, and, although not so fine in quality as that from Canada or New York, has still been well received, and sold rapidly though at lower prices.

The greater portion of the Apples sent from New York come from the western portion of that State. On arrival each barrel is opened, inspected, branded, and shipped in most cases direct from the railway station.

The new refrigerating process which has facilitated the transportation of meat from America will operate in largely developing the shipment of not only Apples at all seasons across the Atlantic, but also of more delicate fruits, such as Peaches, early summer Apples, Pears, Grapes, and Cherries.

Those who have not visited America—in which term I include Canada and the United States—have but little conception of the fruit resources of the country, both in extent and quality. The area in orchards for various kinds of fruit was in 1875 no less than 4,500,000 acres; the shipment in Apples alone amounted in 1873 to 1,185,803 barrels, and about the same are retained for home consumption. From the few kinds of American Apples which have reached us, a very limited idea is formed of the varieties grown there; there are, however, over sixty fine varieties of Apples, ten or eleven varieties of the common Siberian Crab, and ten other descriptions of the same fruit. Of Pears there are no less than sixty-seven different kinds, and of Peaches quite a large number, ripening in succession from July till October. Many of the varieties of Apples exceed in fineness of quality anything we have ever seen here, but their tenderness has hitherto prevented their transportation. We may now, however, expect to receive them; and that American Peaches — now manageable as a perishable fruit by refrigeration — will be as well known in London as they are in New York in the month of August. *M.*

LOW NIGHT TEMPERATURES IN RELATION TO SLIGHT INEQUALITIES OF SURFACE.*

In a valuable paper on the Temperature and Humidity of the Air at Different Heights, recently published in the *Transactions of the Royal Society of Sciences* at Upsal, Dr. Hambery gives an account of some interesting observations made by him with the view of defining with some exactness the influence of the inequalities of the earth's surface on the temperature of the air during night. The instruments of observation were a dry and a wet bulb thermometer, at a height of 3 inches above the surface, and a similar pair of thermometers at a height of 5 feet. The thermometers were fixed to little posts, and their bulbs were protected from direct radiation.

Over ground the surface of which is uneven and covered with grass the temperature close to the surface is generally higher over those portions which rise above the rest. Thus over even a small elevation of from 1 to 3 feet the temperature is frequently 2° or more higher than the general level of the plot of ground. On the other hand, a trench or depression 1 or 2 feet below the general level is often 2° or more colder than what is observed on the borders of the depression and over the general level. At the bottom of a ditch 5 to 8 feet deep, and width double the depth, the temperature fell on one occasion 10°.8 lower than that on the margin of the ditch.

Open drains for field irrigation always indicated, when covered with grass, 2° to 5°.4 greater cold than the margins of the drains. But when the sides and bottom of the drains were composed of bare clay, the reverse held good.

A tree, a bush, a pond, or a stream, raised the temperature all round, or, to speak more correctly, arrested to a great extent the fall of the temperature. The temperature was sensibly higher over short than over long grass, in accordance with what Glaisher showed many years ago; and it was sensibly higher over sand than over grass.

At the height of 5 feet the temperature also varied with the inequalities of the surface, but not nearly to the same extent as at 3 inches from the ground.

On a meadow the temperature fell one night to 40°.5 and 48°.9 at the surface, and at a height of 5 feet respectively; on the summit of a hillock, 150 feet high, at the same heights, it fell to 50°.2 and 51°.3; whereas in a trench on the top of the hillock it fell to 43°.3 and 50°, and on another night to 39°.9 and 45°.5. On a steep but equal sloping side of a hillock 100 feet high, the difference between the temperature at the top and the temperature observed all down the sides almost to the foot were comparatively slight, being only from 2° to 3°.5. But at those places where it sloped less, the difference became greater; where it expanded out into a little plain, still greater; and where it formed a depression the greatest differences were noted, in some cases greater even than the differences between the very summit and base of the hillock. In all these cases, when long grass took the place of shorter grass, the temperature was observed to fall more rapidly. In the streets of the town the temperatures at 5 inches, 5 feet, and 200 feet, were at midnight 57°.2, 57°.4, and 57°.9; and at 0.30 A.M. 56°.8, 57°, and 57°.6 respectively.

The bearing of all this on horticulture is very evident. To secure the best protection for tender plants in spring when a night's frost may be productive of a ruinous loss, a gently sloping surface should, if possible, be selected. But if there be no choice, and the plant-beds must be made on a level piece of ground, let the beds slope slightly from the centre line on both sides to the trenches which separate them. Let the trenches furthermore be kept free from grass, weeds, leaves, and other litter, which being bad conductors of heat, will only retain and store up the cold of radiation; and let care be taken that the earth of the trenches be not kept loose by raking, but be beaten or trodden into as firmly compacted a mass as possible, so that the heat of the soil may the more readily be conducted to the surface to counteract the cold rapidly increasing there through the effects of nocturnal radiation.

* Abstract of a paper read by Mr. Buchan, Sec. Scottish Meteorological Society, at the April meeting of the Botanical Society, Edinburgh.

MARKET PLANTS.

The Dracæna is a favourite market plant, as it is so invaluable for decorative purposes, and can be used in many ways, being of a somewhat lasting character. Those who grow them for market propagate them with remarkable rapidity, and the work is commenced about the month of November by cutting up the stem of a plant into segments, each one having an eye. These are placed in cocoa-nut fibre on a strong bottom-heat, and they soon commence to grow. In this way cuttings are obtained much as one would get them in the case of Dahlias. When the cuttings are from 3 to 4 inches in length they are taken off, put singly in small pots in a brisk bottom-heat, and, root in ten or twelve days. The Dracæna is a rapid-growing plant when properly treated; an example of D. Shepherdi, struck from a top cutting at Mr. H. B. Smith's, Ealing Dean Nursery, in December, 1874, by the spring of 1876 had grown into a remarkable fine specimen 7 feet in height.

Dracænas are also propagated by leaf cuttings; that is, an eye is taken off with a leaf attaching to it, which is of great assistance in getting it to break into growth. The head of a good plant can be removed at an eye or two below the lower leaves, and will quickly make an independent plant, whilst its removal leaves the whole of the stem of the plant available for propagating purposes, by the process already explained.

The best Dracænas for market purposes are those with lively attractive foliage, such as Cooperi, terminalis, regina, Shepherdi, Hendersoni, amabilis, rubra, which is one of the best, and a few others. These retain their colour and brightness well when employed for furnishing, and are therefore liked in the market. Dull-leaved Dracænas are rejected, and indeed are not grown. D. Shepherdi stands and lasts remarkably well. When sent to market in August and September the plants are in 48-pots, but from November till January and later they are sent in 32-pots. D. stricta, which is a very good and handsome variety, requires a 32-pot in order to grow into a good plant.

Curculigo recurvata is an acceptable market plant, and much liked for its bold recurved foliage, and for its lasting quality. It is propagated by offsets, which are thrown up from the roots and taken off when strong enough; and they strike in small pots plunged in bottom-heat, and make good plants in twelve months, being of rapid growth. The variegated form is almost too expensive at present to be used for market growth, and the suckers will only strike root in the spring.

Aspidistra lurida variegata is a good market plant, and valued for furnishing. It is increased by cutting up the roots at any time, but is best done in early spring in bottom-heat. It is a plant of slow growth, but stands well. It is an excellent plant for a close confined room if the leaves are occasionally cleansed from the deposits of dust that are inseparable from an indoor position.

Crotons are good market plants, and especially C. variegatus, C. Weismanni, and C. undulatus. They are propagated by means of top and side cuttings taken in early spring, put in pots and plunged in cocoa-nut fibre, and when rooted treated similarly to the Dracænas already described.

Among market Palms, Latania borbonica holds a high place. The plants are raised from seed, sown in seed pans in January, or broadcast in a stove frame, in a strong bottom-heat, say of from 90° to 100°. In six weeks the seedlings appear above the soil, and in eighteen months they are fit to grow in 48 and 32 sized pots. The plants are grown on plunged in tan. After the fourth or fifth leaf the true character of the plant is taken on.

Eucharis amazonica is almost a perennial market plant, for it can be had in flower at any time by placing the plants in a cool house for a month or six weeks, and then starting them into growth in heat. The growers for market state it is a plant very impatient of being repotted; and it does not flower till well established in the pots in which it is growing. Liquid manure made from fresh cow-dung is applied to it when in a growing state.

Ferns are in large demand and include such valuable decorative forms as Adiantum cuneatum, Ghiesbreghtii (scutum), formosum, macrophyllum; Pteris argyræa, serrulata, &c.—about ten being the leading favourites. These are raised from seed in order to supply the quantity required. The seed is sown in pots under bell glasses, and as soon as the seedlings can be handled they are pricked off into pots and kept close under glass. It is the custom to mingle powdered brick with the soil, and also to place a little on the top to keep the soil open.

Ficus elastica is increased by means of cuttings made of the points of the shoots, and the soft stems. They strike best in leaf-mould and sand, in thumb-pots, in bottom-heat, and occupy from four to six weeks in striking root.

Aralia Sieboldii is struck from cuttings taken from the top, while the stalks are also cut up after the plants have broken into growth in heat. When the plants have been sufficiently hardened off they are planted out-of-doors during the summer, where they become established, and are again potted in autumn. In this manner good dwarf stocky plants are obtained.

The foregoing are but a few leading subjects, but were statistics collected of the numbers annually taken into the London market, their magnitude would astonish many. The one aim of the cultivator of market plants is to grow on his plants into size as rapidly as possible, at a minimum cost of time and labour. Some of the most laborious work done in the nursery trade is that performed in these plant-growing establishments, and at the height of the season, when propagation is carried on at high pressure, and with a wonderful rapidity, an unceasing attention is requisite. A successful propagator is a man of great ability. He has little chance of being heard of out of his own immediate sphere, but his practical genius is one of no common order; and young men desirous of improving their knowledge as plant cultivators could find no better school for doing this, than in one of the nurseries where plants are so largely grown for market purposes. *R. D.*

DASYLIRION LONGIFOLIUM.

We are indebted to M. Jean Verschaffelt, Ghent, for forwarding to us the following particulars relating to the flowering of this plant at Hyères (as it is believed for the first time in Europe), under the care of M. Geoffroy Saint Hilaire, the Director of the Jardin d'Acclimatation. M. Geoffroy Saint Hilaire sowed seeds of the plant in 1868, which he had received from MM. Haage & Schmidt, of Erfurt. The following year three of the seedlings were planted out in the open border, where they grew vigorously. The winter of 1870-71 was exceptionally severe, but did them no injury, though the thermometer was for several days 6° below freezing-point of Centigrade.



Fig 73.—DASYLIRION LONGIFOLIUM.

Fears were entertained that the plants might rot, but they did not suffer in any way. In the middle of April, 1876, they had attained a height of 90 centimètres (about 3 feet), measuring from the ground to the point where their long recurved leaves fall over the plant. From the centre of two of the plants pushed a thick shoot like a great Asparagus, 10 cent. in diameter, covered with rose-coloured bracts, which dried up as the inflorescence grew. This latter formed ultimately a large panicle with numerous but short and dense branches, 1 m. 25 cent. high, and covered with myriads of flower-buds which speedily opened. Flowers were sent to M. Naudin for examination, which proved to be male flowers with a rudimentary pistil. M. Naudin considered it might be a Liliacea, or an exceptional form of Juncaceæ; MM. Tulasne arrived at the same conclusion. M. Germain de Saint Pierre, who also examined the flowers, referred it to the same group. He found a few fertile or bisexual flowers mixed in with the male flowers. No seeds were, however, produced; the inflorescence gradually dried up, but fortunately the plant itself did not die, but produced a number of sets from the axils of the upper leaves. Our drawing (fig. 73) is from a photograph. In addition to this Dasylirion, Yucca filifera and Livistona sinensis (syn. Latania borbonica), also produced flowers last autumn at Hyères.

SOLOMON'S SEAL.

Beautiful as this grand old plant is in beds or borders, it is never seen in anything like the state of perfection, or appears half so lovely, as when taken up and forced, as then its delicately tinted pale green foliage is always charmingly fresh, and a real treat to behold. Even without its unique silver bell-shaped flowers that all strong shoots produce in such profusion quite to their summit, it would be a most desirable plant to cultivate, affording, as it does, one of the choicest bits of greenery it is possible to have, to dress in with hardy Ghent Azaleas, Lilacs, and many other forced flowers that have no foliage of their own to adorn them, and set them off to advantage. There is no question that the leaves of any plant, of whatever kind it may be, always associate better than any others with the bloom they produce, but when these cannot be had it is necessary to substitute some other, and no better or anything half so lasting and satisfactory can be had as the well-known Convallaria Polygonatum, the growth and gracefully pendent habit of which is all that can be desired for the purpose. Grown as a border plant, half its beauty is lost, but place it on a stage or shelf in the greenhouse or any other elevated position and then it is singularly attractive and commands admiration.

As a pot plant for window recesses in rooms it is simply perfection, and being so cheap and so readily forced or brought into bloom, it may be enjoyed by every one who has the convenience of a common hotbed frame to bring it on; or, failing this, an ordinary sitting-room window will do, only in that case it requires a little more time to get it into bloom. For any of the above purposes it should be potted up at once, in doing which it is important to select good strong fleshy roots with plump fat crowns, as it is only such as these that produce strong shoots and flower in the free manner desirable—although, as before observed, the plants are valuable without those highly ornamental appendages. As the roots have elaborated in themselves all or most of what is essential for their growth and blooming, there will be no necessity to give them much pot-room, as a very little soil will suffice, and they may therefore be put into 6 or 7-inch sizes, which will hold quite sufficient for their support, and be more handy and quite large enough for room decoration. Light rich sandy loam suits them best, and the number of pieces of root for each pot may vary from three to six, according to the kind of specimen desired; each, however, should not be less than from 4 to 5 inches long, terminated by a good plump crown, from whence the young shoots arise. If wanted to flower early plunge the pots in any hotbed at work, where they can enjoy a bottom-heat ranging anywhere between 65° and 75°, or stand them in any stove or forcing-house, in either of which places they will come on rapidly and assume those delicate tints of green that render them so exceedingly attractive at this season. As soon as they get sufficiently high and begin to show bloom they may be removed to the greenhouse or sitting-room window, where they will be found to last a long time in perfection.

Solomon's Seal is a plant that admits of ready increase by division of the root; and in order to get these strong and fit for forcing they should be dug up and separated at least once in every two years, which may be done any time during the winter or spring before they commence to make their growth. A deep loose sandy soil suits them best, as they can run freely in it, but it should be made rich and light by working in plenty of vegetable mould, such as leaf-soil or any mild rotten manure. In borders they rarely get fair treatment, as they are generally left pretty much to themselves, when they soon become overcrowded and starved from the rapidity with which they multiply their roots and stems, and exhaust the soil within their reach. It is from this cause that a frequent division of their roots becomes desirable, indeed absolutely necessary, if grown for the purpose of forcing for greenhouse or room decoration, as without it they would not be sufficiently strong to produce satisfactory results.

From its naturally vigorous habit it is a plant that adapts itself to almost any position, and appears to succeed equally well in either sunshine or shade, as we have immense tufts of it growing in moist sand, where they never get a particle of sun, and although this is the case, they are equal to any in the most favoured situations. It is, therefore, well adapted for growing near the margins of woodland walks, in the hardy fernery or wild garden, in either of which positions it forms one of the most interesting and effective plants it is possible to have, as it associates well with all the surroundings. *S. W.*

GREEN MAIZE, OR GREEN CORN.

To an American who has for many years kept the run of all that has been published in English horticultural journals on Maize as a table vegetable, it is very gratifying to see at last an article which shows that the writer has some knowledge of his subject. I refer to the communication by "T. S. J." in the *Gardeners' Chronicle* for November 11 last, who shows, what I have frequently insisted upon, that there is no good reason why Maize, at least in proper condition for the table, should not be raised in many parts of England. Some ten years or more ago, seeing from the articles published in his journal, that one of the English horticultural editors was quite on the wrong track in his experiments with Maize, using varieties from the Southern States, which would be altogether too late,

and moreover, of varieties so inferior for the table that they are never used by those who know better, I took the pains to set him right. I procured seeds of several of the most esteemed varieties, and sent them to him with such suggestions as to their culture as seemed proper. While I know that the seeds reached their destination, I have not yet heard that they were tried, or, if so, with what result.

In the first place, a word about the nomenclature of the plant. The term Maize is not in common use in this country, it being called "corn" or "Indian Corn." The table varieties, for the reason to be given presently, are called "sweet corn;" it is always in the unripe condition when used as a vegetable, and is known as "green corn." If one should go through our markets and greengrocer's shops, and inquire for green Maize, he would be told that there was no such article to be had. The stem or culm of the plant is the stalk, the panicle of staminate flowers which appears at the summit is the tassel, the collection of pistillate flowers (and grain) on a dense spike is the ear. The leafy involucre, which surrounds the ear, is called the husk, or in some parts of the country, shuck; the long thread-like pistils are, collectively, known as the silk; the grain, whether green or ripe, the kernel; the pericarp is the "hull;" and the floral envelopes, which are very small and abortive, the "chaff." The receptacle or rachis upon which the kernels are crowded is the "cob." It is rather amusing to see your correspondent direct that the "cobs" must be boiled until tender. So much for names.

The ordinary field varieties of Indian Corn have, when ripe, a hard, smooth grain, presenting a great variety in size, shape, and colour, the grain within being either mealy or flinty. These varieties are almost innumerable, and show the wonderful plasticity, so to speak, of the plant, which has adapted itself to every climate, from that of Hudson's Bay to that of the Gulf of Mexico. These field varieties are not used in the Northern States for the table, nor are they elsewhere if better sorts are known. Under the name of "sweet corn" we have a set of varieties that are as different from field corn as the wrinkled or marrow Peas are different from the round Peas, and the difference is of a similar character. In sweet corn we have greater tenderness and finer flavour, and a much larger amount of sugar; the kernel in these varieties never fills out in ripening, but is always shrivelled and irregular, as are the marrow Peas.

The varieties of sweet corn are numerous, the catalogues of our seedsmen offering from ten to fifteen, and rarely a year passes but some new kind is offered. The varieties differ greatly in earliness, height of stalk, size of ear and of kernel, as well as in the number of rows (of kernels) to the ear, and there is a marked difference in sweetness and table qualities generally. The earlier varieties are smaller in all respects, and generally less sweet than the later.

Besides the named varieties, there are many local ones not known in the seed trade. Those who grow corn for the markets of New York and other cities have their own particular varieties, or rather strains, which they have established by careful selection; earliness and a good-sized and well-shaped ear are the main points with them, and it is only in the later varieties that we find that delicious sweetness and flavour so much prized by connoisseurs. It may be remarked that, like green Peas, green corn rapidly deteriorates in quality after it is plucked, and those who depend upon the markets for their supplies do not know the possible excellence of either.

Among the early varieties of the catalogues, Early Narragansett and Early Minnesota are the best very early sorts; Crosby's New Sweet comes next. For the general crop I know none superior to Triumph, though Asylum and Moore's Concord are both good. Perhaps the very sweetest and best of all is the Mexican, but it is unfortunately black, or rather dark purple, and does not look tempting upon the table, hence it is less popular than its merits deserve. Stonell's Evergreen is an excellent late variety.

Indian Corn is decidedly a hot-weather plant; with us, near New York, the middle of May is the usual time for sowing, though I usually put in a row or two soon after Peas are sown, and let it take the chances: if it happens to be an unusually warm spring, a gain is made of a week or more; if not, there is only the loss of the seed. It should have the warmest and richest soil, and being a rank feeder, may have any quantity of manure. It is sometimes sown in hills, but I always sow in rows, 3 to 4 feet apart, according to the variety. A furrow is made with a garden plough; a good supply of fine manure is put into the furrow, earth is drawn over this, and the seed is dropped at about 6 or 8 inches apart, and covered with the hoe, patting the earth down firmly over the seed with the flat of the hoe. Though a very robust plant when well established, Indian Corn is delicate when young, and the crop must be thoroughly worked from the first appearance of the plants until it gets large enough to shade the ground. A horse-cultivator is run between the rows, and the work finished with the hand-hoe. The old plan of earthing-up is now abandoned by good cultivators, and flat culture generally practised. When a few inches high the superfluous plants are cut out, leaving those which remain a foot apart.

Green corn is seldom grown in our market gardens proper, it being regarded as a farm rather than as a garden crop. Farmers who live within easy reach of a market find it an excellent cleansing crop; the thorough cultivation, as well as high manuring it requires, puts the land in fine condition for any other crop; the fodder, after the ears are marketed, is of sufficient value to pay all the expense of cultivation.

As to the proper time for plucking the ears, your correspondent, "T. S. J.," gives excellent directions. The grain should be "in the milk," not too small nor too ripe; one soon becomes able to judge of the proper condition by feeling of the ear through the husks. As soon as the ears are plucked the stalks should be cut off by the ground, and after wilting a few hours they may be given to milch cows, for which they are the best possible green food, or they may be cured for winter use. They require some care in curing, for if in too large masses they ferment; it is best to set them against a fence or other support, so that the air can circulate through them. When cured they should be stored under cover. Cut into small bits with a fodder-cutter, wet, and allowed to stand a few hours, and then sprinkled with Indian Corn meal, they form most excellent winter fodder for cows.

As to cooking for the table your correspondent's directions to boil for half an hour are proper, though twenty minutes is usually long enough. He is mistaken in the idea that boiling makes the corn tender; it coagulates the contents of the kernel, which excessive cooking will only toughen. The general way of serving is *au naturel*. The husks being stripped off, and all remaining silk removed, the ears are boiled for twenty minutes, and served hot. There is but one way to thoroughly enjoy sweet corn, and that is to eat it from the cob. The over-genteel have the kernels cut from the cob, but this, to a real lover of sweet corn, is to spoil it. Butter and salt being first mixed upon the plate—some add pepper—a portion of the ear is dressed with the salt and butter, by the use of the knife, and the kernels thus buttered are—well, not to put too fine a point upon it—gnawed off. To be sure a fine young lady does not appear at her best when she thus plays the part of a rodent, but we have also once tasted sweet corn at its best will forgive appearances, knowing the inward satisfaction that accompanies them. The silversmiths make "green corn-holders." A handle is furnished with prongs which are thrust into each end of the ear, and allow it to be held without touching the corn with the fingers. This is a superfluous refinement, adopted by but very few. Those who have imperfect teeth usually slit the kernels by drawing a sharp knife lengthways of the rows; this cuts through the rather tough hull, and allows the contents to slip out readily. Some boil the corn and cut it from the cob, which is readily done with a sharp knife, cutting down from one end of the ear to the other, taking two or three rows of the kernels at a time. The kernels thus cut off are seasoned with salt, butter, and milk, or cream, and served like peas. A more delicate way is to slit the kernels by running a sharp knife lengthways of the rows, and then scraping out their contents with the back of the knife. Our furnishing stores sell "corn cutters," which slit the kernels and press out the contents at one operation, and do it very rapidly.

During the season we endeavour to have sweet corn—no matter what else there may be—at dinner every day. Last season, on account of the unprecedented drought, some of our crops failed, and there were wide gaps in the supply. It is our custom to cook more than will be disposed of at dinner, to have a supply for breakfast. What is left from the dinner is cut by means of the "corn cutter" above referred to, and either dressed like Peas, or, what is greatly to be preferred, made into fritters.

Corn Fritters.—To two coffee-cupfuls of corn, removed from the cob as above directed, add three well-beaten eggs, one small cupful of flour, and stir well together; add cream or milk to thin it, so that will readily drop from the spoon, and fry, as for other fritters. These are sometimes called "corn oysters," but they are good enough to stand on their own merits.

Your correspondent, "T. S. J.," seems to appreciate the whole subject much better than any of his countrymen who have written upon green corn, even if he does call it "green Maize;" and if you will give me his address I shall take much pleasure in sending him seeds of our choicest varieties. If, as I suspect, he has only experimented with field corn, and likes that (as many do who know nothing better), I should like to be by, and see his first essay with one of our choice varieties—the "Triumph," for instance. If large tears of gratitude do not roll down his cheeks I am mistaken of the man.

Some Europeans do not at first take kindly to green corn. When I meet one, and with an indication as to how far he has become Americanised, I ask, "Do you like green corn?" If the answer is in the affirmative, I am sure that he will remain in the country. Our great abundance of Tomatos, our Water-Melons, our huge Blackberries, and other peculiar American products, Europeans seem to accept much sooner than they do our green corn. A few years ago a story went the rounds of the papers, which showed Pat's view of this favourite vegetable. At our hotels green corn is set before each person as a matter of course: a newly arrived Irishman, seeing that others partook of it, gnawed away at his corn with much satisfaction. When he had nothing but bare "cobs" left, he called to the attendant—"Waither, an' will ye be aither putting some more pays on these shticks!" *G. T., Bergen Co., N. J.*

AGRICULTURE AND GARDENING IN COSTA RICA.

(*Concluded from p.* 440.)

TOBACCO being a Government monopoly is very little grown, but what there is is of fine, strong, aromatic quality. Unfortunately, much of the aroma is lost in the bad method employed in curing the leaves. The climate of the higher plains is too cold and damp for the successful cultivation of Cotton and indigo. Cochineal culture has never been introduced, but formerly Wheat and Barley were grown on a small scale. Now the meal can be procured from California and Chili at a cheaper rate than it can be produced in the country itself. If the restrictions on Tobacco growing were removed, there is no doubt that Tobacco would soon become a valuable article of export to the European markets.

Maize yields in the warmer parts of the country two crops of grain, besides a crop of green fodder, in the same year. In the elevated plains, however, the growers are satisfied with one harvest in the year, but they select the less fertile soil for the Maize plantations. The shoots are valuable food for cattle, especially in dry season, though during this part of the year the draught oxen are chiefly fed upon Sugar-cane. The cane attains a height of 10 to 13 feet in ten months, and is then cut before the inflorescence is developed and the root-stocks throw up fresh shoots. As the plantations are made at different seasons there is no regular harvest-time.

Respecting the plants cultivated in gardens, an enumeration of some of the more striking subjects in Mr. Carmigol's garden, which may be regarded as the best in the country, will give some idea of the capabilities of the soil and climate. The hedges are formed of Coffee bushes and tall Roses, and the flower-beds are edged with Box, or more commonly with Pilea macrophylla, an indigenous plant. Others, again, are bordered with the native Lobelia Cliffortiana and micrantha. Ionidium parietariæfolium is a charming plant on the margin of a small brook. The commoner weeds among the Cabbages, Onions, and other vegetables are Chenopodium ambrosioides, Galinsoga parviflora, Heloscladium leptophyllum, Lepidium virginicum, Verbena littoralis, Browallia demissa, Leonurus sibiricus, Œnothera rosea, Jægeria hirta, various species of Paspalum, Panicum, Eragrostis, &c. Some Apple trees were pointed out as great rarities in the country, where, in consequence of their getting no period of rest, they do

not flourish well and bear very little fruit In fact, the only fruit tree grown with any degree of success, and in quantity, is the Peach, and this only in the more elevated parts on the declivities of the volcano of Irasu. Among other cultivated plants may be mentioned Hibiscus sinensis, H. rosa-sinensis, Pavonia Typhalæa, Tagetes patula, Eucalyptus globulus (some fine old trees), Bixa Orellana, Punica Granatum (always with single flowers), Asparagus officinalis, Acnistus Plumieri (forming part of the hedge surrounding the garden), Bouvardia spp., Ocimum Basilicum, Origanum, Lycopersicum, &c. Add to these the universally dispersed plants of cultivation, and one may form a picture of the variety and richness of the vegetation. A shrubby Salvia, probably a new species of the fulgens group, with splendid large scarlet flowers, attracts our attention near one of the entrances, and presently we become aware of the almost stupefying odour of Clerodendron fragrans. The glorious Gesneraceous plant, Kohleria tetragona, afterwards found growing wild, was here seen for the first time. It has velvety leaves, and large red velvety flowers.

Among noteworthy trees in Mr. Carmigol's garden were various species of Melaleuca, and what were regarded as great curiosities, some Conifers, a species of Thuja, Juniperus virginiana, and a Pinus with the leaves in bundles of five. Small plants of the Thuja are exceedingly dear, as are also some other plants which are only grown under difficulties. In the beds were Dahlias, Asters, Zinnias, species of Rudbeckia, Gladiolus, Amaryllideæ, Lilium, numerous species of Begonia, Tropæolum. In the vicinity and around the house were observed Heliconias, Passion-flowers, various fine Aroids, &c. Growing in pots were numerous indigenous Orchids, belonging principally to the genus Epidendrum, Bromeliaceæ, &c.; but among the most favoured were numerous varieties of Viola tricolor. In conclusion Dr. Polakowsky mentions that the Cocoa of Costa Rica is of superior quality, equally as good, or perhaps even better, than the celebrated Cocoa of Nicaragua; but scarcely sufficient for the wants of the country is grown. The formation of a Cocoa plantation is expensive, as the trees do not yield a good crop before the seventh year.

OLD-FASHIONED PLANTS.

The rage for new plants does not abate, and we hope anything of transcendant merit will never cease to receive due recognition and appreciation, but in the rage for things that are new, in name at all events, it strikes me as possible that many old tried and trustworthy friends are forgotten. Well, we do not despise the lady or gentleman who makes a hobby of the Auricula, or the Pansy, or the Picotee; there must be an immensity of zeal and intensity of pleasure also devoted to the improvement, or even the desire to improve—for all do not succeed—the quality of those beautiful flowes.

I am not a florist in the enthusiastic sense of the word—I cannot afford to be, and even if I could my sympathies lie in another direction. But we live in an age in which there is a great demand for cut flowers. Those who at one time used to decorate their halls and staircases with foliage plants must now have flowering ones. I think there is a very agreeable change in our system of decoration throughout, I mean in the combination of flowering and foliage plants, and even the introduction of flowers themselves. The one is a relief to the other. If there is a regular demand for home decoration on an extensive scale, of course we must presume that there are facilities for growing plants in proportion to the demand for them, in which case the process is a simple one, and the line clear: always keep the home signal at "danger," and you are never caught napping.

We often hear how well public decorations are done and how effectively; such opinions may be readily endorsed, and why? Because there is a choice of material. If there is a chance call made on a private establishment, the means are not always at command to make an elaborate effect. The best artist in the world cannot paint without brushes and colours, Much, however, may done by growing what I would call "accommodating" plants, and not expensive ones either. I believe there is nothing so healthy and refreshing as a tour among your friends every three months or so; you always learn or unlearn something before you return, and probably make up your mind that after all you are a good bit behind in some things. When I make a raid on one or two of my particular friends, I always get what would be called in racing phraseology the "tip," but, in horticultural language, I must say a "wrinkle," about something. I must ask your readers not to expect that I have made any remarkable discovery, such as heat without cost, or anything of that sort; I am merely about to reintroduce a few old friends who are well-nigh forgotten in many gardens, but whose adaptability for fashionable decoration stands unrivalled. On visiting a neighbouring garden the other day I was shown into a house arranged tastefully with the following old plants, and an odd new one as well:—

The centre of the middle stage was occupied with Dendrobium nobile, some plants of which were over 4 feet through, and remarkable for their strength and freedom of flowering; the old Eranthemum pulchellum, such plants as I never saw before—a perfect blaze of their lovely blue flowers, a colour not over plentiful at this time of year. The new Poinsettia plenissima was well done, but seems to lose the largest of its leaflet-bracts before the centre is formed and appears to advantage; I have, however, great hopes of it turning out well. I think new plants bear an analogy to young gardeners, they have to overcome a good deal of opposition and prejudice, and are often condemned without having a fair trial. Then there were huge masses of the old Begonia manicata, and another old variety, either hydrocotylifolia or Paxtoni; both are grand winter-flowering plants, and their value for any purpose of decoration cannot be overestimated. Thyrsacanthus rutilans, with its long racemes of scarlet pencil streamers, is also growing for more than one purpose. It must be elevated on inverted pots to be seen at its best, and occupy points of vantage. In the same house were a choice collection of Dendrobiums, and several nice samples of Phalenopsis, including the queen of Orchids, Phalenopsis amabilis, which was in its best dress, having a fine spike of flowers just on the turning point. I think it would be well to resuscitate the cultivation of many old plants, which I need not name. Every leaf or joint of these old Begonias can be made to root in a few months where there is a little top and bottom-heat at command. Cuttings of other things mentioned, and many more not named, may be put in now, and grown on without interruption for the next three months, when they will make fine plants. They must then be gradually hardened off, and kept in cold pits or frames in the full blaze of the sun all through the latter part of the summer and autumn, and when taken indoors again they should occupy a house which can be kept at a temperature of 50°, and a rather dry atmosphere. A high moist atmosphere tends to induce a gross growth, rather than a flowering tendency, especially in such things as Libonia, Sericographis, &c. *W. Hinds, Otterspool.*

NOTES ON OPEN-AIR VEGETATION AT EDINBURGH.*

The early part of the month of March was considered good for gardening operations, being in general dry and cool, but without much of the wind for which March is proverbial. Towards the end, however, rain fell in abundance, and scarcely ceased for five consecutive days, viz., from the 23d till the 28.h. The month commenced with slight snow, and frost has been prevalent throughout. The temperature in general being rather below an average, vegetation has been kept much behind. The genial weather we had during the early part of February brought forward vegetation very rapidly, and now (March 31) it may be said to be nearly at a standstill. Many of the open-air plants reported to be in bloom during February have since fallen back, and although we have come into flower, have not yet to show that vigour which they generally do at this season. Hazels and Filberts were beautiful during the early part of February with their long, drooping yellow catkins, but became perfectly brown in consequence of the frost which prevailed at the end of the month of February and beginning of March. Similar injury was also observed in the drooping catkins of the Garrya elliptica, while the Alder, particularly the Alnus cordifolia, which was richly covered during the month with its brownish yellow catkins, did not suffer, notwithstanding the frost they had been exposed to. Flowers of the early Rhododendrons, particularly the R. præcox, R. atrovirens, and R. ciliatum, the last an injured white the Rhododendron Nobleanum and the other large flowering hybrids have been very scarce this spring, the buds not having been properly matured during the long wet sunless autumn, and now it is rare to see flowers of the early varieties in the open air, kinds which are generally very common at this season. Thujas, Biotas, and other allied coniferous shrubs, are suffering much from a browning of their branches, similar to what took place during the month of April last year, and which resulted in the total destruction of some, and the disfigurement of others. In all these cases, where points of the branches had to be removed from injury (such as Thuja aurea, Fortunei, uncinata, Knightii, orientalis; also Cupressus sempervirens and torulosa), the new shoots produced during last summer on those left are again much disfigured. The leaves of many species of the genus Pinus have also become very brown, such as Pinus patula, densiflora, contorta, Fremontiana, Brutia, muricata, tuberculata, Benthamiana, as well as some specimens of Laricio, and even the Scotch Fir. This mischief is evidently caused by the long moist autumn and winter, succeeded by a lengthened although not very severe frost, and afterwards followed by a few days of hot sun, upon unripened wood. Early fruit tree blooms on walls have also suffered from frost; owing, however, to the unusual number of buds produced a moderate quantity may yet be saved, although it is feared that the long, sunless, wet autumn will be much against a proper setting of fruit, unless extra fine weather should prevail. Many of the early spring bulbs, particularly those growing in low situations, have been very deficient in bloom, the bulbs in such cases having rotted in the ground. It is difficult as yet to say what effect the late excessive damp will have on the roots of many herbaceous plants other than bulbs, particularly those with somewhat fleshy roots; nor will it be possible to ascertain the extent of damage till the season is further advanced. Some important kinds have already suffered, the roots in many cases being infested with grub, wireworm, and other underground vermin.

The scarcity of vegetables for spring planting, such as early Cabbages, Savoys, and Greens, is something quite unprecedented about Edinburgh, cartloads being usually seen in our markets at this time. The drought which immediately followed the sowing of the seed last year, prevented a healthy germination, and was afterwards followed by an unusual wet autumn, and at a time when the plants were weak. To this, and the changeable weather experienced during winter, may be attributed their scarcity. Fortunate holders are receiving high prices for them. The scarcity seems to be general throughout Scotland, as few yet arrive by railway.

Excess of moisture has also been much against the printed tallies, commonly used for naming the open-air plants in the garden; many of them have been rendered totally illegible—a circumstance which has not been observed to the same extent at any former period.

On the last day of February fifty species of plants were counted in flower on the rock garden, many of these have since suffered from frost. On March 31 seventy-five species and varieties were counted in bloom, the most conspicuous being Andromeda floribunda, Bulbocodium vernum, Corydalis augustifolia, Dondia Epipactis, Draba aizoides and cuspidata, Epigæa repens, Erica carnea and E. carnea alba, E. hibernica alba, and E. h. nana; Erythronium Nuttallianum, Gagea lutea, Helleborus ilicifolius, Hepatica augulosa and the varieties of H. triloba, Iris reticulata, Merindera caucasica, Omphalodes verna, Primula denticulata, marginata, Palinuri, purpurea, and viscosa; Saxifraga crassifolia ovata, grandiflora and bryoides, Scilla bifolia, alba and taurica; Sisyrinchium grandiflorum album, also Narcissus nanus and pumilus.

Of the plants selected for annually recording their dates of blooming, the following is the third list of the series:—

	1877.		1876.	
Scilla bifolia taurica	March	4	March	2
,, ,, alba	,,	8	,,	15
Iris reticulata	,,	10	,,	13
Draba aizoides	,,	11	,,	21
Aubretia grandiflora	,,	12	February	17
Narcissus pumilus	,,	14	March	15
Mandragora vernalis	,,	17	,,	12
Arabis albida	,,	18	,,	5
Erythronium dens canis	,,	23	,,	28
Muscari botryoides	,,	24	,,	18
Ribes sanguineum	,,	25	,,	30
Orobus vernus	,,	27	,,	23
Symplocarpus fœtidus	,,	27	,,	25
Corydalis solida	,,	28	,,	28

During March the thermometer was twenty times at or below the freezing point, indicating collectively

* Read by Mr. M'Nab at the April meeting of the Botanical Society of Edinburgh.

136°; while 98° were registered during the corresponding month last year—the lowest markings being on the mornings of the 1st, 4th, 19th, 20th, 21st, and 22d, when 17°, 23°, 20°, 18°, 23°, and 24° were respectively indicated. The highest morning temperatures were on the 11th, 14th, 27th, 28th, 29th, and 31st, when 41°, 41°, 36°, 37°, 37°, and 42° were registered. Although 492° of frost have been recorded during the last five months, particularly in the neighbourhood of Edinburgh, it has never been at any one time of such intensity as to produce strong bearing ice.

SCONE PALACE.

EIGHT centuries ago, in the reign of King Constantine, Scone was a royal city, with a monastery, to which was conveyed from Iona a stone seat, for the coronation of the Scottish kings down to Alexander III., the last of an ancient race, and Robert Bruce, the founder of a new dynasty. In 1559 the venerable building, whose relics, with here and there a stone coffin, are now ornamental objects in the Palace gardens, became a blackened ruin, and in the following century the famous Abbey (founded early in succession to the monastery) became a temporal lordship, granted by James VI. to Sir David Murray, afterwards Viscount Stormont, the ancestor of the Earl of Mansfield, the great Chief Justice, and of the present Earl of Mansfield, the owner of Scone Palace. Even in Scotland there are few sites with a richer substratum of historic interests than Scone. The ancient buildings are all gone, the Palace is of the present century, the coronation chair is in Westminster Abbey, and Boot Hill, where the Scottish chiefs paid homage, each standing on his own ground, which he brought with him stuffed in enormous boots—all is gone or greatly altered, but, *mansit odor!* as in the case of the fairies, the perfume of these things remains.

The site of Scone was well selected on the rich alluvial banks of the River Tay, 2 miles from Perth. It is a rather light and most productive soil, with a moist subsoil. After crossing Perth Bridge by the North Inch, you turn up the left bank of the stream, and presently reach the park, with its timber and Highland cattle by the road-side. A mile further on you pass the Cow Park, and a notable row of black Italian Poplars along the margin of a rivulet. The monks lived hard by. The girth of the Poplars is 11 feet 9 inches at 5 feet from the ground, that of the largest monk could hardly have exceeded 73 inches, which is exactly the circumference of an innkeeper of unusual size who has allowed me to measure and report him—his weight being 23 stone 10 lb. The Poplars will grow bigger yet. There is a wood on the right here, and on the left a glimpse of extensive gardening, hedges without and walls within, and masses of such trees as spring on good ground round a lordly residence. Two or three small substantial houses on the right are rendered attractive by gardens and creepers. The Tropæolum speciosum—a lovely, but, I fear, a local trailer—drew me to the pretty cottage of the clerk of the works, where a lad—a schoolboy at the "fair city" of Perth—answered my knock, and convoyed me to the house I sought. It does not satisfy a schoolboy of the Highlands, or his mother, to direct and show a visitor the road by pointing and explaining; he takes him to the spot. And there I found Mr. Halliday, who was pourtrayed in your columns in 1875, vol. iii, p. 401. Mr. Halliday occupies a fit dwelling for a gardener of distinction—a house bowered in Box shrubs, clipped Yews, and Portugal Laurels with ripe berries.

We plunged at once into the midst of groves and gardens, which held us till dark, when we passed near the Palace, and close to a tree planted by Mary Stuart, and arrived at Boot Hill, but could see nothing. A little further on Mr. Halliday rapped something with his stick; it was a stone coffin, invisible, and, I believe, empty. "Here," said Mr. Halliday, at another spot, "is the original gateway to the Abbey;" and he rapped the said gateway, which gave out a sound like Ivy, and some drops were showered about, but we could see nothing. Within the gateway the Palace windows shone across a wide open space, where the Abbey stood. Outside the gateway is an interesting object, which Mr. Halliday rapped. It was the market cross of the village of Scone, which now stands at a distance, and was once clustered here close to the Abbey walls. And here, in the midst of the groves and shrubberies, there is still a parish graveyard and a right of way thereto. Mr. Halliday with a stick—or it might have been a weeding-hoe—pointed out all these things with his usual vigour that damp, dark night, and I heard his rap, the right of way. We then arranged for my return by daylight, and by daylight we visited the Pinetum, where hundreds of stately specimens of Conifers stand on a lawn, forming a Conifer academy for learning by examples all that kind of tree can teach in regard to structure, growth, size, and beauty.

There are several remarkable trees here and elsewhere in the grounds, to be noticed hereafter. The Pinetum is entirely enclosed by the kitchen garden wall and by shrubberies. We passed round it to reach an avenue of Sycamores, 300 years old at least, extending each side of the path, called Chantry Gate, which brought us into a spacious flower garden decked with numerous permanent shrubs besides the more ephemeral plants. This forms part of the 15 acres of the old Abbey grounds, and it brought us to the Palace slopes or lawn before the windows. When a house stands on ground well elevated above the general level of the park it is sometimes fortified by a wall and terrace, the terrace being narrow and the wall a break-neck affair—or the park may be reached by one uniform slope, or by several. The latter plan is adopted here, and a low wall, handsomely built and ornamented with Ivy and other creepers, divides the park from the enclosed space. Within, upon the lawn, are several specimen trees, including the Mary Stuart Sycamore, of 13 feet girth at 5 feet. This is on the south-west of the quadrangular Palace, which covers an acre of ground, and facing the park and the Tay. On the opposite side of the building are the principal entrance, the old Abbey gateway, and the avenue of Limes beyond. Round about Scone Palace is a favourable field for either gossip or dignified narration, but it may concern the reader more to know that 16 yards, from row to row, is the distance of the Limes apart, and that their tops are now drawing near together, and will interlace and form an arch in ten years, when they will have been just sixty years planted. They are now 56 feet high, and 6 feet or 7 feet in girth at 5 feet. Thirty years ago they were moved further apart, which may have checked their growth.

There is a Lime tree rather older than the above in the park, south-east of the Palace, 8 feet 6 inches at 5 feet, and 76 feet high. It was planted by the present Earl of Mansfield, and contains a great deal of foliage and a great deal of timber. The tree is not pyramidal, as in the case of some others of this species, but columnar, with a conical top. A still more remarkable tree for the amount of timber produced in a single lifetime, is an Oak of sixty-eight years old, growing in the pleasure grounds. It is 70 feet high, 7 feet 11 inches at 5 feet, and 6 feet 4 inches at 31 feet, and 5 feet at 36 feet. The cubical contents are 120 feet. The grandeur and growth of this young Oak, its exquisite proportions, its expressive trunk, and the abounding life and power of quick expansion which seem to breathe in every branch and twig, are surprising. I have not seen another youngster of sixty-eight so big and so full of promise wearing such a marked expression of present and continued growth. What may it not arrive at 500 years hence? Rip Van Winkle was a melancholy man, waking up to find his gun-barrel rusted and his friends gone, and I never envied him his resuscitation until I saw this hopeful Oak, which must be feeding, one would think, on land manured by the mouldering dust of several monks. Of the million Oaks planted by the Earl of Mansfield between 1804-34 this one excels the rest in beauty and in the quantity of timber it has packed beneath its bark in a given period.

In a letter from Mr. Halliday on the subject of the trees of Scone, he mentions that a writer has lately fixed upon a neighbouring and inferior Oak, the same age as the above, in proof of the advantages of pruning. A not uncommon blindness of the eye, Mr. Halliday thinks, prevented his observing that the unpruned tree had done better than the one which had been treated according to the method he recommends.

Next, in point of interest, to this noble native, is the tree which is the special pride and ornament of Scone, as the introduction of Mr. Douglas, who served his apprenticeship in these gardens.

Mr. Halliday informs me that the two specimens of Abies Douglasii of the first importation (1826-7) measured respectively in September, 1844, 31½ feet and 28 feet in height, and 40 inches and 31 inches in circumference of the stem at the ground. In 1876 the best of these trees measured 9 feet 5 inches at 5 feet, and contains 138 cubic feet of timber, the bole measuring timber up to 75 feet. The girth of its trunk at 2 feet is 10 feet 2½ inches, and at 3 feet 9 feet 6½ inches. This timber-producing tree has yielded very little seed; the other tree, the larger of the two in 1844, but now the smaller, has borne much seed, and its growth has been checked by its fertility. The first cones of this parent tree of 1826-7 were gathered in 1844, but they yielded no seed. During the next eight years £300 were gathered from it in the shape of marketed seed. In 1853 this fruitful tree yielded 2000 cones, which produced 12,000 stout healthy plants counted at eighteen months old. Twenty good seeds were found in each cone the following season, and this has been the average yield up to the present time. The cone crop from this tree was 16,000 in 1873, the last fruitful year, and has now reached a total yield of about 200,000, or 4,000,000 plants, each worth 1s. when planted out at three years old, and 20s. at twenty years old, when planted on good land. Even if we allow 25 per cent. for losses by accidents, there remains a large balance of wealth, to say nothing of beauty, created from one tree, and widely distributed by Lord Mansfield among his friends.

In the parish church at Scone there is a memorial to Mr. Douglas, who lost his life, as my readers will remember, by falling into a trap set for savage animals in the Sandwich Islands. On Lord Mansfield's estate at Lynedoch, the same Fir luxuriates on the same timber-producing soil. Close to the graves of Bessie Bell and Mary Grey there is a specimen 9 feet 5 inches in circumference of the trunk at 5 feet from the ground; and on this interesting site there is a Silver Fir whose trunk measures, at 2 feet, at 3 feet, and at 6 feet from the ground, 14 feet 2 inches, 13 feet 10 inches, and 13 feet 4 inches girth. The bole is 105 feet high, and contains, as measured by Mr. Halliday, 403¼ cubic feet, including bark and top, which contain together 39 feet or 38 feet of bark, and about 1 foot of top above the point where the trunk diminishes to a girth of 24 inches.

The Pinetum at Scone Palace is a stately plantation of exotic trees, placed at regular and sufficient intervals for their full development. One of its most attractive features is the Deodar avenue, consisting of trees 30 feet high. There are grafted specimens of Picea nobilis, from the first importation of 1846. The one we measured has a trunk 7 feet in girth at 4 inches above the ground. The Picea Finsapo is one of the ornaments here at 20 feet high. The Wellingtonia is in fruit. The Cryptomeria japonica misses here the western breeze which softens the climate of the west coast of Scotland, and is much cut up by the wind in spring. The only other tree which does not seem quite happy at Scone is the Siberian silver-striped Pinus Cembra, which has shed the leaf in some cases as if something were wrong at the roots. All the other trees are vigorous, including a row of stiff, sturdy Irish Yews, tied and trimmed a little at top so as to give them pointed, conical heads. The variegated Yew at twenty years is here pretty, but small compared with the above, the variegation being a sign of impaired vigour.

To add two more to the large list of trees which luxuriate here, there are two Ashes, 11 feet 9½ inches, and 11 feet 8 inches, respectively, at 5 feet. Their height is 100 feet.

In the kitchen garden, the last of the Pines, Peaches, and Peas, drew attention on October 10. In a Peach-house, 182 feet long, the Salway Peach still hung in great numbers on most healthy and fruitful trees in pots, each with a movable zinc rim for holding earth, annually removed. Each tree is shifted once a year. There is a small plant outside, the Gentiana, which will not blossom or live everywhere, and is here every season a ribbon, blue, broad, and beautiful, and exactly 2120 feet long. We are all drawn towards things which are at once simple, clever, and useful, and I should certainly have wished to spend some hours in a very interesting turf house, 70 feet long, in which numberless plants are brought on, till they are brought out and promoted to the conservatory or elsewhere. The walls are 3 feet thick at bottom, and are lined outside with a mixture of gas-tar and coal-ashes. Inside they have been smoothed and washed over, and they are always dry.

In the engraving (fig 74) which accompanies this article the frontage of the wall, fencing the park from the lawn, shows the gain in height outside by the removal of earth. The apparent extent of the lawn is considerably less than its actual area. *H. Evershed.*

Notices of Books.

The British Manufacturing Industries. Edited by G. Phillips Bevan, F.G.S., &c. London: Edward Stanford.

The last issued volume of this most useful series contains articles on salt preserved provisions, and bread, by J. J. Manley, M.A; sugar refining, by C. Haughton Gill; butter and cheese, by Morgan Evans; and brewing and distilling, by T. Pooley, B.Sc. These articles are scarcely within our province for notice, except perhaps that on sugar refining; nevertheless, we are assured that the subject of the preservation of food as well as the manufacture of bread and biscuits are matters of such general interest and importance that the articles, which are written in a very attractive and instructive form, will be read with satisfaction by all who purchase this little volume.

It is difficult, perhaps, to tell which is the most important to mankind generally—the production of salt or the production of sugar. The object of our journal, however, leads us to Mr. C. Haughton Gill's article, which we find opens with a very brief history of sugar from the "honey made by the hands of man" of Herodotus, to the discovery and manufacture of Beetroot sugar at the end of the last century, and the estimate of the annual production of sugar from this source at the present time, which amounts to more than 1,000,000 tons. The chemistry of sugar is next briefly treated of, and a description of the manufacture of cane and Beetroot sugars follow. In the first, the canes, after being cut, are passed through rollers, so that the juice is squeezed out. For Beetroot many methods have been adopted, the oldest and most general plan still in use being to rasp the root to a fine pulp, which is placed in woollen cloths and submitted to hydraulic pressure. The system of boiling and subsequent refining is, of course, treated of rather fully, this practical portion being illustrated by woodcuts. The statistics are of great interest, showing, as they do, the rapid rise in the production of sugar from the Beet. In 1867 the total produce from this plant was 650,000 tons, while in 1873 it rose to 1,110,000 tons, since which time it has still been increasing.

—— Professor Lange, of Copenhagen, has just published, under the title of *Souvenirs de l'Ancien Jardin Botanique*, an historical account of the Botanic Garden under his charge. The old garden, it appears, is about to be abandoned, in favour of a new one in a more open part of the city, and which will be more thoroughly representative of the present state of science. The Copenhagen garden dates from 1600, and among its Professors have been Fuiren, Kylling, Oeder, the founder of the *Flora Danica*. In 1778 the site was changed to Charlottenborg, and associated with it were Rottböll, Holmskjold, Hornemann, Schouw, Oersted, and Vahl, while among the gardeners Hollboell deserves special mention. Among the more remarkable trees in the garden is a tree of the × Syringa rothomagensis, a hybrid between persica and vulgaris. It is divided at the base into several subdivisions, some of which are very thick. The height is 26 feet, with a diameter of head of 20 feet. It was planted in 1797, twenty years after the raising of the hybrid by Varin at Rouen.

—— The *Game Birds of India*, by A. O. Hume and Captains C. H. T. and G. F. L. Marshall, is announced to be published in three volumes in the autumn. The size of the book will be royal 8vo (10½ inches × 6½ inches), identical with *Stray Feathers* (vol. iii.) and *Shelley's Birds of Egypt*. The game birds of Ceylon, Burmah, and in fact of all the provinces and sub-divisions of our Indian Empire, will be included, as well as those of all the more or less independent States embraced within the limits of our Indian dominion. The book will be divided for convenience into three volumes, which will be issued at intervals of about four months. Each volume will have, on an average, about fifty coloured plates, with their accompanying letterpress.

—— The Calcutta Central Press Co. announce the publication of an illustrated book on *Birds' Nesting in India:* a Calendar for Egg-collectors, and a Popular Guide to the Habits and Breeding Seasons of Birds. By Captain G. F. L. Marshall, R.E.

—— Messrs. Macmillan announce the publication in eighteen monthly parts of *The Forces of Nature*, a popular introduction to the study of physical phenomena, by Amédée Guillemin, translated from the French by Mrs. Lockyer, and edited, with additions and notes, by J. Norman Lockyer, F.R.S.

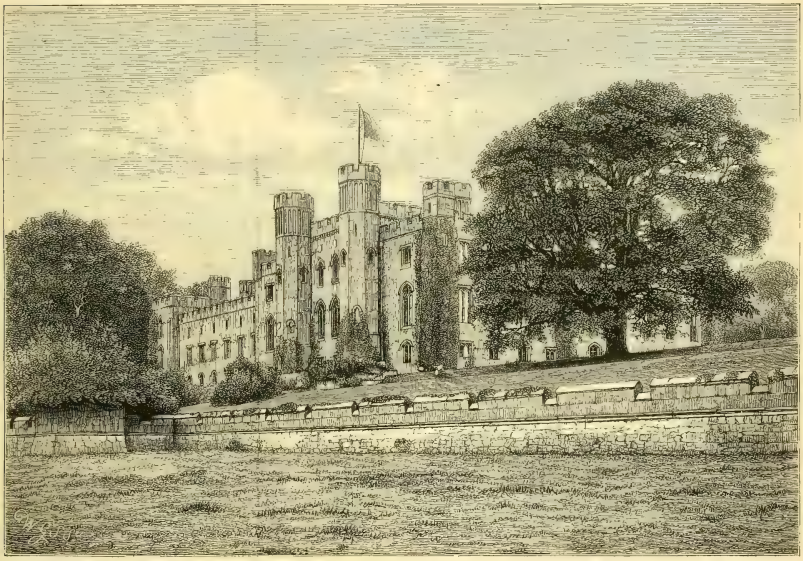


Fig. 74.—SCONE PALACE, PERTH, THE SEAT OF THE EARL OF MANSFIELD.

Publications Received.—The Window Observatory, by Captain H. King, R.N. (London: Crosby Lockwood & Co).—Garden Recipes, by Charles W. Quin (Macmillan & Co.).—The Agricultural Textbook, by Professor Wrightson (Wm. Collins, Sons & Co.).—The Indian Forester.—The New Practical Window Gardener, by John R. Mollison (Groombridge & Sons).—Animal Products, by P. L. Symonds (Chapman & Hall).

Florists' Flowers.

The Auriculas at Loxford Hall.—A recent inspection of Mr. Francis Whitburn's fine collection has convinced us that one, at least, of the Southern growers is likely to hold his own at the great Auricula tournament at the Crystal Palace on Tuesday next, and that if he is much beaten, a rare treat is in store

for the visitors. The collection under Mr. Douglas' care has grown considerably in dimensions during the last few years, and now includes all the modern sorts, as well as the greater portion of the old favourites of the last generation of florists. Right well, too, does Mr. Douglas grow his plants, and though the season has been sadly against the Auricula, the Loxford Hall plants are in wonderful health and vigour, and throwing trusses of fine size and excellent character. It is a rare treat to see how even the "miffy growers" thrive under Mr. Douglas' care; and the comparatively easy manner in which he propagates the "shy" sorts is really a triumph of cultural skill. No coddling treatment does the Auricula receive here, and the result amply attests the soundness of their fare. A good sound loam, with about a fifth part of some sweet rotten manure, is the compost they are grown in, and through the summer months they are freely exposed to air and rains alike. The fancy composts of the older florists (the so many ounces of pigeons' manure, if you like) finds no place on Mr. Douglas' potting-bench; no double distilled essence of goose-dung gets into his water-pot; plain honest fare is what the plants like, and if Mr. Douglas does nothing more for florists' flowers than expose the fancy compost fallacies, he will at least deserve the hearty thanks of every amateur for doing that.

Mr. Douglas is strong in all the "edges" as well as the selfs, and the breadth and liberality of his floral notions is well testified by his high regard for the showy alpines. In the white-edged section the good old Taylor's Glory has been in fine form for some weeks, and one somewhat regrets that his best truss was developed a week or two too soon for the Palace show. With a wavy paste, reddish plum body colour and pure white edge, it is a grand flower, and stands second only to Heady's well-named Smiling Beauty, the body colour of which is black, the paste dense, and the tube of beautiful form. It is in all respects a very refined flower, and throws a fine truss of pips, numbering from a dozen upwards. Hepworth's True Briton is a fine large flower, with a black body colour and dense white paste. A favourite with the Northern men is Summerscales' Catharina, and though small it is a very neat flower, but does not throw a large truss. Annie Smith (Smith) is the purest white of all, and a very pleasing variety, notwithstanding its fault—a somewhat angular paste. Amongst the very best, too, in this section is Smith's Ne Plus Ultra, a pure white, with rich chocolate body colour, and rather pointed petals. M'Donald's Miss Arkley, a reddish purple body coloured flower; and Smith's Lady Sale, also show up well—the latter especially having nice foliage, and throwing a fine large truss.

In grey edges, Headly's George Lightbody is generally considered the finest, and it is here in grand character. Sykes' Complete, a very old variety with a fine black body colour, is very correct in its markings, and still stands to the fore. Sophia Dumaresque is not much known, but it is a grand flower, with a purplish plum-coloured ground, and pips of fine size. Cunningham's John Waterston is, it seems, not generally appreciated by the Northern men, but is very fine with Mr. Douglas. Lightbody's Robert Traill has a dense paste, bright gold tube, black body colour and fine grey edge, which, however, sometimes comes green. One of the strongest growers, and most handsomely mealed of plants is Turner's Colonel Champneys, the ground colour in which is violet. The points are generally correct, and it is a very showy variety, though our Northern friends do not much exhibit it. Headly's Alderman Charles Brown is of somewhat recent introduction, and an improved flower of the Ringleader (Kenyon) and General Bolivar (Smith) type. The last named is a fine old variety, that cannot be dispensed with. A good and well-marked flower is Waterhouse's Conqueror of Europe, which has the distinction of producing the largest pips in its class; and the only variety that matches well with it is Fletcher's Ne Plus Ultra. Other choice varieties in this class are Dickson's Duke of Cambridge, with its rich plum-coloured ground and fine edge, which sometimes comes almost green; Kent's Queen Victoria, a very neat flower, the body colour in which is black, and the tube and paste very regular; Reid's Dr. Horner, which has a black body colour, and has been shown as a white-edged variety, though it certainly belongs to the greys; and Grimes' Privateer, a good old sort, with a fine body colour and very narrow edge, like that of Campbell's Confidence, which has a fine paste and very dark ground colour. Of new varieties Walker's Peverell of the Peak has fine qualities, and is very promising; and Kay's Alexander Meiklejohn is generally a very refined flower, though it does not throw a large truss and is rather a miffy grower.

The leading varieties in the green-edged section are Leigh's Colonel Taylor, Headly's Alderman Wisbey, which has a bright yellow eye and good dark body colour: the single pips are the best of all, but the truss is not large—the best truss here numbers seven, and that may be considered fine; Cunningham's St. Augustine, a new Scotch variety, with a good golden eye, fine black body colour, and well defined dark green edge; Campbell's Admiral Napier, which would stand very high but for its angular paste; Ashton's Prince of Wales, of a pure grass-green, and dense paste; Traill's George Lightbody, a very good green, but deficient in body colour; Oliver's Lovely Ann, of which there are two varieties in cultivation, the best having a fine broad petal and bright green edge; Pollite's Highland Laddie, and Booth's Freedom, which has an intense black body colour, and a very dark green edge.

Amongst the selfs we noted Pohlman's Eilen Lancaster, a new variety, and one of the very best of the dark coloured ones, though not so round a flower as Kay's Topsy, which is a great favourite, and has finely mealed foliage; Campbell's Pizarro, dark maroon, and one of the best of the Falkirk grower's raising (and he has raised many good ones with but little means or convenience for doing so). Amongst the violets nothing can compare with Turner's Charles J. Perry (a worthy memorial of a most worthy man); the colour is rich to a fault, but the tube is not so bright as it might be; however, let that pass: the pips are of fine size, and it is a free grower. Lightbody's Meteor Flag has finely mealed foliage, but it is not of so bright a shade as the last-named, and has a defect in its thin watery paste. Spalding's Metropolitan, too, is not so pure in colour as C. J. Perry, and its flowers are rather thin. As a crimson, Campbell's Lord of Lorne is the finest in this collection, and a fine flower it is. Sim's Vulcan has black flowers, which form a beautiful contrast with its handsome mealed foliage; Spalding's Blackbird stands well amongst the dark ones; and Sim's Eliza, a reddish maroon, is of fine size, and a showy flower; Lightbody's Lord Clyde, dark maroon, is also fine; and Netherwood's Othello has very dark rose-leaved petals and a fine gold tube.

For the alpines we have left but little space, but we must not omit to notice a perfect gem which Mr. Douglas has in Diadem, a beautifully shaded crimson-velvet flower, of fine size and form. Turner's Beatrice, and the same raiser's Bronze Queen, are also flowers of merit, the latter being a prettily shaded flower; and the first-named a bright shaded purple, with very large pips, which we measured, and found to be 2 inches across. *W.*

THE NATIONAL CARNATION AND PICOTEE SOCIETY'S SOUTHERN SHOW.—You will greatly oblige by permitting me to inform your readers that this show will be held in the Royal Aquarium, Westminster, in conjunction with a display of cut Roses, for which the Aquarium Company offer £65 in prizes, on Wednesday and Thursday, July 18 and 19.

Schedules of these prizes, and those for the Carnations and Picotees, are in the press; and by the time this notice meets your readers I shall be ready, and shall most gladly forward them to all persons interested.

The promoters of the Carnation and Picotee show accepted this proposition of the Aquarium Company in the belief that the display of Roses would give an additional attraction to the show of Carnations and Picotees, and therefore offer a larger return to those friends who so readily and generously responded to their appeal for the means of offering suitable and adequate prizes.

That response disposes, I presume to believe, of the perverse and absurd statement that "florists' flowers were hopelessly at a discount in the South;" but I shall not think the reputation perfect and complete until the Carnation and Picotee growers of the South, aided as they may be, and as I am sure they will be, by their brethren in the North, who have convenience for hastening the bloom, have provided a display of these lovely flowers such as Mr. Dombrain never before looked upon, and such as shall elicit universal admiration. I invoke the aid of my fellow florists in this work, and if we succeed, as I am sure we shall, I shall be repaid tenfold for the pleasant labour it has entailed upon me. *E. S. Dodwell, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W.*

Natural History.

BIRDS AND FLOWERS.—Primroses and Cowslips (especially the latter), where they grow in small quantities on garden banks and like spots, are sadly pecked about by the birds this year. They eat part of the petals off in some instances (peck them like a caged bird does any green plant within its reach), and destroy numberless blossoms in this way. The present winter having been so very mild, no lack of vegetation, no frosts to harden the soil, and a fair proportion of winter berries, one can but feel surprised that the birds should attack spring flowers so vigorously. *Helen E. Watney.*

THE HAWFINCH.—In your notice last week of Shobdon Court, the seat of Lord Bateman, you allude to the hawfinch being a rare bird in the locality, only occasionally visiting this island. In Middlesex and Hertfordshire it certainly now breeds every year. Within 5 miles of the City, in Caen Wood, Highgate, I have frequently seen these birds, and two years ago I picked up a young hawfinch alive in my garden here and kept him for nearly twelve months. He became as tame as a bullfinch, pecking at the hand and eating fearlessly Hemp and Millet seed, raw Peas, Beans, or Lettuce. He was kept in the same room with a linnet, whose song he soon learned to mix in with his own, and the combination of the two was a strange jargon, unlike anything in bird song I ever heard. *J. Miles, Bournemside, Southgate, N.*

—— I think nearly all the authorities on birds describe the English grosbeak or hawfinch as being of a shy and retiring disposition; I was, therefore, somewhat surprised the other day to see one of them making himself very much at home in a dove's cage which stands open within a few feet of the windows of my house. He comes very regularly, and seems greatly to enjoy his meals. He also objects in a most emphatic manner to the sparrows, chaffinches, greenfinches, &c., who intrude upon him, totally ignoring their prior claims to a share of the good things. Of course they make some show of resistance, but by the aid of his powerful beak all disputes are quickly settled. *Maurice Young, Milford Nurseries, Godalming.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—There are a few small-growing plants that in the general preference for flowering subjects are lost sight of, though sufficiently interesting to deserve a place in the most select collection. Amongst these may be named the Australian Pitcher-plant, Cephalotus follicularis, and Dionæa muscipula, which, although sometimes classed as greenhouse plants, succeed better in a somewhat warmer and closer atmosphere. The present is the best season for propagating the Cephalotus, which is increased by division, taking off the small offsets that are formed round the base of strong plants, placing them singly in the smallest sized pots, well drained and filled with an equal mixture of fibrous peat and sphagnum, both chopped quite fine, to which add a fourth of sand; keep them moist and moderately close, shading slightly until they have rooted, after which give more air, standing them as near the glass as possible, potting on as required; but, as it is a small rooting subject, it must never have too much room. It is now time to pot the Dionæas; these plants increase naturally, much in the manner of Lilies, by the crowns splitting up where the flower-stems have been produced the previous year; they succeed well in a similar compost to the Cephalotus, singly in small pots kept a little close, and some 8° or 10° warmer than an ordinary greenhouse. The pots in which both the above plants are grown, when in either a small or full sized state, should be kept plunged in larger pots or pans, filled with sphagnum, which helps to keep them equally moist, neither of them being able to bear any approach to a dry condition at the roots, nor do they like the atmosphere being too dry. There are few flowering subjects that do not attain a large size more effective for decorative purposes, than Anthurium Scherzerianum, but through its comparatively slow growth with inability to be increased quickly by division, and the general reluctance felt to breaking up large specimens, there are few places in which it exists in sufficient numbers to admit of its being used to the extent it deserves. Now that it is found to succeed the best in a much lower temperature than it was generally subjected to when it was first introduced, it can when in flower,

during the advanced spring and summer, be with advantage used in conservatories kept a little closer than an ordinary greenhouse, as also in Fern-houses, where its bright spathes contrast so well with the mass of green; but to thus employ it extensively it should be increased from seeds. As these take a long time to mature, the earliest opened flowers are best for the purpose. When the spathes fade and die off, they should be cut away, leaving the spadix untouched; these will show little alteration through the summer, but about the beginning of the new year the seed-vessels will begin to swell, and during the spring will turn to a bright orange colour; when ripe they are detached with a slight touch, and should be washed out in the way usual with Tomato seeds, and sown at once. The seeds will now shortly be ripe. I have found them succeed best in finely chopped sphagnum, mixed with one-fourth or fifth of clean sand; the sphagnum before using should be thoroughly dried so as to kill it. If used in a fresh state it will grow, and has a tendency to smother the young seedlings; fill the pots half-full of drainage, pressing the mixture of sand and sphagnum close down, and watering, so as to fill up the interstices. Sow the seeds on the top: they must not be covered, except by laying a square of glass over the pots to keep the surface from drying. In a stove temperature they will soon vegetate; when large enough they should be pricked off an inch apart into well-drained pans, filled with material similar to that they were sown in, with a little fibrous peat added: here let them remain till the leaves get an inch long, when they are large enough to pot off singly. The present is a good time to propagate the ever-flowering Scutellaria Mociniana. This is one of the most useful stove plants that can be grown, as it will flower in any state, either large or small, almost continuously the whole year round. It is a very effective object in the stove, and the flowers are also well adapted for cutting. Small bits of the half-ripened wood strike readily in a brisk heat, after which they should be encouraged to grow freely during the summer, stopping them once or twice to induce them to break out. Griffinias should now have plenty of light and be kept tolerably warm, by which means they make better growth, upon which the flowering of these beautiful autumn plants much depends. They are naturally slow glowers, and where they do not receive sufficient warmth through their season of active growth their increase is still slower. They will bear from 60° to 70° night temperature now. The showy summer blooming Gloriosa Plantii and G. superba must have sufficient pot-room, for if too much confined at the root at this time, when their annual shoots are actively progressing, no after-treatment will make up the deficiency. *T. Baines.*

FLOWER GARDEN, ETC.

The continued gales of wind which we have experienced for several days, has strewn the lawns and pleasure-grounds with leaves and branches, but as soon as the weather moderates we must resume operations, and have all made trim and smart. While the ground is in good condition for the work, keep the hoe going where weeds make their appearance. Push forward the potting of late-struck plants, and box off and plant in frames or pits Alternantheras, Lobelia, Golden Feather, and things of that description, for I find they succeed better in such places than in pots, and require less attention; the plants also turn out well at planting-time. Have sufficient protection at hand, for we cannot trust much to the weather at this season of the year. Be careful that the plants do not receive a check in moving them from one place to another. Seeds of all tender and quick-growing plants may now be sown. Indian Corn, Castor-oil plants, and ornamental Gourds, are best sown in moderate heat. The two former are very ornamental subtropicals when grown in well prepared beds, and before the end of the season they will be strong and vigorous, and from 9 to 10 feet in height. They succeed best in sheltered situations, as the large foliage is apt to get torn and disfigured by the wind. Look over all the plants that have been put out preparatory to planting, and pinch the tops off all that are required to form bushy plants. Stir the ground among Tulips, which will encourage them to root and grow; and, as the weather permits, proceed with the usual work. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

Melons.—Notwithstanding the piercing easterly winds which have prevailed, with a minimum of sunshine, the earliest Melons in 16-inch pots, plunged in a bed of fermenting Oak leaves, have set an abundance of fruit which is now swelling very fast, and the plants are clean and healthy. This I attribute in a great measure to the use of tobacco-powder on the first appearance of green-fly in preference to fumigating with tobacco-paper, which often injures the tender foliage. Having removed all surplus fruits, those left should be supported on small pieces of board with galvanised wire suspended from the roof or trellis, but sufficiently near to secure the full benefit of sun and light when the Melons begin to ripen. Top-dress with a rich compost of strong loam and manure, and water copiously at the roots with tepid liquid manure. Ply the syringe freely twice a day in bright weather; run up to 90° in sunshine, and close when the temperature has declined to 80°. The treatment recommended for the early plants will also apply to successions, with the exception of the supply of water and atmospheric moisture, which must be considerably increased as the days lengthen. Be careful to have the roots in a moderately dry state when the female blossoms begin to open. Discontinue stopping until the fruit is set: impregnate daily until the requisite number show signs of swelling, when stopping to one or two joints beyond the fruit and the removal of all useless spray, may be resumed. Those growing in pits and frames must have extra care until we have brighter weather, otherwise the plants will receive a check, become a prey to insects, and disappointment will follow. Keep the foliage thin, remove the first blossoms if setting is doubtful, and allow the surface of the bed to become dry when this process is going on. Attend regularly to the linings, to keep up a sharp bottom-heat, and use plenty of dry mats for covering up the lights. Collect spent forcing material from the Seakale, oak leaves, and a little fresh stable dung for successional beds, as young Carrots and Potatos are now to be had from the pits and frames; throw these into a heap to revive fermentation, and make up the bed as soon it becomes warm. Oa beds formed in this way the soil may be placed at once, as they rarely get so warm, neither are they so lasting as when made up entirely of new materials. A good stock of fine fibrous loam should also be ready for planting out when the beds are made up. *W. Coleman, Eastnor Castle.*

Figs.—Where the crop of fruit is considerably advanced towards maturity, the artificial general thermal applications of tepid water should be given to the trees, as the mulching matter, being now freely permeated with rootlets, it should likewise be kept constantly moist. This matter is of the first importance; it should therefore not be neglected, as nothing in the whole routine of culture is more inimical to successful trees than an arid state of the border in which the roots are growing. At this stage of development many borders which are employed for these subjects, by reason of the elevated position they occupy in the house, or by their being either narrow or too shallow in their capacity, are naturally very susceptible to drought, and all such borders will require frequent attention to avoid such consequences. Until there is an indication of the fruit swelling off to ripen, continue to well moisten the house every day. Afterwards gradually introduce a drier atmospheric state. Persevere in maintaining a mean temperature of about 65° at night and 75° throughout the day, constantly, by artificial means, when those arising from natural causes are insufficient of themselves to realise it. Before the ripening of the fruit takes place, ventilate slightly at 75°, and afterwards regulate the admission of air so as to keep the temperature between 80° and 90° by sun-heat, closing the house under this influence at 75° to 80°. After the ripening process is commenced, keep a chink of air on the house constantly; this is very essential to the crisp juiciness in the fruit, which under other conditions would naturally ensue. In later houses keep the shoots which are to be pinched in, done betimes, and tie in loosely; by so doing, much after trouble will be averted. Such houses as are not required to ripen the fruit on the trees before August, should be ventilated very liberally on all suitable occasions, and advantage taken of plentiful supplies of rain-water to get the borders in a moist condition before the hot weather sets in, when so many other things will be requiring it. *G. T. Miles, Wycombe Abbey.*

Orchard-house.—Although we have had little sun during the past fortnight to raise the temperature of the unheated orchard-house, yet the absence of frost, with a moderately dry atmosphere, has produced conditions favourable to the setting of all kinds of fruit under glass, and up to the present time there is every appearance of a good set of Peaches, Nectarines, and Apricots in pots and glass cases against the walls; moreover the trees are looking unusually clean and free from imperfect foliage. As soon as the fruit is safe the trees must be syringed once or twice a day, according to the state of the weather; disbudding and shortening back to a good shoot above the requisite number of the most promising fruit-buds may also be performed; all small and badly placed fruits should be rubbed off as soon as those on the sunny side of the shoots show signs of taking the lead. Ventilate freely on fine days, but avoid exposing the trees to cutting draughts. Water with tepid liquid manure sufficiently often to keep the soil in a healthy growing condition, and shut up early on fine afternoons, to allow the house to run up a few degrees after it is closed. Cherries, Plums, and Pears require abundance of air while in bloom, it will, therefore, be advisable to keep these together in the coolest part of the house until they go out of flower, when the final arrangement of the trees may be completed. If green-fly puts in appearance before it is safe to fumigate, no time must be lost in dressing the affected shoots with tobacco-powder, having previously damped them to make the powder adhere to the under-sides of the leaves. Hand-pick Plums and Cherries before grubs have time to perforate the young fruit; the whereabouts of these troublesome pests may be traced by the curled up appearance of the young leaves. The treatment recommended for pot trees also applies to those which are planted out in the borders. Stop all gross shoots at the fifth leaf, mulch with short dung, and water thoroughly at the roots as soon as the fruit begins to swell. *W. Coleman, Eastnor Castle.*

HARDY FRUIT GARDEN.

Apricots that were so full of promise a short time back have been unfortunately scathed by frost that has destroyed the greater part of the bloom, and not only is this the case, but the young wood has suffered so much that a large portion of it is dead and dying. This probably arises from the sap-vessels being ruptured, owing to the gorged state they were in from the excessive rainfall and unusually mild winter, together with the imperfect ripeness which was the natural result of such a season. Be that, however, as it may, certain it is that most of the trees I have seen show unmistakeable signs of having received much injury, and the only thing to be done is to arrest its further progress, and set about repairing it in the best manner possible. The proper course to pursue is to cut away the whole of the spurs affected, likewise any young shoots that have been laid in to fill vacant places on the wall, as it is useless to allow any of these to remain, and each day's delay in removing them only aggravates the evil by the way they continue to die back, and so carry the mischief further. A clean cut made close to a young healthy shoot will prevent this, and from the growth now taking place the wound will soon heal over, and by further timely stopping and attention in training the trees may be got in proper order for another year. Even in cases where no injury to the spurs has taken place, it is always advisable to take advantage of the absence of fruit to get these shortened well back, and thus force them to form nearer home, where they can derive benefit from the protection of the wall, instead of having a long way therefrom, exposed, as they necessarily are, when so left, to all changes of the weather. At no other time can this operation be so readily and safely performed as at this season, now that the buds or young shoots have formed, and one can see where to cut, besides which, the wounds made are so clean as very soon heal over, and thus stop any decay of the exposed parts that would be sure to take place were the amputation to occur during the autumn or winter.

Now that all danger of frost is over, so far at least as it is likely to affect Peaches and other fruits grown on walls, all covering materials should be at once removed, as they only obstruct the sun and air, and tend to weaken the growth. The mild winter has been eminently favourable to all kinds of insect life, and red-spider, green-fly, and all other pests that usually affect fruit trees may be expected to be unusually numerous and troublesome this season; indeed, the green-fly has already appeared on Peaches and Nectarines in full force, and unless immediately got rid of it will soon cripple the growth, and seriously damage the trees.

The various insecticides, if applied at this early stage require extreme caution in their use, so susceptible of injury is the tender cuticle of the young fruit, especially that of Peaches, the soft downy covering of which almost defies any liquid applied that may be applied, as to soak them nearly through, and frequently cause them to perish. After many trials of the various compositions now in use, I find nothing so safe and effectual as tobacco-juice mixed with an infusion of quassia and soft soap, of the latter about an ounce to the gallon of the mixture. Any common rank tobacco does to extract the juice from, and should be soaked in boiling water and then squeezed out, and again soaked till all the strength is extracted, when it may be dried to mix with any other fur fumigating purposes, and so save waste. Where good genuine tobacco-water can be obtained from the manufactory, that is perhaps the cheapest and most preferable, but where this is not to be had readily, the above is an easy way of forming a substitute. A pound of tobacco will make 12 gallons of sufficient strength, with the addition of the extract from the quassia and soft soap, to kill any fly if wetted with it, which may easily be done by any one at all expert in the use of a Read's syringe, and that with but little waste taking place if thrown out, as it may be, in a fine spray. Before putting it on, however, the trees should be gone over and receive a partial disbudding, so as to remove a portion of the superfluous shoots and those most affected with insects, that the liquid may the more effectually be driven in among others remaining. *J. Sheppard, Woolverstone.*

THE
Gardeners' Chronicle.

SATURDAY, APRIL 21, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, April 23 { Sale of Imported Orchids, at Stevens' Rooms.
TUESDAY, April 24 { Crystal Palace: National Auricula Society's Show.
WEDNESDAY, April 25 { Sale of Herbaceous Plants, Shrubs, Roses, Bulbs, &c., at Stevens' Rooms. Royal Horticultural Society of Ireland: Spring Show.
THURSDAY, April 26 { Sale of Imported East Indian Orchids, at Stevens' Rooms.
FRIDAY, April 27 { National Auricula Society's Show at Manchester.

IN December of last year a correspondent, who signed himself merely as a "Constant Reader," sent us a very handsome DOUBLE LAPAGERIA ROSEA, the merits of which were such as strongly to attract our attention, and induce us to recommend that the fortunate owner should take means to propagate it by layering. The flower in question appeared as a sport upon a branch, and doubtless if that branch were duly layered it would in due time produce these much-to-be-desired flowers. But apart from its beauty as a double flower of unusual symmetry and regularity, it presented certain peculiarities of structure to which it may be useful to advert. It is not indeed necessary to enter into details which would be of interest mainly to botanists, but the principles involved were such as to afford useful lessons in the way of practical cultivation. They do not, indeed, offer any particular novelty, but their importance is such that repetition becomes excusable.

Briefly, then, the peculiarities of the flower in question depended upon variations in the processes of growth and of development respectively. Sometimes the one must have been active while the other was passive, and *vice versâ*. Sometimes both had manifested themselves in an equal degree, at other times both had been temporarily suspended or arrested. Before we go further we must define clearly what we mean by growth and development. By growth, then, we mean the formation of new or additional tissues, by which means the bulk, substance, or weight of the plant are necessarily increased. Development is merely the change or progressive modification of tissues or structures already formed, a change intimately connected with the adaptation of that tissue or of that structure to fulfil particular purposes.

The two processes are indeed not always easily distinguishable as they pass one into the other, but as a rule they are easily recognised, and we need not stay to consider exceptions. Growth must precede development, and it may proceed without it. Growth may and generally does accompany development, but development need not necessarily accompany growth. Growth and development may go on at the same time in the same flower or at different times. If a proper balance be maintained between growth and development, then the flower or other organ is normal according to its kind or type. But, if the balance between the two processes be disturbed, then the flower or other organ becomes necessarily abnormal or distorted. Again, the question of time has to be considered: the two processes must not only be symmetrical as to form, so to speak, but they must preserve a correct rhythm. Growth and development must take place at certain times, and last a certain time. What that time is, and what its duration, depend, of course, on circumstances. All that we are concerned with now is the fact that in symmetry, as well as in rhythm, and in both together, the just equilibrium must be maintained, or the flower or other organism becomes distorted and abnormal. Thus, in any flower there are natural periods of growth, alternating with periods of no growth or arrest, and periods of development, alternating with intervals of non-development or arrest. In the flower of Lapageria, for instance, which has served as a text for these remarks, the sepals, petals, and stamens were normal, the balance of growth and development normal to the flower, and the time at which those processes had taken place had not been interfered with, but, after the formation of the stamens, at a period when under ordinary circumstances the growth and development should go on in the formation of the pistil, four additional rows (one within the other) of petals were formed. Growth was clearly not arrested, but rather exaggerated, unduly manifested; development, on the other hand, was checked, or at least it showed itself in the formation of petals instead of running on into the construction of the pistil with its ovules or rudimentary seeds.

The importance of a clear conception of the facts we have been alluding to will be admitted by every gardener. In the culture of Cauliflowers, for instance, the tendency to "bolt," that is, to develope flower-stalks and flowers, is not one which the gardener looks on with complacency, nor does he regard with any greater satisfaction the tendency which his Pelargoniums have in some seasons, or when over-watered, to run to leaf, at the expense of the flowers—growth in the latter case predominates over development. The swelling of Strawberries, of Pines, of Grapes, is a process of growth; the ripening of the wood, the setting, the stoning, the colouring of fruits, are matters of development. Between the two processes there is sometimes an antagonism, as every gardener knows to his cost. Again, though general principles remain unaltered, there is much room for individual variation even among plants of the same kind. What is so conveniently called the "habit" often varies materially even in seedlings from the same pod. Such things test the power of observation and the tact of the gardener, and serve to distinguish the intelligent workman from the man of routine, who owns no rule but that of his thumb. The conditions which are favourable to growth, are not always the same as those which are beneficial in the case of development; indeed, as we have seen, the two processes are often antagonistic. Practically the matter resolves itself mainly into a proper regulation of the amount of light, heat, air, and water to be given to plants at different times, according to varying outward circumstances and in accordance with the individual requirements of particular plants. As many plants of varying habits have often to be grown together in the same house, it is evident that in most cases a compromise must be hit on, and this again tests the ability of the gardener, who has to produce the greatest amount or best quality of produce compatible with circumstances.

If we had to point out wherein young inexperienced gardeners and amateurs most usually fail, it would be in the due regulation of the amount and time of watering plants in relation to light and heat. More failures we believe occur from negligence or carelessness in this particular than from any other breach of the laws by which plant culture is regulated.

—— THE illustration on the next page, fig. 75, represents a very fine specimen of CHOROZEMA CORDATUM SPLENDENS belonging to MRS. J. H. VIVIAN, Singleton, Swansea, whose gardener, Mr. JAMES HARRIS, kindly favoured us with the photograph. The plant measures 24 feet 6 inches in circumference, and is about 8 feet in height. It was struck from a cutting five years ago. This variety of Chorozema lasts in flower from Christmas to the middle of March, is invaluable for cutting, and when grown in small pots comes in most useful for table decoration.

—— We are by no means sure—or, if the expression be preferred—we entertain a strong feeling that the best thing in the recent Amsterdam Exhibition was one which finds no place in the catalogue, and of which, up to the time we left, we were unable to discover the exhibitor. It consisted of an exhibition of a very large number of BOOKS, &c., of various dates and languages, RELATING TO THE TULIP, commencing with books of the seventeenth century, and including Mr. BAKER's recent monographs. Amongst them was a list in Dutch of an auction sale (February 5, 1637) of Tulip bulbs, in which one was knocked down for 4200 guilders (a guilder = 1*s.* 8*d.*). Another, a mother and her child—that is to say, a bulb with an offset, sold together for 5000 guilders. The total amount realised by the sale was 90,000 guilders. Tulips were at that time sold by weight, and in one engraving here exhibited, there is a sarcasm pointed at speculative florists, which might not be inapplicable in some cases at the present day. A huge fool's-cap, Floræ Gecks Kap, is shown serving as a tent, in which Tulips are being weighed and sold. A figure, which may represent Good Taste or Common Sense, is blinded, and her hands tied behind her, while Flora is shown in the distance on a donkey surrounded by mocking small boys and others, who chastise the unfortunate goddess with birch rods, &c.

—— The managers of the South-Western Railway are to be complimented on their appreciative preservation of some NATURAL CHARMS that might, in less grovelling hands, have been converted into hard cash. On the steep sides of the slopes that border the railway cuttings in North Hants the wild Primrose is seen growing in great abundance, and just now afford no small amount of pleasure to the swift-passing traveller. It will be well if the out-of-the-way *locale* of these charming spring flowers should remain undiscovered by those thieving vandals who rob our hedgerows and woods of myriads of wild flowers, almost exterminating some kinds in various localities, as the unfortunate plants are soon killed by the ungenial surroundings of the metropolis. Probably it will not be long hence ere we awake to the fact that some wild flowers, as well as wild birds, need special legislation for their preservation.

—— The WOOD ANEMONES are just now very charming indeed at the sides of the pleasant woodland walks AT CASTLE ASHBY, Northampton, the seat of the Marquis of NORTHAMPTON. In many semi-wild nooks and corners the visitor comes upon patches of the common A. nemoralis, and its double variety, the single rose, which is this season quite highly coloured, and here and there the scarce double rose variety. For years past a rich bed of decayed leaves has been accumulating, and in this these Anemones flourish with native freedom and vernal loveliness. It is curious to note that in some places the single rose variety has leaves of quite a bronzy hue, in others the leaves are quite green; peculiarities of soil or exposure may have something to do with this. The yellow A. ranunculoides and the pretty pale blue A. apennina are also present and very gay indeed. It simply requires the gorgeous A. fulgens to give completion to a group of spring plants that are highly attractive. While the woodland walks are aglow with floral life, the terrace spring flower garden is quite backward, owing to the wet dull season; during May and June it will be very effective, and about the second week in July the present occupants have to give place to the summer bedding plants, and they are planted out in nursery beds till autumn comes round once more.

—— There are about the country some plants that may be said to possess a kind of historical interest. One of these is the grand old CAMELLIA RETICULATA AT CHISWICK HOUSE. Planted by MR. CHARLES EDMONDS in 1829—very nearly half a century ago—it has proved this season as splendidly floriferous as at any period of its career. It has been literally clothed with flowers, and a considerable number of buds were removed, so thickly was the tree studded with them. The average diameter of the flowers was 7 inches. The measurement of a few of them was specially made by Mr. EDMONDS. The plant is so confined in the narrow dome in the centre of the large Camellia-house at Chiswick that it is a pity a new habitation was not built over it, to give it ample space in which to develope its branches. Bushels of flowers have this season been cut from it for Marlborough House. Close by it are the remains of a fine hybrid Rhododendron named Metropolitana, raised many years ago by the late Mr. JOHN RONALDS, of Brentford. The specimen at Chiswick



Fig. 75.—Specimen of Chorozema cordatum splendens.

House is the original plant, and it is a very fine variety, with large heads of well-formed bright red flowers. It is so robust in constitution as to be nearly hardy, and is of a different habit to most Rhododendrons, growing strongly and flowering freely at the points of the shoots every year. This Rhododendron is becoming much crowded, and, unhappily, is dying in some of its parts, perhaps from old age. Perhaps with the demise of this plant it may become utterly lost to cultivation.

—— Not long ago we gave an Austrian's opinion of gardening in France and England, and the state of horticulture in Austria as compared to that of our own country. The comparison was perhaps too favourable to our gardens and gardeners, and having reproduced that, it is no more than fair to hear what there is to be said on the other side by a more patriotic writer. M. Czullick, in a recent number of the *Wiener Gartenfreund*, "On the Gardens and Gardeners of Great Britain," certainly goes to the extreme in the opposite direction. After admitting that our gardens exceed all Continental gardens in richness and beauty, he suggests that it is possible that this superiority is not due to the skill of our gardeners, but is simply the consequence of favourable climatal conditions, and the cheap way in which whole shiploads of plants are obtained from our various possessions. Many ships that would otherwise return empty are laden with valuable plants. Our winter is not worth mentioning, and our summers moderately hot and moist: hence the construction of our glass-houses is cheaper and better adapted for plant-growing than any that can be adopted in Austria. If Austrian gardeners took no more care of their plants than English gardeners, there would not be a plant left alive at the end of the year. Besides, Austrian gardeners have other difficulties to contend against, of which their English colleagues can form no conception; and it has been repeatedly proved that Englishmen can do anything else in Austria except gardening. Then look at the money the English spend on their gardens, often paying several hundred pounds for a new plant, though this must be regarded as arrogance, whereas the Austrian gardeners have almost nothing. And so the writer goes on. Of course there is a good bit of truth in his exaggerated statements, but he appears to have lost his temper and prudence, to put it no stronger, because his wealthy countrymen spend their money wastefully on horses, instead of encouraging horticulture, and because English gardeners have been held up as a pattern. He thinks Austrian gardeners would beat their English compeers, if they only had the chance. Well, perhaps they might in their own country; but transfer them hither, and give them three months' dull, foggy weather for fruit and flower forcing, and they would find that English gardeners have their difficulties, and that success on their part is the triumph of skill in their profession.

—— We have seen a reprint from the *Pharmat. Zeitung*, n. 10, 1877, of an article by Dr. GOEPPERT on FUNGUS EXHIBITIONS, with special reference to the collection in the museum of the Botanic Garden at Breslau. Fungi are much more largely consumed in Germany, where they are probably more abundant, than in England—that is to say, very many more species are exposed for sale in the markets. In the Botanic Garden of Breslau an exhibition of models, coloured figures, and fresh specimens of poisonous and edible fungi is open to the public daily from May till September. The following list of edible species sold in the markets may interest fungivorous readers :—

Agaricus campestris, L.
,, deliciosus, L.
,, fistulosus, Now.
,, ereales, Bolt.
,, melleus, Fl. Dan.
,, Musceron, Vitt.
,, Pomonæ, Leuz.
,, procerus, Scop.
,, scorodonius, Fr.
,, sylvaticus, Schaff.
,, virgineus, Fr.
,, volemnus, Fr.
,, piperatus, Fr.
Boletus bovinus, L.
,, circinans, Pers.
,, edulis, Bull.
,, luteus, L.
,, scaber, Fr.
,, variegatus, Schaff.
Cantharellus cibarius, Fr.
Clavaria Botrytis, Pers.
,, brevipes, Kromhholz.
,, corallina, L.
,, flava, Pers.
Clavaria formosa, Pers.
,, grisea, Pers.
,, muscoides, L.
Helvella esculenta, Pers.
Hydnum coralloides, Scop.
,, imbricatum, L.
,, repandum, L.
,, violascens, Fr.
Lycoperdon giganteum, Batsch.
Hymenogaster virens, Kl.
Morchella bohemica, Pers.
,, conica, Pers.
,, esculenta, Pers.
,, rimosipes, Ol.
Peziza aurantiaca, Pers. (probably not eaten).
,, repanda, Wahl.
Polyporus frondosus, Fr.
,, ovinus, Schaff.
,, sulphureus, Bull.
,, umbilicatus, Fr.
Rhizopogon albus, Fr.
Sparassis crispa, Fr.

—— From the organ of the Silesian Society for Agriculture we learn that Dr. GOEPPERT's labours to give the people the means of DISTINGUISHING THE INNOXIOUS FROM THE POISONOUS FUNGI should be appreciated. In spite of the fact that different fungi are so largely consumed in Germany, much ignorance prevails, and many lamentable cases of poisoning occur. Dr. BUCHWALD recently described to the section for public health of the above-named society several cases. In one family three adults and one child were sacrificed. No safe and certain antidote has yet been discovered. Vinegar, Dr. GERARD's remedy, dissolves the poisonous principle. The most effective remedies employed by Dr. BUCHWALD were atropine, ice-water, and stimulants, such as coffee and wine.

—— We understand that the GREAT SHOW of the ROYAL HORTICULTURAL SOCIETY is fixed for Tuesday, June 19, and that a Schedule of Prizes will shortly be forthcoming.

—— The central committee of the SIEBOLD MEMORIAL has issued another appeal to the horticultural and scientific world, in aid of the monument it is proposed to erect in Wurzburg. The total amount received up to March, 1877, was 2850 Austrian florins, including a sum of 692 96 florins (£55 4*s.* 4*d.*) from Mr. DOHMEN, the English and Austrian Consul in Japan. This sum was made up by subscriptions from Japanese, and from German, English, and other foreign residents. Accompanying this circular is a brief sketch of the life of Baron Von SIEBOLD, which is of so much interest that we hope to find space for some portions of it at least. Meanwhile we may remind our readers that Dr. EDWARD FENZL, of Vienna, is the chairman of the central committee.

—— An elegant specimen of the new PHŒNIX RUPICOLA may be seen in the stove at Kew, to which establishment it was introduced by seeds in the year 1868. All the larger plants in the country were distributed from the set to which this belongs, so, without doubt, this is the finest of all. Many have been given in exchange, from a subsequent batch, to all the leading nurserymen, to whom we recommend an early application, it being one of the finest of the feather-leaved section in cultivation. It was named by the late Dr. ANDERSON, from whose description in the *Journal of the Linnean Society*, vol. xi., we learn that "this species is distinguished from all others of the genus by its long slender stems without adherent petioles, except immediately under the old fronds, by the soft delicate foliage, like the leaves of the Cocoa-nut, and the elongated, much flattened spadices, bearing a few fasciculated spikes on the sharp edges near the apex." Cultivated plants, of course, have not yet attained to the stage of this description, all being yet without stems; it is, however, satisfactory to know that it is not likely to lose its very graceful habit with increasing age. The specimen here referred to has ten leaves, the longest of which are about 3½ feet in length, with a width of 2 feet about the middle, all curving in the most graceful manner, without any of the rigidity common to the genus. Fine hair-like filaments depend from many of the pinnules, a feature which, more conspicuous in Pritchardia filifera, has gained for it great popularity. Though more delicate in texture than any other species, its cultivation is attended with no less facility. It is a native of Sikkim, and has been found only on the sandstone cliffs at the exit of the Teesta from the hills into the plains.

—— The *Southport Daily News*, noticing the exhibition of Rhododendrons and Azaleas which is now being held at the Winter Gardens of that town by Mr. ISAAC DAVIES, Brooklane Nursery, Ormskirk, remarks that the SWEET-SCENTED RHODODENDRONS take precedence amongst the interesting varieties which Mr. DAVIES has raised during the last thirty years. These hybrids are the result of a cross between Rhododendron multiflorum (a seedling of Mr. DAVIES', of very free-blooming habit) and Rhododendron Edgeworthii, and possess the fragrance characteristic of the latter. They are especially valuable on account of their free-blooming nature, the parent plants being now literally covered with blossoms. The flowers, which are very large—some measuring from 3 to 4 inches in diameter—are pure white, some being faintly marked with rosy purple on each side of the corolla. Several of the plants bear flowers having beautifully fringed edges. The plant which Mr. DAVIES regards as the finest of the set is one which he has called Countess of Derby, and which received a First-class Certificate from the Manchester Botanical and Horticultural Society in April, 1875. The flowers of this variety are very large, pure white, and bell-shaped. Next in order of merit we have Countess of Sefton, flowers white, marked with rosy purple on each side of the corolla, with beautifully fringed margin; Lady Skelmersdale, flowers white, with even edges; Mrs. James Shawe, pure white cup-shaped flowers, and Duchess of Sutherland, flowers larger than the preceding one, with pure white fringed edges. Amongst the Azaleas may be noted Azalea Daviesii, which bears fine trusses of white sweet-scented flowers; and Azalea hybrida odorata, which was awarded a First-class Certificate by the Royal Horticultural Society in April, 1868, is a free-blooming Azalea of great merit, bearing large trusses of pure white sweet-scented flowers in profusion. In addition to these and other novelties of his own raising, Mr. DAVIES is exhibiting some very fine plants of Azalea mollis, an introduction from Japan, bearing trusses of flowers as large as those of some of the hardy Rhododendrons, and of great variety of colour, such as straw, white, yellow, rose, red, and orange-scarlet. It is quite hardy, and suitable for forcing. The exhibition will be an attractive sight for two or three weeks.

—— There is an old and quaintly expressed Hampshire adage anent the BLOOMING OF THE GORSE, which runs thus :—

"When Vuzen's out of bloom
Kissin's out of vashion."

Conversely, if this adage has any force, kissing must be in rare fashion just now, as the Gorse is everywhere, on moor, common, and waste, all aglow with its bloom of golden yellow. Although political economists have a strong case when advocating the cultivation of waste lands, yet the entire extinction of the golden Furze would be a loss to the picturesque and beautiful too great to be easily borne. We can ill afford to spare any of Nature's gems of earth in this prosaic country.

—— The following prices were realised at the sale of plants belonging to Mr. JAMES CYPHER, conducted by Messrs PROTHEROE AND MORRIS, of 98, Gracechurch Street, E.C., at Cheltenham, on Wednesday and Thursday, April 11 and 12 :—Azalea Flag of Truce, 210*s.*; A. Iveryana Improved, 147*s.*; A. President, 168*s.*; A. Madame Meillez, 215*s.*; A. Perfection, 168*s.*; A. Souvenir de Leon Maenhaut, 126*s.*; Cocos Weddelliana, 400*s.*; Pritchardia pacifica, 320*s.*; two Adiantum farleyense, 135*s.* each; Davallia Mooreana, 126*s.*; Gleichenia Mendelli, 420*s.*; G. rupestris, 220*s.*; G. dicarpa, 160*s.*; G. flabellata, 168*s.*; Erica Cavendishiana, 147*s.*; Croton pictus, 110*s.*; C. irregularis, 147*s.*; C. Weismanni, 168*s.*; C. majesticus, 105*s.*; Anthurium Scherzerianum, 336*s.*; Bougainvillea glabra, 95*s.*; and Darwinia (Hedaroma) tulipiferum, 441*s.*

—— Mr. C. BURLEY, of the Brentwood Nurseries, has sent us flowers of some very striking new varieties of ZONAL PELARGONIUMS. Amongst them is one called Purple King, which is the most pronounced purple shade of any which we have yet seen, and, according to Mr. BURLEY's statement, is one of the most profuse of flowerers. It comes in fine large trusses, is of medium size and of good form, the colour a crimson-magenta, the under petals especially being flushed with purple. Its fine colour, neat zonal foliage, and free-flowering habit should make it welcome as a bedder. Magnificent is an exquisite flower, larger than the foregoing, better-shaped, and more refined, with the crimson flush more pronounced and predominant, though the purple is apparent. Beethoven is a very large, pure, dense crimson-scarlet, entirely self-coloured, and thus has an exceedingly rich effect. Sir Edwin Landseer, said to be a fine bedder, is similar in colour to the last, and like it is a bold telling flower. Hogarth, Charm, and Mozart, are fine rosy scarlets, not very different in the shade of colour. We have here a highly meritorious batch of novelties.

—— Here is a hint for the First Commissioner of Works and the new "Bailiff." Passing through the streets of AMSTERDAM the visitor may suddenly light on a square over which REMBRANDT presides in bronze. The statue is raised on a turfed mound, and in the turf are cut out flower-beds, filled with Hyacinths, Tulips, and what not, each bed being filled by a separate grower, whose name, attached sufficiently, but not offensively conspicuous, supplies an excellent advertisement.

—— Evergreens are scarce in Dutch towns—scarcer than they need be, seeing how well many of the coniferous shrubs thrive. A striking effect is, however, produced by massing together groups of CORNUS ALBUS, the brilliant red branches of which supply colour on the dullest day. A clump of young Larch trees just beginning to expand their delicate green leaves was also very effective.

—— One of the most interesting of recent contributions to the LIFE HISTORY OF THE LOWER ORGANISMS in the vegetable kingdom is Dr. ARNOLD DODEL's illustrated account of the development of Ulothrix zonata, which appeared in the last part of the tenth volume of PRINGSHEIM'S *Jahrbücher*. It furnishes, if the author is correct in his observations, one of the most convincing proofs of the truth of the theory of descent, inasmuch as it offers the simplest transition from asexual to sexual reproduction. Dr. DODEL recognises three distinct generations or phases in the cycle of development of the plant in question—the first or macrozoospore generation, the microzoospore generation, and the zygospore or sexual generation. The macrozoospores germinate and reproduce the parent plant asexually, and the microzoospores act in the same manner, or conjugate in pairs, each pair forming a single-celled zygospore, which is a kind of resting-spore, retaining its vitality through the winter, and serving to propagate the species on the return of favourable weather. The most interesting result of these investigations is the behaviour of the microzoospores, which, failing copulation, germinate independently, and reproduce the parent form, not only as showing the great provision for the propagation of the species, but also as an illustration of the non-existence of a hard and fast line between asexual and sexual reproduction. The zoospores which conjugate are alike in appearance and function, and the fusion of the contents of two of them produces the zygospore.

—— The report of the United States Commissioner for Agriculture for 1875 contains a catalogue of upwards of 400 species of FOREST TREES, including, however, such plants as Yuccas. The same volume contains an elaborate and exhaustive account of the forests of the several States. For the benefit of those who rail at Latin names of plants we give the popular names of Abies Douglasii, which it

appears is known as "Douglas Fir, Red Fir, Black Fir, Douglas Spruce, Red Spruce, Black Spruce, Hemlock, Oregon Pine, Western Pitch, Bear River Pine, Swamp Pine, and perhaps others. Moreover, nearly all of the names are also applied to other species."

Home Correspondence.

Royal Horticultural Society.—A good many of the would-be guinea Fellows on our list, and others, have sent in their names here, or direct to the Society, as willing to become guinea members, but many have not yet decided how to act; perhaps the best hope of influencing them is by trying to show the present position of the Society. The nurserymen in and near London can, if they please, make the fortnightly shows at South Kensington beautiful ones; it will be worth their while to do so if enough of Fellows and of the public see the plants they exhibit. All the shows held this year have been, weather notwithstanding, good ones. When the beauty of these shows becomes generally known, there is little fear of their not being sufficiently well attended and so continued; there will therefore be very good value for the guinea subscriptions of all living near London, and so it may be expected that very many new subscribers will join the Society. If this be so, whatever may have been the case in the past, it is probable that the South Kensington garden will pay both its direct cost and that of furnishing it with plants grown at Chiswick. Therefore there is no reason why all money subscribed by horticulturists, in order to promote horticultural science, should not be applied to purely horticultural purposes at Chiswick and elsewhere, and that South Kensington, instead of being a charge, should be a benefit, as providing gratis a good place for committee meetings and shows. Of course, among the nurserymen who make the shows there are some really good horticulturists, but I think it should now be a great object to induce as many as possible of the best scientific horticulturists of the country to join the Society, as until they do so it will never be the great representative Society it should be. The guinea membership, with hope of a vote for country members hereafter, will help this. Some of the very highest country horticulturists, among them the Rev. H. Hailstone and Mr. George Maw, have already become members or Fellows; and last, but not least, Mr. Isaac Anderson-Henry, of Edinburgh, has sent me his name to go in as a guinea member, with the hope of greater privileges hereafter. It is now of the greatest importance that as many well-wishers to horticultural science as possible should join the Society. It was feared by some that guinea Fellowship or membership would stand in the way of the higher subscriptions, this appears to have not been the case. I may perhaps give one instance in proof of this: an old friend sent his name for our guinea list, but when the time of joining the Society came he, for the sake probably of the transferable ticket, not only became a £2 2s. Fellow himself, but made his wife and daughter-in-law £2 2s Fellows also. *George F. Wilson, April* 11. P.S. April 14. I had written the above before Dr. Clifford Allbutt's letter, p. 472, appeared. He is wrong about the Chiswick work, which has been really useful. I think there is much that is right in his strictures on the past and his aspirations as to a society of the future, but the difficulty is, who is to bring about this good new state of things? We seem travelling in a circle. The Society, while it has to trust to South Kensington and to show-visitors for its funds, will look especially to their interests The country horticulturists will not join till the Society becomes more purely horticultural, and the Society will not become more horticultural till the country horticulturists join. How are we to get any forwarder? No one has come forward to raise up a new society on a more scientific basis; so surely it is our wisest present course to try and improve and strengthen the existing society, and the way to do this is, I think, to infuse more horticultural blood by a great influx of new good country guinea members, to become guinea Fellows hereafter. *George F. Wilson.*

— Permit me to thank Dr. Clifford Allbutt, of Leeds, for his outspoken letter in last week's *Gardeners' Chronicle*. I agree with him in the main. I may also add that since Mr. Wilson's change of front and the extraordinary letters of Messrs. Veitch and Gilbert, I should assuredly decline to accept a guinea Fellowship under the proposed conditions. To go in with the stigma of qualification and the share of dishonour, with a view of forcing equality afterwards, looks amazingly like securing a Fellowship under false pretences, and is a course which I trust will receive no support from honourable men. *D. T. Fish.*

— I hate fighting, scolding, or arguing in a newspaper, but I found it impossible for me, as an old and attached member of the Royal Horticultural Society, to read the letter in your last issue, by Dr. Clifford Allbutt, and hold my tongue. Anything more unkind, unjust, and untimely than your correspondent's remarks I never remember reading, even among the many attacks made upon the Society during the irritation of our most troubled times. Can your correspondent have made himself acquainted with his subject, made sure of his facts, or studied the history of the great institution he takes upon himself to condemn? It seems incredible. Dr. Allbutt's programme of work proper for a horticultural society is excellently well drawn, and is, with a few immaterial exceptions, an accurate description of what the great mother of horticultural science has been well and truly carrying out year after year, decade after decade, from her birth until now. Hot, strong, and unthinking as is the language of your correspondent, there are in it signs of energy and earnestness worthy of better things. Will he excuse me for saying that such qualities are much needed at the present time, and would be well employed in furthering the efforts of those who are now, and daily increasing in numbers, rallying round their society, and determined, if possible, to succour and save her? The Royal Horticultural Society has been too long a butt for the arrows of ill-natured and ungenerous criticism; neglected by those who should have stood by her in her extremity, and left, like the poor eagle, to be hawked at by every mousing owl. We want now sympathy and support, and I have every reason to believe both are at hand. I have not picked your correspondent's letter to pieces, though it is very, very vulnerable, believing that much that is objectionable in it must have arisen from imperfect information. *C. Country Fellow.*

Dendrobium pulchellum.—Having noticed Mr. Payne's eulogium on Dendrobium Pierardii and D. pulchellum in your columns of April 7, I feel it a pleasure to state that there is a very fine specimen of the latter at Ashtead Park Gardens, which had 700 flowers fully expanded when I was there a week ago. It was suspended in a basket in the Orchid-house, and was so crowded with blossoms that not a vestige of the basket was visible; it was literally one ball of yellow and pink, and this plant in particular fully deserved the praise Mr. Payne lavished upon it. *Wallace Morse, Epsom.*

The "May" for Church Decoration.—I think Mr. Fish has never helped in church decorations, or he would not recommend any of the cut blossom of the May for the purpose, and as to "lettering" it had need be a very practised hand at an hour before service to retain any of its beauty, for nothing fades more quickly or loses its form more completely. Plants may answer, but certainly not the blossoms cut. *B. T., Clipston Rectory, April* 11.

Decorative Plants: Hardy Ferns.—Amongst the many kinds of plants used for conservatory decoration at this season, none in its varying forms, and many fine forms of the Lady Fern. They are of such a beautiful green and so delicate in their appearance, that nowhere scarcely can they be said to be out of place. Some of the plain varieties of Athyrium Filix fœmina are very pretty, but some of them are so finely tasselled that for decoration they may be said to surpass the common forms. These Ferns are of the most easy culture, and indeed where favourable they will self-sow themselves on the borders near where the old plants have been standing. The crested kinds also do this, so that they could be had again (lifted, potted, and grown on) to better advantage if desired. For the summer decoration of the conservatory, when there are plenty of other flowers out-of-doors, we find varieties of such Ferns very useful for conservatory work amongst Fuchsias, Liliums, &c. Though they are common, or varieties of hardy plants, they are none the less beautiful. Another very fine form of British Fern is the crested Osmunda regalis; in a gentle heat it is also now in fine foliage. Then there is the Polystichum angulare proliferum, which is interesting at all seasons from its proliferous character; it may be termed a perennial for conservatory work, as it will keep in good appearance all the year. Many make a speciality of growing fine forms of hardy Ferns alone, but when grown or set amongst other fine flowering plants, such as Azaleas, they show to the best advantage, as the delicate and the rich colouring agree so well together. *R. M.*

The Double Poinsettia.—My employer purchased a small plant in a thumb-pot last April, and I kept it in a dormant state for three months in a cold house. It commenced to grow about the end of August or the beginning of September, and showed its bracts in the beginning of December. I measured it to-day (April 16), and found that its height is 21 inches. The head is divided into four branches, which are again divided into ten distinct heads, from 4 to 5 inches in diameter. The entire head is 14½ inches in diameter, and of brilliant scarlet; and from its appearance I should say it will last quite another fortnight, making the Poinsettia season of six months' duration. This is a grand addition to our stoves, and it cannot be long before it will be grown as plentifully as the old one. It cannot be said of this as of many new things—that we have to get rid of an old friend to make room for the new one. One great recommendation of this plant is that it comes into perfection about the time the old one sheds its bracts, and its great value as a decorative plant has become more apparent daily up to this date. Another year, when we have strong plants to start with, I have no doubt but that heads will be produced of the same size, if not larger than the old one. *Richard Shore, Gr. to Rev. James Heyworth.*

Lobelia pumila magnifica, or Emperor William.—Mr. Morgan's strange letter on this subject at p. 473 induces me to trouble you with a few more last words. Mr. Brownsell told me he raised his Lobelia from seed procured from me; I may have been mistaken about having given it him, but that is of no great importance. As far as I know I did not pretend to have seen it at Mr. Brownsell's till the autumn of 1874, previous to which time I had received the two First-class Certificates I spoke of in my previous letter. I had had my plant about the Fine-apple Nursery at length of time before I exhibited it, and claim priority of possession; at all events I took the first steps to make it known to the public, and now three years after it is rather late in the day to set up a counter claim, even were it done by Mr. Brownsell himself, instead of by a third party; not that there is much at small matter of importance to me, still I feel bound to defend myself from Mr. Morgan's charge of having made a false statement in the matter. *John Bester.* [The subject may as well be allowed to drop now. Eds.]

Selborne and Gilbert White's Grave.—On visiting Selborne churchyard last Saturday, for the purpose of seeing the famed old naturalist's grave, I was much shocked to find it entirely covered over with mortar, broken bricks, pieces of slate, &c., the top of the headstone alone being visible. They are repairing the church, but surely a fitter spot may be found whereon to throw the rubbish than Gilbert White's last and truly resting-place. As a Selbornian I spoke to informed me, with considerable pride in his tone, that "Selborne was visited by a great many strangers." "Because of Gilbert White's writing about it," I replied; adding, "I am sorry to see his grave so little cared for." "Oh, I don't know him," was the answer! *Helen Watney.*

Eucalyptus globulus in Lancashire.—It may be a matter of interest to many people to know that the Eucalyptus has stood a winter out-of-doors in Lancashire. From its conduct here I am disposed to think that it ought to live and thrive in the South of England in warm, sheltered situations. Our plant here was planted out about the end of last May, and it would perhaps be very difficult to find a more favourable situation out-of-doors than the one the plant occupies. It is planted on a sloping bank, where its roots are comfortable and dry, and protected on all sides by a fast-growing Privet, not crowded so as to be injurious to growth. I think it seems reasonable to suppose that a rather elevated, dry position like this will be conducive to the formation of hard wiry roots, which in turn will send up shoots of a less milky character than plants which are treated to a liberal compost. The latter circumstance is a means of procuring inevitable death from the first visit of sharp frost in November, whilst the former leaves a loop-hole for escape, in so far as we can expect a more moderate growth to be harder, better ripened, and better able to withstand the effects of our changeable climate. I have no faith in any one succeeding to grow the Eucalyptus out-of-doors as far north as we are, except under peculiarly favourable circumstances. I also think that the soil cannot be too poor, and I am much mistaken if restriction of the roots would not have a tendency to promote growth—a character that would give one some hope of preparing it to stand an ordinary English winter. What if we take a little pains in selecting a proper situation, in giving poor soil and limited root-room, and in protecting for a winter or two, and then chronicle results? *W. Hinds, Otterspool.*

An Extraordinary Set of Peaches.—On a recent visit to Clumber I was astonished at the enormous quantity of fruit just set in the early Peach-houses, the Nectarines being equally heavily laden. The bearing wood, which is equally distributed from the lowest to the highest parts of the trees, is literally clothed with fruit from base to point, the trees themselves being in the most robust health and fine examples of skilful management. Mr. Miller will require to exercise no small amount of courage in order to take off the requisite quantity of fruit to prevent over-cropping, although I

daresay the task will be a pleasant one. These results have been obtained, I am informed, without artificial fertilisation in any form. What will the advocates of the syringe say to this? Will Mr. Simpson avow that, had Mr. Miller syringed the trees when in flower, the set would have been heavier? If not, why use the syringe, or the camel-hair pencil, or bunch of feathers, at all? If all other conditions are equal, and the flowers are perfectly developed, is artificial fertilisation necessary? *Vitis*.

Primroses Indoors. — Where these beautiful spring flowers are found in our woods they are usually in such profusion, and increase so fast from seed, that no objection need be raised to the plan which I pursue, and which I recommend to others when it is proposed to decorate rooms with Primroses. I cut off the whole plant above the roots and below the leaves, and place it in a saucer of water. The effect is improved by an edging of five or six plants of the Dog Violet treated in the same way. *W. T. T.*

Adiantum Capillus-Veneris var. cornubiense. —Amongst the many beautiful species and varieties of British Ferns the Maidenhair has no rival, and one might doubt if it were possible that any abnormal form could surpass the parent form in graceful elegance, but the var. cornubiense, represented by the annexed woodcut (fig. 76), occupies the same relative position to A. Capillus-Veneris that the beautiful farleyense does to A. tenerum. Like that variety, it is much larger in all its parts, the large wedge-shaped pinnules being divided into numerous and deeply parted lobes; and, like that, it does not produce seeds. The fronds are from 12 to 15 inches long, very delicately membranaceous; the pinnules an inch or more broad and an inch long, deeply multifid, the margins dentate-lobate. Both indusium and sori are wanting. As in the var. farleyense, the involucres, instead of taking the form of indusia and becoming reflexed, are extended in continuation with the free-forked veins, and subdivided into numerous slightly dentate and rounded lobes. The honour of discovering this beautiful Fern and introducing it to cultivation is due to Mr. H. H. Trevithick, of Hayle, who found it growing on the rocks by the sea, and near his home. The name I have chosen for it will mark it as one more, and not the least valuable, of the many beautiful Fern sports found in this county. *J. Tyerman*.

Foreign Correspondence.

RETROSPECTIVE VIEW OF A JOURNEY THROUGH NATAL.—After having travelled the length and breadth of Natal, visited its most important places of business and interest, wandered along the banks of its principal rivers, and received hospitality from many of its adopted children, I can now at my leisure look back upon all the various scenes which have passed before my eyes, and combining them all together in taking a comprehensive view of the whole colony, come to the conclusion that with all the drawbacks possessed by Natal, it is a pleasing country to the eye, and holds out many temptations, in spite of difficulties, to intending settlers. The natural scenery of the country does not possess that awful grandeur to be witnessed in the Himalayas or Andes, but it is pleasing and picturesque. The long flats on the coast land, the undulating, broken, and often rugged country inland, with here and there small plains and elevated plateaus, the whole interspersed with a complete network of rivulets and rivers, make a favourable impression upon the mind of the casual observer.

The climate is not at all disagreeable, rather warm on the coast, but very pleasant and suitable for Europeans up-country in fact; although in the middle of the hottest time of the year, I have fairly shivered with cold during the night, especially towards morning. Rain is plentiful during the summer months, as a rule, and a sufficient quantity of dew falls in the dry season, or what we would call winter; and it is a common occurrence to have frosts, even ice, after 30 miles from the port of Durban. The geological formation is very peculiar, and the various phenomena to be seen in passing across country is striking and often difficult to account for. Travelling from Durban to the foot of the Drakensberg Mountain, the strata, which are for the most part horizontal and undisturbed, appear in regular succession from the Æolian, now forming the coast, to the greenstone and shale of the Drakensberg. After leaving the coast alternate beds of claystone, porphyry, gniess, and silurian sandstone make their appearance, until, after passing Pieter Maritzburg, greenstone and a shale containing numerous fossils, principally reptilian, and the remains of a bygone and vast vegetation appear. In places where now for miles and miles a bush or a tree cannot be seen, one spit deep reveals a rank vegetation, which must, geologically speaking, be of recent extinction. In general the flats and valleys possess a deep and fertile alluvial soil, but for the most part the hills are horribly stony, and fit only for sheep. Several important minerals and earthy products have been discovered, and gold was found a few years since on the Tuegela River; indications of coal are numerous, and a few mines are now working at Newcastle, in the north of the colony, but, judging from what I have seen of coal indications and of exposed strata, clearly showing forth the fact that the whole formation of Natal seams to have undergone a vast amount of heat and destruction from Plutonic agency; in fact, everything seems to have been thoroughly baked, and yet there are barely any indications of volcanic action.

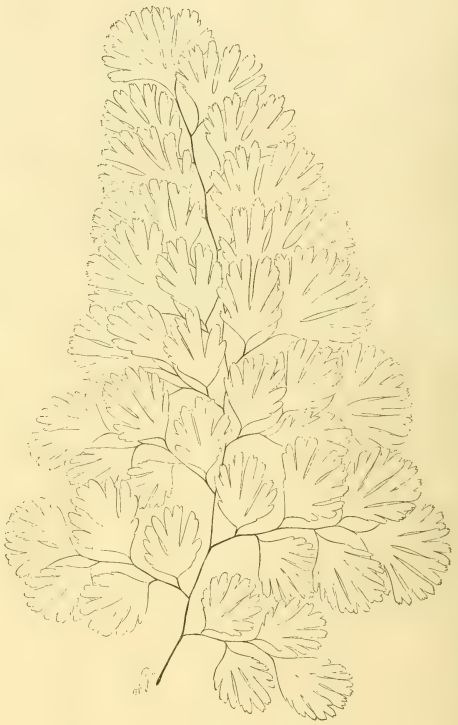


FIG. 76.—ADIANTUM CAPILLUS-VENERIS VAR. CORNUBIENSE.

The agricultural and horticultural departments of the colony are but in their infancy, and at present stopped from developing, by innumerable difficulties — horse sickness, cattle disease, dry summer, want of transport, and the unsettled affairs in the Transvaal. This last difficulty seems to have thrown a gloom over the whole colony, and caused a complete stagnation of trade; the markets are full, and there is but a poor demand—and I believe in the best of times the markets are easily flooded; so that until there is a crying demand agriculturally, Natal will never rank as an important and prosperous colony.

A great deal of land is taken up and cultivated to a certain extent by the Kaffirs, who are yearly increasing at a rapid rate; and now numerous Kaffir kraals are to be seen, with patches of cultivation and small herds of goats and cattle, where a few years ago none were to be seen. A great many of the old colonists apprehend an imminent danger from what they call the meditated and gradual encroachment of the Kaffirs, but from all my observations I believe the danger is imaginary and groundless. They have a perfect right to take up land when, complying with the demands of Government, they cultivate Mealies (Indian Corn), breed goats and cattle sufficient for their own consumption, and generally some for the markets; moreover, they are the original occupants of the soil, and no Christian people or Government would ever take measures to prevent them from settling down amongst a white community, whose influence, if for good, would soon tend to elevate the Kaffir to a fit and proper standard of life; but, alas! it is too often the contrary, for the great thirst for wealth and possession prevalent in this colony generally transforms the so-called Christian man into a would-be aggressor, held

in subjection by the philanthropic part of the community.

The principal articles of cultivation amongst the farmers are Mealies, forage (Oats), Yams, and Tobacco. For these four products there is always a good demand, and this year (owing to the unusually dry season) especially. Tobacco is about the most paying crop when grown successfully, but it cannot be depended upon, for droughts, heavy storms, and insects have often a pernicious effect upon the plants. The mode in which the farmers, both Dutch and English, prepare the Tobacco for the markets is rather strange, and I believe peculiar to South Africa. The plants on coming to perfection are cut and stripped of their leaves, the leaves are separately strung on twine and suspended in long rows in a dry shed; afterwards they are sweated or fermented in a box, then by a slow process they are twisted, leaf by leaf, into large coils resembling rope, generally three-quarters of an inch in diameter; this rope Tobacco is then measured out and rolled into 3 lb. and 4 lb. twists, which are at once ready for the market.

Botanically speaking, the vegetation of Natal is rich, not that it possesses the teeming beauties of a South American forest, the umbrageous occupants of a Ceylon jungle, or the majestic ornaments of the Australian bush; these, to my mind, would here be out of place, that is, they would not agree with the geological features of the country; the stunted jungle on the coast, the scattered trees often absent in the interior, with the plateaus and plains covered with bulbs of all descriptions, is in perfect accordance with all surrounding things. Acacias, with a few other Leguminosæ, are the almost universal occupants of the bush inland, and the farms and settlements have all a surrounding vegetation of Eucalyptus globulus and Melia Azedirachta, which have been introduced and thrive remarkably well. Down on the coast the low forests possess a much greater variety, and a more foliaceous class of plants than inland. Filices are well and abundantly represented, comprising upwards of a hundred species to my knowledge. Amongst the Tree Ferns are Cyathea Dregei, frequently seen between Durban and the Drakensberg: it is of small habit, but rather graceful; Alsophila capensis, very plentiful in damp ravines, often with a caudex 10 feet high, and fronds 7 to 8 feet long by 3 feet broad. It has a very scaly and compact appearance, and having seen it growing at an altitude of 3000 feet, I should certainly fancy that it would grow in sheltered positions at home. Davallia nitidula, D. thecifera, Asplenium obliquum, A. varians, Phymatodes elongata, Polypodium lanceolatum, P. irioides, P. Phymatodes, Stenochlæna tenuifolia, and a few Elaphoglossums are more or less abundant on trees and moist rocks from the coast to the Drakenberg; a few of them are strangely limited to certain altitudes. Gleichenia polypodioides, G. umbraculifera, Hymenophyllum tunbridgense, Trichomanes pusillum, T. pyxidiferum, Cystopteris fragilis, confined to the Drakenberg; Adiantum Capillus-Veneris in abundance. A. æthiopicum we saw in splendid condition at Karkloof, a good collecting place about 30 miles from Maritzburg; Hypolepis Bergiana, Cheilanthes capensis, C. hirta, Pteris geraniifolia, P. Platyloma hastata, P. Calomelanos, Pteris cretica, P. flabellata, P. aquilina, Lomaria discolor, L. attenuata, L. procera, Blechnum australe, Asplenium Kraussii, A. monanthemum, A. ebeneum, A. lunulatum, A. erectum, A. anisophyllum, A. lucidum, A. Adiantum-nigrum, A. cuneatum, A. furcatum, A. rutæfolium, A. Filix-fœmina, A. aspidioides, Didymochlæna lunulata, Aspidium aculeatum, A. pungens, A. capense, A. falcatum, Nephrodium Bergianum, N. Thelypteris, N. athamanticum, N. inequale, N. unitum, N. molle, Oleandra articulata, Polypodium vulgare, P. incanum, Nothochlæna Eckloniana, Gymnogramma totta, G. argentea, G. aurea, G. lanceolata, Acrostichum conforme, A. spathulatum, Osmunda regalis, and Todea africana. These are but a few of the common species met with in a run through the colony; several others I have not as yet been able to identify.

Flowering shrubs and trees are very scarce and possess very little beauty, except the Erythrinas, of which I have met with at least ten different species, some of exquisite beauty and well worth cultivation at home; in fact, the finest sight of bloom ever witnessed by myself and party was a plant of Erythrina, growing at the foot of the Umgeni Falls. The herbaceous plants are numerous, and in their representations embrace a good many of the natural orders, the chief of which are Asclepiadaceæ, Leguminoseæ, Scrophulariaceæ, Compositæ, and Malvaceæ. There are Lobelias in all varieties of colour, and magnificent climbers in abundance, generally Cucurbitaceæ. The most pleasing and striking part of the Natal flora is the vast amount of bulbs, &c., distributed all over the grass lands of the interior. Being rather a bad time of the year for bulb flowering, I was unable to make out many of them. Hæmanthus pubescens was growing luxuriantly on the Moor River, and three other species had past recognition; Crinum aquaticum was in abundance; two Strumarias, Nerines, and some magnificent Amaryllis adorned the plain and hill-sides, with their massive umbels of brilliant-coloured flowers; also what I took to be two Pancratiums, Agapanthus umbellatus and A. præcox; a small Aloe with an umbel of salmon-coloured flowers, elegant; a deep scarlet and free-flowering Tritomia, also T. media, Sanseviera pumila, Eucomis punctata, E. striata, and one with very broad racemes of purple-tinged flowers; Ornithogalums and Massonias, Asparagus æthiopicus and A. flexuosus; Gladioli, embracing at least twelve distinct species, not considering the numerous variations of colour to be seen on all sides; some of the Gladioli are extremely rich in colour, and found at a considerable altitude. Tritonias are abundant, one especially fine in its bloom, producing large panicles of bright scarlet flowers, and forming a wondrous contrast with the old T. aurea. Ixias, Watsonias, and numerous other Irids occur in all directions. Calla æthiopica grows everywhere, and one species with variegated leaves has a cream-coloured spathe with a deep purple centre. The epiphytal Orchids are scarce, but the terrestrial ones plentiful. Phajus, Disa, Lissochilus, and Satyrium are well represented families. *Christopher Mudd.*

Reports of Societies.

Amsterdam International Horticultural Exhibition.—Unless we gave a catalogue and a list of awards, for which few of our readers would thank us, we do not know that we can add much of interest to the hurried report which we gave of the Amsterdam Exhibition in our last issue. Of course, owing to evoked out of chaos at last, but up to Saturday, the time of writing this, no list of prizes had been issued. The scattered manner in which the exhibits were disposed, some in sheds, some in stoves, and relatively few in the Palace, where sausage-machines, garden tools, and steam engines were exhibited, prevented anything like a fine pictorial effect, such as was given in 1865. In fact, without unduly depreciating the Exhibition as a whole, and without overlooking the merits of sundry exhibits, it may be said that it has been, as an exhibition, the least successful of any of the International series, and gives rise to the doubt whether exhibitors are not getting tired of them, making them mere bazaars rather than exhibitions of superior cultivation, or of new, rare, or interesting plants.

Mr. Williams' success, telegraphed to you, was fairly earned. The extraordinary prize, granted to M. Linden for his miscellaneous exhibition, shown not for competition, was also richly deserved. An extra gold medal was given by the City of Hamburg to Messrs. Byvoet Brothers, of Overveen, near Haarlem, for the best collection of Dutch bulbs. This firm also took the lion's share of the first prizes in the classes open for competition; Messrs. E. H. Krelage & Son, Messrs. A. E. Barnaart & Co., Messrs. L. van Waveren & Co., Mr. A. F. Byvoet, and others also taking prizes. Later on we shall doubtless be in a position to speak more at length as to the awards, as the Palms of M. Lemonnier, of Brussels, the Cacti of Von der Heiden, various collections of hardy Conifers, besides those we have already mentioned, must certainly not have been overlooked by the jury, whose principle of action seems to have been to give a prize of some sort to every exhibit no matter how bad.

Four large span-roof sheds were erected for the exhibitions of Hyacinths, Tulips, &c., but were not half filled; much better displays of bulbs have been frequently made by London nurserymen at various horticultural exhibitions in London.

We noted the following as among the best of the Hyacinths:—Dark purple to black: General Havelock, very fine; Uncle Tom, La Negresse, Rake, Feruck Khan. Dark blue and purple: Hadyn, King of the Blues, Sir Henry Havelock, Starlight, Mac-Mahon. Light blue: Czar Peter, very fine; Lord Palmerston, light eye; Prince Talleyrand, Lord Derby, Blondin, very fine; Voltaire, light eye. Dark red: Vuurbaak, Incomparable, Linnæus, Pellissier. Red: Cherub, Reine de Jacinthes, Romeo, Von Schiller, Macaulay, Josephine. Rosy red or pink: Garibaldi, Cavaignac, Cosmos, Lina, Koh-i-noor. Blush: Wellington, Anna Paulowna, Princesse Amelie. White: La Grandesse, fine; La Belle Blanchisseuse, Anna. Yellow: Ida, very fine; Obelisque. Fawn: Fabiola. The display of Hyacinths was not equal to what we expected. The show was held in the immediate vicinity of the Hyacinth country, and it was natural to suppose that all the principal growers would be represented there. But such was not the case. It seems that many of the principal growers are satisfied with growing, and even a national movement of this kind was not sufficiently enticing to induce them to depart from their recognised line of business. There were indeed some fine spikes of flowers in the show, but they certainly were not equal to what we are accustomed to see at the flower shows in England, and not superior, if equal, to what we saw by hundreds and thousands in the grounds at Haarlem and Overveen.

A series of sheds open in front were arranged on the outsides of the Exhibition grounds. These were filled with miscellaneous collections of plants of very little merit, the following being the only exceptions. The Acacias were the finest we have ever seen exhibited. In collection No. 133 were splendidly grown plants of A. verticillata; A. ulicifolia, a grand specimen, with fine robust habit and splendidly bloomed; A. pendula, with its graceful clusters of golden-yellow flowers; A. paradoxa, forming a fine mass of bloom, and the plant a perfect specimen; A. spiralis, shown in excellent condition; A. pentadenia, A. ovata, A. Drummondii and A. armata. If specimens like the above could be seen at our London exhibitions this useful and very ornamental class of plants would not be so much neglected by English gardeners as they are. There were also some pretty good pyramidal Camellias and some medium collections of Azaleas from several exhibitors, but nothing equal to the fine collections we have seen exhibited in Belgium and elsewhere.

Several groups of standard Tea and Hybrid Perpetual Roses were very creditably shown, but fearfully handled by the people who were arranging them for effect. We fancy seeing Mr. Turner, and some of our other Rose growers, watching their plants being handled so roughly: probably the Dutch artists would have speedily come to grief if we never saw Roses so badly handled, most of them being spoilt before the opening day, as were many other plants. The Dutch have much to learn yet before they can compete with Belgian and English horticulturists with any hope of success.

Orange trees, curiously trained as fans, Yuccas, Aloes, various greenhouse plants, Palms, foliage plants, Rhododendrons, &c., were displayed amongst the plants mentioned above, but were not of sufficient merit to be described individually.

The Congress meetings were very numerously attended by botanists and horticulturists of all nations, our own being relatively very meagrely represented. The arrangements were such that a great deal of valuable time was lost, and a great deal of unprofitable talk made use of. The Congress itself was opened by Prince Henry of the Netherlands, who throughout the whole exhibition has shown himself sympathetic, and anxious to make the stay of the visitors agreeable. The Burgomaster, the Minister of Finance, and other officials followed, and then Professor Rauwenhoft of Utrecht read an address in excellent French, an abstract of which we may give at another time. Vice-Presidents from various nations were chosen, and the Congress subsequently divided into three sections for botany, horticulture, and economic products respectively.

At the first meeting of the botanical section M. de Bary was elected chairman, with Professor Beketoff, M. Morren, and M. Masters as Vice-Presidents. Various papers were read, amongst others by M. Weddell, who showed balls formed by the fibrous tissue of Posidonia caulini, from which the cell tissue had rotted away, and which assumed the form above mentioned. Dr. Ascherson showed the rachis of a Palm (Phœnix dactylifera var.), of a bluish black colour, from the oasis of Jupiter Ammon. Dr. Engler read a communication on the Araceæ, Dr. Radlkofer on the Sapindaceæ. In the horticultural section M. Delchevalerie showed specimens of the fasciation recently mentioned in our columns, and which it is asserted is the result of a cross between Gossypium vitifolium and Abelmoschus esculentus. There is nothing impossible about it, but the evidence, as far as we could make out, was not very conclusive; at any rate it is a distinct and curious variety, but of doubtful commercial value. But the question of most interest, and for which a conjoined meeting of both sections, under the presidency of Professor Rauwenhoft, was held on Saturday evening, was that relating to a Hortus Europeus or *Catalogue Raisonné* of cultivated plants. The subject was started last year at Brussels, under the auspices of the Fédération Belge, and it was hoped that in the interval something practical would have been arrived at; but this seemed far from having been accomplished,

and after some discussion a resolution was passed, that M. Morren be requested to prepare a model sheet, to be exhibited and discussed at the next Congress!

If we have felt it obligatory to comment on the needless loss of time and imperfect arrangements for the Exhibition and Congress—for which none are in a position to make more allowances than ourselves, and which will be readily accorded by those who know the amount of forethought and vexation and labour required to bring these matters to a successful issue, it is the more compulsory on us to acknowledge in the warmest terms the cordial hospitality of the Dutch. Our Dutch friends in this particular do not make much ado about nothing. They are a quiet and unostentatious folk, but there is in their hospitality a sense of good will and a truly heartfelt welcome more satisfactory than the profuse effusiveness characteristic of some other nations. The Burgomaster's reception, the banquet presided over by Prince Henry, were good illustrations of this. But, as we have occasion to speak of some indifferent arrangements, it behoves us to speak of one entertainment provided by the municipality and bulb growers of Haarlem, which was a perfect model of orderly methodical arrangement, well planned, well carried out, affording the greatest amount of pleasure and interest, with the least amount of confusion and fatigue. This comprised within a space of four or five hours a visit to the museums of the town, an inspection of one or two bulb grounds, an organ concert, in which the qualities of the famous organ were displayed, affording a rich treat to the hearers; then a light luncheon and a speech of welcome from the Burgomaster, and then a drive through the woods and bulb fields and back to the *table d'hôte* train to Amsterdam. The whole was done without hitch or confusion of any kind. Excursions still to come are those to the palace and gardens of Prince Henry at Soestdijk (where is a fine collection of Agaves and other plants), and to the new North Sea Canal, which for its length and its importance to the shipping of Amsterdam, is as noteworthy as the Suez Canal.

Royal Horticultural: *April* 18.—H. Webb, Esq., in the chair.—The only business transacted at the general meeting at 3 P.M. was the election of nineteen Fellows, and fifty guinea members.

SCIENTIFIC COMMITTEE.—Dr. J. D. Hooker, C.B., Pres. R.S., in the chair.

Dammara robusta.—The Chairman exhibited some branches of this Conifer, illustrating their deciduous nature. A large specimen of this species growing under adverse conditions in one of the large public buildings in London first shed its leaves, and afterwards branches, from 2 to 3 feet in length, fell off, much as Taxodium distichum and some other deciduous Conifers throw off their ultimate branchlets in autumn. As in the petioles of some large pinnate leaves, there is an immense mass of cellular tissue surrounding the vascular portion at the articulation with the main stem.

Damaged Rhododendron Leaves.—On behalf of Lieutenant-Colonel C. L. Cocks, Tiverton, Devon, Dr. Hooker showed injured foliage of various Himalayan Rhododendrons. A letter was read explaining that the injury could not be due to cold, any particular soil, or any cultural conditions. The leaves eventually fall away, the shoots perish, and the plant died. It was the opinion of some members of the committee that the injury was caused by the action of the sun on hoar frost. The leaves were infested with a fungus, but which, according to Dr. Cooke, is never destructive.

Fritillarias and other Bulbous Plants in Flower.—Both Mr. Elwes and Mr. Harpur-Crewe exhibited some interesting and rare species of Fritillaria, Muscari, Tulipa, &c. The former gentleman had a tall, leafy, many-flowered Fritillaria from California, which in its dull green and purple-tinged flowers resembled a Hellebore; it was possibly a luxuriant state of F. lanceolata, *Hook. Fl. Bor. Am.* t. 193. Mr. Elwes had also a fine Muscari from Sicily, possibly M. matrimum. Mr. Harpur-Crewe exhibited Tulipa pulchella, perhaps a variety of T. sibirica, a very elegant acaulescent species; and a Muscari, supposed to be a new species, with dull purple, white-tipped perianth segments. Also Fritillaria latifolia, tenella, graeca?, and a species collected by Mr. Elwes in Asia Minor, Muscari Strangwaysi commutatum, &c.

Diseased Vine Leaves.—Mr. Henley, on behalf of Mr. R. Dean, requested the opinion of the committee as to the cause of the spotting and gradual decay of Vine leaves taken from a Vine under gentle forcing. No traces of insect or fungus agency could be seen, and it was suggested that it might be owing to defective nutrition or defective root energy.

Rhododendrons.—The Hon. and Rev. J. T. Boscawen exhibited a splendid truss of flowers of a Himalayan Rhododendron, which Dr. Hooker thought was a cross between R. argenteum and R. lanatum. The flowers were waxy white and true bell-shaped. It was cut from a fine tree growing at Tregothnan, Lord Falmouth's Cornish residence. Mr. Boscawen also showed a seedling variety, named Mrs. Townsend Boscawen, the flowers of which are blush white with pink buds.

Life-size Portrait of the Rev. M. J. Berkeley.—Mr. Worthington G. Smith sent a sketch of the head and part of the bust of the Rev. M. J. Berkeley, which was pronounced to be an excellent likeness, and several members expressed the wish that the original or a copy should some day be found in the Library.

FLORAL COMMITTEE.—W. B. Kellock, Esq., in the chair. First-class Certificates were awarded on this occasion to M. J. Elwes, Esq., Preston, Circncester, for the beautiful Tulipa Gregi—a fine bold flower of a rich scarlet colour; to Mr. R. Dean, Ranelagh Road, Ealing, for three new and distinct varieties of Primula cortusoides, distinguished respectively under the names of coerulea alba, purpurea, and maxima—the first-named being a very fine white, the purpurea a rich purplish lilac, and maxima a beautiful flower, rosy lilac underneath and white in front; to Mr. G. Smith, Hedge Lane, Edmonton, for a fine gold-laced dark maroon Polyanthus named Duke of Wellington—anovelty at these meetings, such an award not having been made before for a considerable time; and to Messrs. G. Beckwith & Son, for fancy Pelargonium Duchess of Bedford, as a decorative plant. It is a free grower, and remarkably floriferous, the trusses being of good size, and the flowers white, with a small spot of lake-purple. It must prove a grand market and exhibition plant. Silver medals were awarded to Messrs. Wm. Rollisson & Sons, Tooting, for a group of standard Azaleas, numbering some two dozen, all of which carried fine heads of bloom, and were very bright in colour; to Messrs. H. Lane & Son, Berkhamstead, for a large group of admirably flowered Rhododendrons, and small collections of Azaleas and Roses in pots; to Mr. B. S. Williams, and Mr. John Wills, South Kensington, for admirable groups of flowering and fine-foliaged stove and greenhouse plants; and to Messrs. Osborn & Sons, Fulham, for an attractive collection of fine-foliaged subjects. Bronze medals were voted to Mr. R. Dean, Ealing, for a choice assortment of hardy spring-flowering plants; to Mr. Turner, Slough, for a good display of show and alpine Auriculas; and to Messrs. Croucher & Boller, Kensal New Town, for a small collection of miniature succulents. Several new plants were exhibited by Mr. B. S. Williams, and Messrs. Brook & Gallop contributed samples of Miles' new hybrid Mignonette, a vigorous but somewhat coarse variety. A group of decorative plants shown by Mr. Aldous, Gloucester Road, South Kensington, was accorded a vote of thanks.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair. A Cultural Commendation was awarded by this body for a good brace of Black Hamburgh bunches shown by Mr. Rapley, gr. to R. Hudson, Esq., Clapham Common; and a vote of thanks was passed to Mr. Tillery, gr. to the Duke of Portland, for examples of late kept Grapes, which included Lady Downe's, Royal Vineyard, and a black seedling between Lady Downe's and Wilmot's Sir Peter. A remarkable instance of fasciation in the stem of a Cucumber was shown by Mr. Bennett, of Rabley; and samples of a small seedling Apple, named Baron Liebig, came from Mr. James Pink, gr. to Lord Sondes, Lees Court, Faversham.

THE EXHIBITION OF COVENT GARDEN PRODUCE was held in the arcades on either side of the large conservatory, and a most beautiful display of flowers it proved to be, notwithstanding the shortness of the notice which the growers had. There were not quite so many exhibitors taking part in the show as we expected to have seen, but the arcades would hold no more, and those growers who did contribute did so very largely, and deserve all praise for their efforts to make the show a success. The Society was very liberal in the encouragement of the more meritorious collections, and all seemed well pleased with the results of the judging but one individual, who, being aggrieved at having a silver medal only awarded to him, rejected the prize, and marked his cards "not for competition!" To act in this way is unbecoming a grower of flowers. We shall do him the favour this time of not publishing his name, but we would advise the gentleman to learn to accept defeat more cheerfully before he enters a competition again.

We are glad to say that the attendance of visitors was very good, the conservatory and arcades being well filled in the afternoon—a circumstance which we have not had the pleasure of recording for some time. In the morning the exhibition was visited by the Duke and Duchess of Bedford, who carefully inspected the various collections, and appeared to be well pleased with the display. Those who organised the present exhibition, and the exhibitors themselves, desire that a similar exhibition should be made annually, and that a sum of money should be raised for the purchase of cups and other suitable prizes. This was mentioned to the Duke, who promised assistance in the matter. Not the least of the good results likely to accrue from this exhibition is the promotion of a good understanding between the Duke and his tenants in the market, that must tend to the mutual advantage of all concerned. We understand that the Duke spoke to all his tenants who were present, and asked for any suggestions that they could make with a view to improving the market, or the convenience of the standholders, promising at the same time that any reasonable alterations that were required should be attended to. Shortly before 2 o'clock the Duke of Teck arrived in company with Her Royal Highness the Princess Mary, Duchess of Teck, and two of their children, and the distinguished visitors were attended in their tour round the show by the President, Lord Aberdare, and other members of the Council. In the conservatory the Duchess of Teck accepted from a young lady—Miss March—a handsome bouquet prepared by Mr. John Wills.

Turning now to the exhibition proper, we commence our notes with Class 1, which was for "A collection of plants," and in which gold medals were awarded to Messrs. G. Beckwith & Son, Tottenham; Mr. John Reeves, Acton; Mr. Herbst, Kew Nursery, Richmond; Messrs. J. & J. Hayes, Lower Edmonton; Messrs. Hawkins & Bennett, Lily Gardens, Twickenham; and Messrs. H. R. & G. Wright, Turner Road, Lee. Messrs. G. Beckwith & Son made a magnificent display of show and fancy Pelargoniums, the space occupied measuring about 60 feet in length and 10 feet in width. The whole of the plants were in the regulation market pots, of fine proportions and development, with an abundance of flowers and foliage, and a good variety of colours. The same firm also showed several plants of a valuable new Hardy Fern, raised from a variety known under the name of Florence Nightingale. Plants of the new sort, which is a good one at all points, have been sold in the market for some time, but it was not named until to-day, when it was christened Lizzie Holland. Mr. John Reeves also put up a grand group of plants, which included very showy masses of Hyacinths, fine show Pelargoniums, Mignonette, Lily of the Valley, Richardias, and double white Primulas, effectively mixed with Maidenhair Ferns, Heliotropes, Gardenias, Fuchsias, Roses, Spiræas, and Crotons, Dracænas, Coleus, and small Palms, &c. Mr. Herbst's large, richly furnished, and most tastefully arranged group of plants consisted of Palms, small Cycads, and Spiræas, grand masses of Lily of the Valley, in the culture of which Mr. Herbst is a master; Azalea rosea punctata, an old and wonderfully free flowering plant of pleasing colour; Dracæna amabilis amœna, small Ferns, &c., and seedling plants of a new Abies from Bourbon, in the way of A. ciliata, but more finely divided. Messrs. J. & J. Hayes, of Lower Edmonton, contributed very largely, filling a stage about 80 feet long and 6 feet wide, the whole forming a dense mass of flowers. The subjects exhibited consisted of Spiræas, Show, Zonal, and Tricolor Pelargoniums, Cinerarias, Fuchsias, Fairy Roses, Cytisus, Azaleas, Ericas and Ferns, all being well grown and thoroughly well bloomed. Messrs. Hawkins & Bennett, Lily Gardens, Twickenham, had a fine show of Zonal Pelargoniums, arranged in pairs, white and scarlet, lines of colour, all in small pots, and well grown and flowered. The same firm also showed large bunches of cut flowers of Pelargoniums and Maidenhair Ferns, and Messrs. H. R. & G. Wright, Turner Road, Lee, staged a fine and effective group of Palms mixed with Ferns, Anthuriums, Dracænas, and a few Orchids, consisting principally of Dendrobium nobile. Silver medals were awarded to Messrs. W. & A. Brown, of Hendon, who filled a considerable space with Show and Zonal Pelargoniums, Fairy Roses, and hardy Ferns, together with numerous examples of the compact and very free-flowering variety of Silene and of Myosotis dissitiflora. The Silene is evidently a fine plant for pot culture, and would prove a useful subject in the hands of many a gardener. To Mr. James Puttick, Park Road, Acton, for a beautiful display of Show and Zonal Pelargoniums, neatly grown and admirably flowered, and excellent Mignonette and purple Stocks. To Mr. G. Poulton, Fountain Nursery, Angel Road, Edmonton, for a group of Spiræa japonica, consisting of 1,200 plants in 48-pots, splendidly grown and flowered. To Mr. H. B. Smith, Ealing Dean Nursery, for a beautiful group of Palms, Dracænas, and other fine-foliaged plants, Ferns, Selaginellas, &c. To Messrs. Hooper & Co., Covent Garden, for an effective group of Palms and Ferns, Caladiums, Coleus, and other fine-foliaged subjects. To Mr. Thomas Pagett, Clapham, S.W., for a large group of plants, mostly Cytisus racemosus, mixed with Spiræa japonica, Palms and Dracænas, Ferns, &c.; and to Messrs. Barr & Sugden, King Street, Covent Garden, for a large display of cut blooms of Narcissus in great variety. This latter was no doubt the finest display of these showy hardy flowers which has ever been seen, and was especially rich in variety.

Cut flowers of choice quality being still scarce and valuable, was perhaps the reason why bouquets, and other decorations of cut flowers, were rather poorly represented. But possibly the present tasteless fashion

of using enormous masses of costly flowers gave the makers no inducement to exercise their ingenuity, as the sacrifice would have been too great. The great drawback to this vulgar profusion is that both purveyors and purchasers suffer, and the result of a bridal or ball-room bouquet of the present form is inconvenience, as many flowers being huddled up together in one bouquet as would make at least two far prettier ones. But we do not impute the blame to the makers, who profit little by this extravagance. It is the old story of a display of wealth. In spite of this difficulty one or two of the exhibitors were very successful; but we were gratified to see that the judges did not countenance the adjuncts of butterflies and hummingbirds on bouquets. For a bridal bouquet Messrs. Walter Wood, Parmley & Co., Knightsbridge, were awarded a silver medal. It was the least objectionable as regards size, but it was almost overdone with Fern, and the wiring of orange blossom on small-leaved Myrtle rather spoiled the otherwise natural effect. A bouquet of the same class exhibited by Mr. James Bromwich, Buckingham Palace Road, was Highly Commended. As a tasteful arrangement of flowers it did not suffer by comparison; but Hoteia japonica is now a common plant, and flowers of this were largely used. The same florist, deservedly as the fashion goes, gained a silver medal for his ball-room bouquet. A bronze medal was awarded to Mr. A. A. Dickson, of Covent Garden, for a group of three bouquets, and Mr. J. Aldous received a similar reward.

Messrs. Wood & Parmley exhibited the only set of table decorations, for which they obtained a bronze medal. Though rather heavy, and the central one bearing the objectionable addition of perched humming birds, they had the merit of not being overdone with flowers. Rhodanthe Manglesii and Jonquils were the most conspicuous flowers, interspersed with Ferns and variegated Panicum.

Dried and dyed flowers should not be altogether despised, especially in a city where fresh flowers are so ephemeral. Indeed, if they were not dyed unnatural colours there would be nothing to say being overcome

piece of wirework might be fitted along the front of the box, and to this the wirework might be fastened; or the front of the box might be reserved for flowering plants to hang over during summer, such as Tropæolums, Convolvulus mauritanicus, Ivy-leaved Pelargoniums, &c.

The box should be spacious enough to afford root-room for the Ivy and also root-space for plants. During the winter it might be filled with liliputian evergreen or variegated plants, such as Euonymus, Aucuba, Retinospora, Thuja temperaurea; and with these might be mingled Laurustinus, and anything that would give flower. Such plants as these bear removal once or twice a year; and the plants could be lifted from the box at the beginning or middle of May, potted, and stood by in the shade till October or November, and then be planted in the boxes, without disturbing the ball of roots in doing so, but pressing some soil firmly about them at the time of planting. During times of severe frost such plants would gain little or no harm if kept dry at the roots. There is no reason why the plants should not be taken out of the box at the beginning or middle of March, and the box again filled with any pretty hardy spring plants, such as Primroses, Daisies, Pansies, Aubrietias, &c.; or some of the plants at least could remain in the box, and the spaces be filled up with the plants above-named.

If the front of a house were fitted up with window boxes with wire-screens, there is no reason why Ivy alone should be used in all cases. Some deciduous creepers might also be employed, such as Virginian Creeper, Clematis, Hops, Jasmine, Lonicera, &c., to give a different shade of foliage, mingling with which would be pleasant flowers. But the Ivy is certain to suggest itself; for it is so easily managed, can exist in a dry soil for a time without injury, does not readily shed its leaves, always affords green foliage, and defies sun and wind. How appropriate are Mrs. Hemans' cheery lines:—

"It changes not as seasons flow
In changeful silent course along:
Spring finds it verdant, leaves it so—
It outlives summer song.

"Autumn no wan or russet stain
Upon its fadeless glory flings;
And winter o'er it sweeps in vain,
With tempest on his wings."

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, APRIL 18, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to Sea Level.	Departure from Mean of 32 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for the Day.	Departure of Mean from Average of 32 years.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Dew Point.	Degree of Humidity. Sat. = 1000.	Average Elasticity of Vapour.	WIND.	RAINFALL.
April	In.	In.	°	°	°	°	°	°				In.
12	29.86	+0.12	52.3	34.8	17.4	41.8	— 4.1	35.5	79		ENE. NE.	0.00
13	29.81	+0.07	56.2	37.8	18.4	45.5	— 0.6	39.7	81		ENE. NE.	0.10
14	29.95	+0.21	54.4	41.3	13.1	45.6	— 0.7	42.6	89		NE.	0.04
15	29.83	+0.09	52.6	40.0	12.6	45.0	— 1.5	35.1	68		E. S.E. E.	0.00
16	29.51	—0.24	48.8	39.0	9.8	43.0	— 3.6	31.1	63		ESE. E. E.N.E.	0.03
17	29.40	—0.35	45.0	35.0	10.0	38.8	— 8.0	29.3	69		E.N.E.	0.07
18	29.45	—0.30	43.2	34.0	9.2	37.8	— 9.2	31.9	82		N.E.	0.00
Mean	29.69	—0.06	50.3	37.4	12.9	42.5	— 3.9	35.0	76		E. N.E.	sum 0.24

April 12.—A fine day, partially cloudy. Cool.
— 13.—A dull cloudy day. Frequent rain after 6 P.M.
— 14.—A fine but dull and cloudy day. Rain fell in early morning.
— 15.—Fine, but generally cloudy and cool.
— 16.—A fine day, cloudy. Gale. Cloudless at night.
— 17.—A very cloudy, cold day. Frequent showers of hail and rain. Gale of wind.
— 18.—Overcast, dull, cold, and windy throughout. A little thin rain fell at 9 P.M.

LONDON: *Barometer.*—During the week ending Saturday, April 14, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.66 inches at the beginning of the week to 29.71 inches by the morning of the 8th, decreased to 29.52 inches by the morning of the 10th increased to 30.07 inches by mid-day on the 12th, decreased to 29.98 inches by the afternoon of the 13th, and increased to 30.18 inches by the end of the week. The mean reading for the week at sea level was 29.81 inches, being 0.25 inch above that of the preceding week, and 0.12 inch below the average.

Temperature.—The highest temperatures of the air observed by day ranged from 58½° on the 10th to 52½° on the 12th; the mean value for the week was 55½°. The lowest temperatures of the air observed by night varied from 34½° on the 12th to 45½° on the 10th; the mean for the week was 41½°. The mean daily range of temperature in the week was 14°, the greatest range in the day being 18½° on the 13th, and the least 11½° on the 9th.

The mean temperatures of the air and the departures from their respective averages were as follows: —8th, 48°.3, +2°.9; 9th, 48°.9, +3°.3; 10th, 50°, +4°.3; 11th, 47°.9, +2°.1; 12th, 41°.8, —4°.1; 13th, 45°.5, —0°.6; 14th, 45°.6, —0°.7. The mean temperature of the air for the week was 46°.9, being 1° above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 117° on the 11th, and 103½° on the 13th; on the 8th the reading did not rise above 73°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 33½° on the 12th, 35½° on the 13th, and 38½° on the 10th; the mean for the seven low readings was 38½°.

Wind.—The direction of the wind was variable, and its strength gentle. The weather during the week was dull and showery, and the sky cloudy. A slight *thunderstorm* occurred during the afternoon of the 11th inst.

Rain fell on six days during the week; the amount collected was 1.57 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 63° at Truro, and 61½° at Bristol; at Sunderland 48° was the highest reading, and the mean value from all stations was 57°. The lowest temperature of the air observed by night was 30° at Eccles; at Portsmouth 40½° was the lowest temperature; the general mean from all stations was 36°. The range of temperature in the week was the greatest at Truro, 28°, and the least at Sunderland, 14°; the mean range of temperature from all stations was 21°.

The mean of the seven high day temperatures was the highest at Truro, 58°, and the lowest at Sunderland, 46½°; the mean value from all stations was 52½°. The mean of the seven low night temperatures was the lowest at Eccles, 37½°, and the highest at Truro, 45°; the general mean from all stations was 41°. The mean daily range of temperature was the greatest at Blackheath, Leicester, and Cambridge, all 14½, and the least at Liverpool and Sunderland, both 7½; the mean daily range of temperature from all stations was 11½°.

The mean temperature of the air for the week from all stations was 45½°, being 4° higher than the value for the corresponding week in 1876. The highest occurred at Truro, 50°, and the lowest at Sheffield and Stroud, both 41½°.

Rain fell on five days in the week at most places, at Sunderland 1⅔ inch was measured, and at Blackheath 1½ inch, while at Truro and Plymouth a quarter of an inch only was recorded; the average fall over the country was seven-tenths of an inch. The weather during the week was dull and showery, and the sky generally was cloudy. *Thunderstorms* occurred at Leicester during the evening of the 10th, and at Blackheath during the afternoon of the 11th.

SCOTLAND: *Temperature.*—The highest temperatures of the air ranged from 50° at Paisley and Leith to 46° at Aberdeen; the mean value from all stations was 48¼°. The lowest temperatures of the air varied from 27° at Paisley and Perth to 30¼° at Greenock; the general mean from all stations was 29°. The mean range of temperature from all stations was 19½°.

The mean temperature of the air for the week from all stations was 38½°, being 13° lower than the value for the corresponding week in 1876. The highest was at Greenock, 42°, and the lowest at Edinburgh, 38°.

Rain.—The amounts of rain measured during the week varied from 1⅞ inch at Edinburgh, 1¼ inch at Aberdeen, to a quarter of an inch at Greenock. The average fall over the country was nine-tenths of an inch.

DUBLIN.—The highest temperature of the air was 61°, the lowest 34°, the range 27°, the mean 47¾°, and the fall of rain 1.10 inch.

JAMES GLAISHER.

Obituary.

WE regret to announce the death, on March 31, of Mr. WILLIAM FOSTER, nurseryman and seedsman, of Stroud, Gloucestershire. The deceased gentleman, who was in his 78th year, was placed at the age of 15 years (about the close of the Peninsular War) in Hank's nursery, at Pontrefact, at that time perhaps the most important establisment of its kind in the North of England; and from that time he had to depend solely on his own industry for a livelihood, for home he had none to return to. When he had gained some knowledge and experience here, he came to London, and entered the service of Messrs. Gray & Sons, of the Brompton Park Nursery. At this time the three principal nurseries near London were Lee's, Malcolm's, and Gray's, and the *employés* were known respectively as Lee's gentlemen, Malcolm's lions, and Gray's slaves. Of theses nurseries, Lee's is the only one now in existence. With the Messrs. Gray Mr. Foster stayed for some years, the latter part of which he represented them in the country, travelling for nine months every year on horseback. In this way he travelled through most parts of England, and over a great portion of Scotland. He left London about forty-five years ago, and after a short engagement in Cirencester, commenced the business at Stroud, in the management of which he took an active interest until within a few weeks of his death.

Enquiries.

He that questioneth much shall learn much.—BACON.

182. JUSTUS HEURNIUS.—Can any of your readers give information concerning the collector, Justus Heurnius, mentioned in the preface to Thunberg's *Flora Capensis*, p. 5, as to the date when he visited the Cape, &c.? I shall be greatly obliged for any communication through the medium of this paper. *N. E. Brown, Herbarium, Kew.*

Answers to Correspondents.

ALOCASIA MACRORHIZA VARIEGATA: *A Constant Reader.* To grow Alocasia macrorhiza variegata satisfactorily it is necessary in the first instance to choose young plants that have a right balance of colour in the leaves. If when small they are too white, they generally are too delicate to grow freely; if too green they rarely, if ever, afterwards attain sufficient colour, although a plant that is almost wholly green will produce suckers varying from all green to nearly pure white. Those should be selected that are about half white and half green, taking them off with a portion of roots attached; when they have got three or four leaves each, put singly in small pots and cover with a bell-glass till they have got established; give more root-room as they require it through the summer, and about February they will bear moving into 16 or 18 inch pots. The plant likes very rich soil, equal parts rotten dung and good loam will answer the best for it; in this it will grow strong and colour beautifully. Confining the roots has rarely any influence in inducing it to colour, in the case of a vigorous subject like this it will prevent its making satisfactory progress.

ARAUCARIA EXCELSA GLAUCA: *P. E. N.* Araucaria excelsa glauca is certainly a greenhouse plant, and therefore admissible in a collection of stove and greenhouse fine-leaved plants; but what comparative value a judge would attach to a handsome specimen we cannot tell, but he would probably give precedence to an equally fine specimen of a Croton or Palm.

AZALEAS: *Y. Calvert.* There is nothing in the schedule restricting the twelve Azaleas to single blooms of each. Such an exhibition would be a very poor one as compared with your exhibit in trusses of three.

BLUE GUM TREE: *A Country Subscriber.* If you sow the seeds, and give them the protection of a greenhouse or frame, there should be no difficulty in getting seedlings, but they would, of course, germinate quicker in a little heat. The trees is hardy in warm sheltered localities, but whether, in your case, it would require protection during winter, we cannot say, as you have given no data to form an opinion on.

CATERPILLAR OF THE APPLE MOTH: *A Subscriber,* p. 478. It is difficult to find a remedy for the first stage of attack of the Apple moth when it first eats the buds of orchard growth on such a large scale, but something may be done for the present by picking off and burning all attacked buds that are in reach. For future preservation, as soon as the caterpillars begin to spin their webs, each web should be cut out with the grubs enclosed and burnt, and when the moths hatch shaking the boughs on which they sit quiet during the day, so as to make them fall on a sheet spread beneath, gets rid of many (see article on ermine Apple moth, *Gardeners' Chronicle*, 1849, p. 660). Lime dusting, burning fires of rubbish near, or anything that would make the locality uninviting to the moths for oviposition would be then of service, but probably at present there is nothing to be done but what little can be managed in the way of picking off buds.

GUN LICENCE: *Wake.* If you use the gun for any other purpose than scaring birds you must take out a licence.

INSECTS: *K. Julus guttatus.* No absolute remedy known. Try traps made of hollow Potatos, &c., into which the Juli may come. *A. M.—Constant Reader.* Larva of the Daddy Longlegs. Try sprinkling with emerald-green.

NAMES OF PLANTS: *W. D. F.* Polystichum angulare proliferum.—*G. O. C.* Polystichum aculeatum lobatum. —*Wake.* 1, Erica carnea; 2, Helleborus foetidus;

3, Kerria japonica flore-pleno.—*E.* Acer rubrum.—*A. B.* 1, Hedera arborescens; 2, Cupressus macrocarpa (young plant); 3, Pinus Massoniana; 4, Cupressus Lawsoniana; 5, Fagus Cunninghamii; 6, Pinus insignis; 7, Cupressus macrocarpa, adult form. —*R. P.* Burchellia capensis.—*W. D.* 1, Kerria japonica flore-pleno; 2, Forsythia viridissima; 3, Orithogalum pyrenaicum; 4, Cystopteris fragilis var.; 5, Asplenium Colensoi; 6, Pteris tremula.—*J. King.* Demetholium Jenkinii.—*J. H. A.* 1, Cynara capense we believe.—*W. D. F.* Primula denticulata var. erosa.

ROGATION-FLOWER: *R. J. W.* The Rogation-flower, or Procession-flower, is Polygala vulgaris.

ROYAL HORTICULTURAL SOCIETY: *J. C.* Wait: you will probably learn some day.

STOVE PLANTS: *H. Fairbank*s. Nepenthes are increased by cuttings of the shoots. The soft, unripened tops generally fail to root if the base of the cuttings is not made some four or five joints from the top, consequently it should not be cut shorter than this. The whole of the hard-wooded stems are suitable for cuttings made with two joints each, placed singly in small pots, well-drained, and half filled with fibrous peat, chopped sphagnum, and sand; the remainder filled up with sand alone. They must be kept continually moist, and covered with a bell-glass, and, if in bottom-heat, all the better. Cuttings may be put in at any time during the year when a night temperature of 70° can be secured; they take a considerable time to root. Cuttings of Cyanophylum and Sphærogyne require to be treated alike. They strike freely through the spring and summer. The best way to obtain cuttings is to remove the head from a strong plant three or four joints from the top, which will cause it to throw out shoots below: these should be taken off when 8 or 9 inches long, and be placed in small pots half filled and covered with a bell-glass. They will root in a few weeks in a temperature of 70° or 80°. Marantas are increased by division of the crowns, which should be separated early in the spring, before any growth commences. When a plant has to be broken up it should be turned out of the pot, and have the whole of the soil shook away, by which means it may be reduced to single crowns, each retaining a portion of root.

VARIEGATED STELLA PELARGONIUM: *J. C.*, who states that he has succeeded in raising Stella Pelargonium with white variegated leaves, and an extremely rich zone of yellowish colour, with little green, and that it is of rapid growth and free-flowering, suitable for bedding, asks if any of our readers have raised a variety of this character, and how it has succeeded with them.

COMMUNICATIONS RECEIVED.—X.—J. W.—W. T.—C. B.—D. T. F.—S. P.—A. G. B.—C. F. F.—Edwin.—J. M.—J. C.—J. & H. C.—G. D.—W. T. T. D.—N. E. B.—J. H. G. —J.—T. B.—W. P.—R. G.—Enquirer.—J. B. & Sons.—W. B.—L. J.—Flora.

Markets.

COVENT GARDEN, April 19.

Several samples of new Grapes are now to hand, and good specimens are realising their full value. Strawberries come on very slowly, but, the demand not being active, remain at last week's quotations. The first Peaches of this season arrived during the week. *James Webber, Wholesale Apple Market.*

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per bush.	4 0	..	Horse Radish, p. bun.	4 0	..
— Eng. Globe, doz.	4 0	6 0	Leeks, per bunch	0 3	0 4
Asparagus, Fr., bun 20 to 25	0	..	Lettuces, Fr., per doz.	1 0	0 0
— English, p. bun.	8 0	10 0	— Cos, per doz.	6 0	..
— Fr., natural, bun.	2 6	6 0	Mint, green, bunch	0 6	..
— Sprue, per bun.	1 6	..	Mushrooms, per pottle	2 6	3 6
Beans, French (new), per 100	..	1 6	2 0	Onions, per bush.	5 0	8 0
— French, Long-pod, ½-bushel	..	2 0	— young, per bun.	0 8	0 10
Beet, per doz.	..	1 0	Parsley, per bunch.	0 3	..
Cabbages, per doz.	1 0	2 0	Peas, green, per lb.	1 0	..
Carrots, per bunch.	0 6	..	— shelled, per qt.	1 0	..
— New Fr., p. bun.	0 0	..	Potatos, new, per lb.	0 0	1 0
Cauliflowers, per doz.	2 0	4 0	Radishes, per bunch.	0 2	0 3
Celery, per bundle	1 6	2 0	— Spanish, doz.	0 0	..
Chilis, per doz.	3 0	..	— New Jersey, doz.	2 0	..
Cucumbers, each	0 6	1 0	Rhubarb, per bundle	1 0	..
Endive, per doz.	1 0	2 0	Salsafy, per bundle	1 0	..
— Batavian, p. doz.	2 0	3 0	Seakale, per punnet	1 0	1 6
Garlic, per lb.	0 6	..	Shallots, per lb.	0 6	..
Herbs, per bunch	0 0	0 4	Spinach, per bushel	3 0	..
Potatos.—Kent Regents, £5 to £6; Essex Regents, £4 10s. to £5; Kidneys, £8 per ton.			Tomatos, per doz.	8 0	..
			Turnips, per bundle	0 4	0 6

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	3 0	8 0	Peaches, per doz.	15 0	25 0
Cobs, per lb.	1 0	1 6	Pears, per doz.	2 0	12 0
Grapes, per lb.	12 0	30 0	Pine-apples, per lb.	6 0	12 0
Lemons, per 100	4 0	10 0	Strawberries, p. oz.	0 6	1 0
Oranges, per 100	4 0	10 0	Figs, green, each	1 0	2 0

CUT FLOWERS.

	s. d.	s. d.		s. d.	s. d.
Azaleas, 12 sprays	0 6	2 0	Lily of Valley, 12 spr.	0 9	3 0
Bouvardias, per bun.	1 0	4 0	Mignonette, 12 bun.	4 0	9 0
Camellias, 3 blooms	2 0	9 0	Narcissus, 12 sprays	1 0	2 0
Carnations, per dozen	1 6	4 0	Pelargoniums, 12 spr.	1 0	2 0
Cyclamen, per doz.	0 3	0 9	— zonal, 12 sprays	0 6	1 6
Daffodil, double, 12 bunches	..	3 0	9 0	Primroses, per dozen	0 6	2 0
— single, 12 bun.	1 0	6 0	Primula, dbl., p. bun.	1 0	2 0
Epiphyllum, 12 blms.	1 0	3 0	Roses, indoor, p. doz.	3 0	12 0
Eucharis, per doz.	0 6	12 0	Spiræa, 12 sprays	1 0	4 0
Euphorbia, 12 sprays	2 0	9 0	Stephanotis, 12 spr.	9 0	15 0
Gardenia, per doz.	4 0	12 0	Tropæolum, 12 bun.	1 0	6 0
Heliotropes, 12 spr.	0 6	1 0	Tulips, per dozen	0 6	2 0
Hyacinths, 12 bunch.	6 0	18 0	Violets, 12 bun.	1 0	4 0
			Wallflowers, p. doz.	3 0	9 0

PLANTS IN POTS.

	s. d.	s. d.		s. d.	s. d.
Azaleas, per dozen	24 0	60 0	Heliotrope, per doz.	6 0	18 0
Begonias, per doz.	6 0	12 0	Hyacinths, per doz.	12 0	24 0
Bouvardias, do.	12 0	24 0	Hydrangea, per doz.	12 0	30 0
Calceolaria	12 0	24 0	Lily of Valley, each	2 6	3 6
Cineraria, per doz.	9 0	18 0	Mignonette, per doz.	5 0	9 0
Clematis	24 0	60 0	Myrtles, do.	3 0	9 0
Coleus, per dozen	3 0	9 0	Palms in variety, each	5 0	21 0
Cyclamen, per doz.	9 0	24 0	Pelargoniums, scarlet,	9 0	12 0
Cyperus, do.	6 0	12 0	— per doz.	12 0	12 0
Dracæna terminalis	30 0	60 0	Primula sinensis, do.	4 0	9 0
— viridis, per doz.	18 0	24 0	Richardia æthiopica,	9 0	18 0
Ferns, in var., p. doz.	18 0	30 0	per doz.	9 0	18 0
Ficus elastica	2 6	15 0	Spiræa, per doz.	12 0	30 0
Fuchsias, per dozen	9 0	18 0	Tulips, per dozen	8 0	12 0
Genista	12 0	18 0	Wallflower, purpur., doz.	12 0	18 0
Heaths, variety, doz.	9 0	24 0			

SEEDS.

LONDON: *April* 18.—The seed market has been well attended this week, and more disposition to operate has been shown by country dealers. Of cheap grown red Clovers the supply has now greatly fallen off; prices, however, continue very irregular. American seed is also lower. As regards Trefoil, the recent continuous and severe fall appears to have at last reached its limit. In view of the extremely unfavourable prospects of next year's crop holders seem resolved, rather than submit to lower terms, to hold on to their present stocks. In Alsikes and white Clovers there is only a fair demand. Imported Italian and perennial Rye-grasses experience a brisk inquiry at full prices. For Sainfoin there is also a good sale. Lucerne meets attention at the moderate rates now current. For spring Tares no improvement can be noted either in value or demand. Rather more business has been passing in Canary seed. Blue Peas and feeding Linseed are 2s. to 3s. per quarter dearer. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday trade was very thin. Wheat was quoted from 1s. to 2s. per quarter dearer than on Friday, or from 3s. to 6s. higher than on Monday se night, the principal advance being in foreign red. English Wheat advanced in some instances 5s. per quarter. Grinding Barley made fully 2s. per quarter more money; malting remained firm at previous quotations. Malt was at rather better prices. Oats were held for an advance of from 2s. to 3s. per quarter on the week. Maize realised from 3s. to 4s. per quarter more money; Beans and Peas 1s. to 2s. per quarter, and flour from 3s. to 4s. per sack and barrel.—On Wednesday extreme prices were asked for Wheat and all other classes of produce, but sales were slow. As regards the top price of town-made flour, the decision of the majority would appear to be that no advance be made until war has been actually declared.—Average prices of corn for week ending April 14.—Wheat, 52s. 4d.; Barley, 40s.; oats, 24s. 11d. For the corresponding week last year:—Wheat, 45s. 1d.; Barley, 33s. 7d.; Oats, 25s. 8d.

CATTLE.

At the Metropolitan Market on Monday prices for beasts advanced. For sheep trade was not very brisk, but prices were scarcely altered. Choice lambs and calves were in demand at fully late rates. Quotations:—Beasts, 4s. 4d. to 5s. 2d., and 5s. 6d. to 6s.; calves, 6s. to 6s. 10d.; sheep, 5s. 8d. to 6s., and 6s. 4d. to 6s. 8d.; lambs, 8s. to 9s.; pigs, 4s. to 5s.—On Thursday the supply in the beast market was light, and a quiet demand prevailed at late rates. Of sheep and lambs there was an average number for a Thursday's market, and both met a steady sale without change in value. The few calves on offer sold slowly.

HAY.

At Whitechapel on Tuesday trade was brisk for all prices, the arrivals being short. Prime Clover, 100s. to 132s.; inferior, 85s. to 95s.; prime meadow hay, 90s. to 114s.; inferior, 70s. to 85s.; and straw, 40s. to 55s. per load.—Thursday's market was firm, with light supplies. Quotations:—Clover, best, 100s. to 132s.; inferior, 85s. to 95s.; hay, best, 100s. to 124s.; inferior, 70s. to 85s.; straw, 42s. to 55s. to 57s. per load.—Saturday's market was firm, with light supplies. Quotations:—Clover, best, 100s. to 132s.; inferior, 85s. to 97s.; hay, best, 100s. to 116s.; superior Clover, 132s. to 140s.; inferior, 108s. to 120s.; and straw, 56s. to 60s. per load.

POTATOS.

The Borough and Spitalfields markets reports state that trade remains in much the same state as previously noted. There are moderate arrivals, and a steady demand prevails for sound descriptions. Kent Regents, 90s. to 115s. per ton; Essex do., 80s. to 105s.; Scotch do., 90s. to 120s.; flukes, 130s. to 155s.; Victorias, 120s. to 160s.; kidneys, 100s. to 120s.; and rocks, 80s. to 100s.—The imports into London last week comprised 39,344 bags from Hamburg, 12,353 Antwerp, 5678 Bremen, 1930 Brussels, 837 Harlingen, 562 Dunkirk, 170 Rotterdam, and 100 sacks Boulogne.

COALS.

In the market on Monday house coals were in demand at a rise of 1s. per ton.—On Wednesday house coals were sold for arrival at previous prices, the stormy weather having detained the steamers. Quotations:—West Hartley, 16s. 9d.; Walls End—Hetton, 21s.; Hetton Lyons, 18s. 9d.; Vanes, 18s. 9d.; Hartlepool, 20s. 3d.; Tees, 20s. 9d.

Extract from the *Gardeners' Chronicle*:—"It would be difficult to find more efficient instruments than those made by Messrs. Read."

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PUMPS for Garden and Conservatory,

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Metallic Hothouse Builder to Her Majesty.

HENRY HOPE

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SILICATE ZOPISSA COMPOSITION. All colours. For Damp Walls, either internal or external.

LIQUID SILICATE ZOPISSA COMPOSITION. Colourless. For Preserving Stone, Brick, or Cement. All washable and durable. To be had genuine only of the Original Manufacturers.

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Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or at 8d. per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED TESTIMONIAL.

Glangwilly, Llanybyther, Carmarthen, Nov. 27, 1873.—"Mr. Lloyd Lloyd encloses cheque for £3 5s., amount due to MESSRS. HILL & SMITH, and he considers the Black Varnish one of the most useful things he ever possessed."

Apply to HILL and SMITH, Brierly Hill Ironworks, near Dudley; and 118, Queen Victoria Street, London, E.C., from whom only it can be obtained.

CAUTION.—It having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, they would especially draw attention to the fact that every cask of their Varnish is legibly marked with their name and address, without which none is genuine.

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		s. d.	*s. d.*	*s. d.*
3½-inch ivory handles	per doz	14 0	11 0	6 0
3⅞ " "	"	18 0	14 0	7 0
3⅝ " " to balance	"	20 0	15 0	7 0
3¼ " "	"	26 0	20 0	8 0
4 " "	"	30 0	22 0	8 0
4 " fine	"	33 0	24 0	9 0
4 " " extra large	"	33 0	28 0	10 6
4 " " African	"	42 0	32 0	12 0
4 " silver ferrules	"	42 0	35 0	13 0
4 " silvered blades	"	46 0	35 0	"
Do. electro-silvered haudles	"	23 0	19 0	7 6

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TIFFANY, 6*s.* 6*d.* and 7*s.* 6*d.* per piece of 20 yards.

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"FRIGI DOMO" CANVAS.

2 yards wide	.. ..	1*s.* 10*d.* per yard run.
3 yards wide	.. ..	3*s.* per yard.
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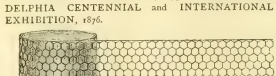
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Extreme standards of T or angle iron, for ends or angles, for straining the wires from, self based; also stays for these standards, at prices as under:—

Intermediate Standards, 10 ft. apart, at half these prices.

	Painted.	Galvd.		Painted.	Galvd.
4½ ft. high..	4*s.* 0*d.* ..	6*s.* 6*d.*	7 ft. high	7*s.* 0*d.* ..	10*s.* 0*d*
5 ft. high....	5 0 ..	7 6	8 ft. high	8 0 ..	11 0
6 ft. high....	5 9 ..	8 6	9 ft. high	9 0 ..	12 0

STRAINING SCREWS and NUTS, one to end of each wire, 3*s.* per dozen.

No. 13 WIRE, 10 inches apart, 2*s.* 3*d.* per 100 yards.

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FOR TRAINING PEAS, INSTEAD OF STICKS.
GALVANISED AFTER MADE.



Prices, in Panels of the undermentioned sizes only, without stakes:—

6 feet wide, 3 feet high	.. ..	.. ..	2*s.* 6*d.* each panel
6 feet wide, 4 feet high	.. ..	.. ..	3*s.* 6*d.* ..
6 feet wide, 5 feet high	.. ..	.. ..	4*s.* 6*d.* ..

The above engraving shows the arrangement of the panels tied to ordinary wood stakes.

*Improved Framed Standards for ditto, galvanised, 2*1. 6*d., 2*1. 9*d., and 3*1. each.

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NEW PATTERN, GALVANISED,
8*s. per dozen, 3 feet lengths.*

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Wirework Arches.
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Iron and Wire Espaliers.
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Water-piping laid on in Gardens.



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GREEN'S
PATENT "SILENS MESSOR,"
Or Noiseless Lawn-mowing, Rolling, and Collecting Machines for 1877.

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The superiority of these Machines over those of all other makers is universally acknowledged. They will Cut either long or short Grass, Dents, &c., wet or dry.

These advantages no other Lawn Mowers possess.

They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant.

The largest stock of Mowers kept in London is to be found at our Establishment, 54 and 55, Blackfriars Road, where purchasers can select from upwards of 500 machines of hand, pony, and horse power, and have their orders executed the same day they are received.

Every Lawn Mower sent out is guaranteed to give entire satisfaction, otherwise it may be returned at once free of cost to the Purchaser.

N.B.—Those who have Lawn Mowers to repair will do well to send them either to our Leeds or London Establishment, where they will have prompt attention, as an Efficient Staff of Workmen is kept at both places.

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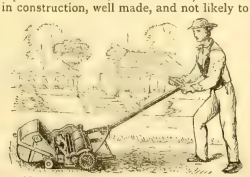
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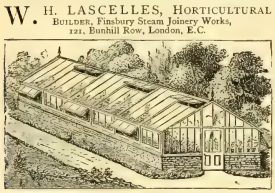
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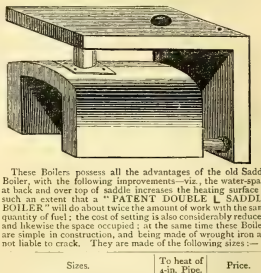
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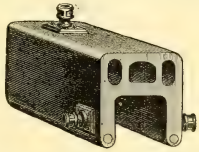
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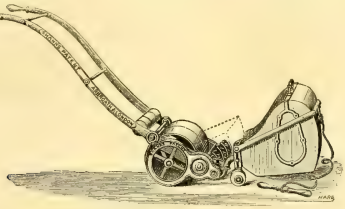
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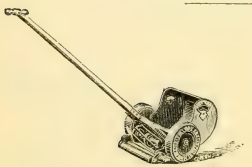
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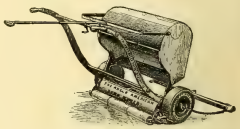
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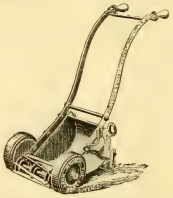
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12-inch ..	.. 4 10	18-inch ..	.. 7 10

Patent "Climax" Lawn Mower.

6-inch ..	.. 25s.
7-inch ..	.. 35s.
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Delivered Carriage Free to any Railway Station in Great Britain.

N.B.—Upwards of 37,000 of Follows & Bate's celebrated Lawn Mowers have been sold within the past few years.

FOLLOWS AND BATE here abstain from enumerating in detail the various good points claimed for other Machines, and content themselves with saying that their Lawn Mowers possess them all, and more also; they therefore solicit the favour of an application for one of their Catalogues, with Testimonials, *before purchasing*. To be had from all respectable Ironmongers and Seedsmen throughout the United Kingdom, or from

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THE

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The "Gardeners' Chronicle" in America.

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Including postage to the United States, is **$6.30** gold, to which add premium on gold for U.S. currency at the time, and 25 cents exchange—PAYABLE IN ADVANCE.

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Now Ready, in cloth, 16s. 6d.,

THE GARDENERS' CHRONICLE VOLUME for JULY to DECEMBER, 1876.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

FIRST GREAT SUMMER SHOW of ROSES, AZALEAS, RHODODENDRONS, TABLE DECORATIONS, FRUITS, and VEGETABLES, in honour of HER MAJESTY THE QUEEN'S VISIT,

On WEDNESDAY, May 2. Doors open at 1 o'Clock.

Admission, 2s. 6d., or by tickets bought before the day, 2s. Band of the Royal Horse Guards from 4 o'Clock, 1s.

** The Competition for Bouquets and Table Decorations is open to all.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—SCIENTIFIC, FRUIT, and FLORAL COMMITTEES' MEETINGS, on WEDNESDAY NEXT, May 2, at 11 o'Clock. GENERAL MEETING for ELECTION of FELLOWS at 3 o'Clock.

N.B.—The Fruit and Floral Committees will meet in the CONSERVATORY, where Exhibits will also be shown.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

FIRST SUMMER EXHIBITION of PLANTS and FLOWERS, WEDNESDAY, May 16. Tickets to be obtained at the Gardens, only by vouchers from Fellows of the Society. Price, three days, 2s. 6d. each; after that date, 5s. each. Schedules of Prizes, &c., can be had by post.

CRYSTAL PALACE.—GREAT FLOWER SHOW, May 12. Schedules, now ready, can be had on application to GENERAL MANAGER.

GRAND FLOWER SHOW will be held by the Orleans House Club, Twickenham, on FRIDAY and SATURDAY, May 25 and 26. The Show will be under the entire superintendence of Mr. Thomas R. Rollisson. Schedules and full particulars can be had of WILLIAM ROLLISSON AND SONS, The Nurseries, Tooting S.W.

Captain H. WOMBWELL, Manager and Secretary.

Offices, 114, Waterloo Place, S.W.

TORBAY HORTICULTURAL SOCIETY, Torquay, JUNE 27 and 28.

SUMMER SHOW of PLANTS, FRUIT, VEGETABLES, &c. Prizes ONE HUNDRED POUNDS, and a Grand ROSE SHOW, Money Prizes upwards of SIXTY POUNDS, and Five Silver Cups. For 72 varieties, one truss each, 1st Prize Cup, value £6; 2d prize, £4; 3d prize, £2. For 12 Tea and Noisette Roses, one truss each (Amateurs), 1st prize, presented by Messrs. Curtis, Sandford & Co., Cup, value five guineas. Entries close Thursday, June 21. Schedules, &c. ready.

W. FANE TUCKER, Capt. Hon. Sec. T. H. S. Braddon Tor, Torquay.

THE INTERNATIONAL POTATO EXHIBITION will be held at the Royal Aquarium, Westminster, S.W., on October 3, 4, and 5, when Prizes amounting to upwards of ONE HUNDRED and TWENTY POUNDS will be awarded. SCHEDULES are now ready, and may be had on application to

Mr. J. A. MCKENZIE,
1 and 2, Great Winchester Street Buildings, London, E.C.

April 7, 1877.

Splendid Novelty.

HARRISON'S NEW MUSK.—For full description and particulars, see p. 460 of *Gardeners' Chronicle*, or apply to HARRISON AND SONS, Leicester.

Centaurea candidissima or ragusina,

PACKAGE FREE.

WOOD AND INGRAM offer fine plants of the above, thoroughly established in single pots, at 20s. per 100, or 90 per 1000. Not less than 50 will be sold at the 100 price, or 500 at the 1000 price.

The Nurseries, Huntingdon.

Special List of Choice Orchids (No. 33).

THE NEW PLANT AND BULB COMPANY beg to announce that the above is now ready, and will be sent post-free on application. It also contains a List of New Ferns, Beautiful Foliage Plants, Eurycles australasica, &c., all at low prices. Lion Walk, Colchester.

To the Trade.

PINUS INSIGNIS, 1-yr., in single pots, 8s. per 100, 90s. per 1000.

IVY, Irish, 1-yr., 8s. per 1000, 70s. per 10,000; 2-yr., about 1 to 2 feet, 8os. per 1000.

RODGER MCCLELLAND AND CO., 64, Hill Street, Newry.

HOLLYHOCKS.—Lists of Varieties, with their colours and price, on application; also TEA ROSES, in pots.

L. WOODTHORPE, Glazenwood Nursery, Braintree, Essex.

PONTICUM RHODODENDRONS —for Cover—2½ to 3 feet, fine, £8 per 1000.

J. JACKSON, Nursery, Kidderminster.

BEGONIAS, tuberous-rooted. — Strong seedlings, just starting into growth, fine for Planting Out this summer, 9s. per dozen, 60s. per 100.

RODGER MCCLELLAND AND CO., 64, Hill Street, Newry.

NEW 1877 ROSES.—Our Plants are now fine and strong. Early orders are respectfully solicited. LISTS on application.

The New CLEMATIS LIST will be ready in May.

EWING AND COMPANY, Royal Norfolk Nurseries, Eaton, Norwich.

All the Best Selected

NEW CONTINENTAL ROSES for 1877. Fine plants of the above now ready.

Descriptive CATALOGUES on application.

WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

Tea Roses on Seedling Briar.

EDWIN HILLIER offers the above, in splendid plants and best varieties, by the dozen or 100: also New H.P. ROSES of 1876. Price LISTS on application.

Nurseries, Winchester.

Vines, Vines, Vines.—The Planting Season.

THE COWAN PATENTS' COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Canes of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

FRUITING VINES.—Black Hamburgh and other leading sorts; first-class strong Canes.

SMITH AND SIMONS, Nurserymen, 36 and 38, Howard Street, Glasgow.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

POTATOS for Sale.—Bresee's Peerless, Excelsior, Climax, Brownell's Beauty, Compton's Surprise, Fluke Kidney, Sutton's Early Flourball. Offers requested.

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MRS. POLLOCK, or OTHER TRICOLOR GERANIUMS.—Parties having such to Dispose of will oblige by communicating. State quantity, size, and price.

R. AND F. ALLUM, The Nurseries, Tunworth.

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WANTED, a quantity of good strong Plants. State lowest price to

H. AND F. SHARPE, Seed Growing Establishment, Wisbech.

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WILLIAM ARMITAGE AND SON, Seed Merchants, Huddersfield.

Carnations, Picotees, and Cloves.

CHARLES TURNER can supply the above in great variety. Now is the time for planting them out.

The Royal Nurseries, Slough.

CENTAUREA CANDIDISSIMA.—Nice plants, in single pots, 20z. per 100, package included. Terms Cash.

JOHN HOUSE, Eastgate Nurseries, Peterborough.

SPIRÆA PALMATA.—Fine Crowns for Forcing, 75s.; smaller, 25s. to 50s. per 100.

CHARLES NOBLE, Bagshot.

PYRUS MAULEI is now being sent out, in strong plants, in full bud, at 10z. 6d. each, at once showing its distinct character and high claim to the attention of Hardy Fruit Growers.

W. MAULE AND SONS, The Nurseries, Bristol.

FIFTY THOUSAND BEDDING PLANTS in variety for Sale, at Wholesale and Retail prices: all grown in separate pots, and in excellent condition. CATALOGUES on application.

F. W. COOPER, Florist, Huntingdon.

VERBENAS, VERBENAS, VERBENAS. —Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6z. per 100, 50z. per 1000. Also 100 rooted cuttings, in 100 fine and beautiful varieties, first prize flowers, for 8s. Terms cash.

H. BLANDFORD, The Dorset Nurseries, Blandford.

Verbenas, Verbenas, Verbenas.

WILLIAM BADMAN offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, at 12z. per 100; or turned out of pots, 10z. per 100. Good rooted Cuttings, 6z. per 100, 50s. per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S.E.

Pelargoniums.

CHARLES TURNER can supply strong healthy plants of all the classes; they will have a good head of bloom this season.

The Royal Nurseries, Slough.

Special Offer.—150,000 Vesuvius.

WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, 10z. per 100: or from store-pots, 8s. per 100, 75s. per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S.E.

NEW REGAL PELARGONIUMS (Two of the Gems of the Season).

"PRINCE OF WALES" and "PRINCESS OF WALES."

Price 1 guinea each.

To be sent out the first week in May by

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Geranium, "Wonderful."

WILLIAM CLIBRAN AND SON can now supply plants of this fine double sport of Vesuvius, at 6s. and 9s. per dozen, free for Cash with order.

Oldfield Nurseries, Altrincham.

To the Trade.

MANDEVILLA SUAVEOLENS.—Strong and thoroughly healthy plants, 8s. per dozen, or £3 per 100.

FRANCIS R. KINGHORN, Sheen Nurseries, Richmond, Surrey.

Gentiana acaulis.

OSBORN AND SONS can supply fine Clumps of the above at 6s. per dozen, 30s. per 100. Trade price on application.

The Nurseries, Fulham, London, S.W.

English Scarlet Runner Beans.

H. AND F. SHARPE have a few Bushels of the above more than they require, and offer them to the Trade at a very reasonable price.

Seed Growing Establishment, Wisbech.

Scarlet Runners, English-saved.

To MARKET GARDENERS and LARGE GROWERS.

JAMES FARRAR AND CO. offer a very fine lot of the above, on moderate terms.

Seed Warehouse, 154, Golden Lane, Barbican, London, E.C.

New Spring Catalogue.

CHARLES TURNER'S CATALOGUE of PLANTS is now ready, and may be had free on application. The Royal Nurseries, Slough.

Clematis Roots for Grafting, 30s. per 1000.

CLEMATIS.—Finest named kinds, spring and autumn flowering, any number at very reduced prices.

CHARLES NOBLE, Bagshot.

JERUSALEM ARTICHOKES.—A quantity of the above to offer, price 4s. per bushel.

STUART AND MEIN, Seedsmen, Kelso.

Gentlemen's Gardeners, Amateurs, and Others

REQUIRING

GARDEN POTS of best quality, are requested to send their orders to

J. MATTHEWS, Royal Pottery, Weston-super-Mere.

Price List on application.

SALES BY AUCTION.

Established and Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 2, at half-past 12 o'Clock precisely, ESTABLISHED ORCHIDS in splendid condition, comprising fine masses of Lælia purpurata, L. præstans, L. cinnabarina, Cattleya Schilleriana, C. Leopoldi, C. marginata, C. aurea, C. Mossiæ, C. labiata, C. Dowiana, C. Mendelii, C. Marshallianum, O. crispum, O. marginatum, O. concolor, O. Forbesii, &c.; also some fine SPECIMEN PLANTS of Cologyne cristata, 600 or 700 bulbs in each pot. An importation of choice INDIAN ORCHIDS, comprising Aerides, Dendrobiums, Oncidiums, Saccolabiums, Vandas, &c., comprising many rare varieties. An importation of ONCIDIUM VERUCOSUM ROGERSII and O. SARCODES, a consignment of LILIUM AURATUM and other LILIES from Japan, &c., and some plants of MUSA ENSETE.

On view the morning of Sale, and Catalogues had.

Cypripedium Druryii.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, May 3, at half-past 12 o'Clock precisely, a few good established plants of the new and distinct CYPRIPEDIUM DRURYII.

On view the morning of Sale, and Catalogues had.

Phalænopsis violacea.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, May 3, at half-past 12 o'Clock precisely, FOUR ESTABLISHED PLANTS of the new and distinct PHALÆNOPSIS VIOLACEA. This is an extremely difficult species to import, and it is the first time established plants of it have been offered.

On view the morning of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, May 3, at half-past 12 o'Clock precisely, a small COLLECTION of ESTABLISHED ORCHIDS, including the following and many other rare kinds:—

Odontoglossum odoratum	Trichopilia crispa
Aerides quinquevulnerum	Vanda teres
Odontoglossum Roezlii	Oncidium bifolium majus
Brassavola glauca	Odontoglossum cirrhosum
Aerides Lobbii	Mossiæ
Odontoglossum vexillarium	Dendrobium aureum
Sacco-labium guttatum	Cattleya Mendelii
Odontoglossum Phalænopsis	xanthina
Wilckeanum	Odontoglossum sceptrum
Palumbina candida	Oncidium concolor

Also some imported Orchids from Rangoon.

On view the morning of Sale, and Catalogues had.

Exhibition Plants, Gleichenias, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 9, at half-past 12 o'Clock precisely, a selection of STOVE and GREENHOUSE PLANTS, from the Collection of John Tattersall, Esq., of Quarry Bank, Blackburn, being sold for want of room for Orchids, &c.; several of these are very fine and rare specimens, including Phormium tenax Veitchii, with 19 breaks and 200 leaves, 6 feet high by 6 feet; Zamia Lehmanii, 40 fronds, 4 feet high by 6 feet; Croton interruptum and Veitchii, 5 feet high by 4 feet; Crotons Youngii, 6 feet through; volutum, 5 feet high by 4 feet; numerous Seemannias, 5 feet high by 4 feet; Gleichenias Hookeri, 6 breaks, 4 feet high by 4 feet; young Gleichenias, 4 feet through, of Mendelii, rupestris, glaucescens, &c.; fine young flowering plants from 3 to 4 feet through, of Azaleas, Aphelexis, Genetyllis, Ixoras, &c. Particulars may be had of

Mr. EYE, the Gardener at Quarry Bank, Blackburn; and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

May be viewed the morning of Sale, and Catalogues had.

Stove and Greenhouse Plants.

MR. J. C. STEVENS has been favoured with instructions from Leigh Pemberton, Esq., M.P., of Terry Hill, near Sittingbourne, to offer for SALE by AUCTION, on the Premises, on FRIDAY, May 11, at 12 o'Clock precisely, the fine Collection of STOVE and GREENHOUSE PLANTS formed by the late Lord Kingsdown, and which have been exhibited most successfully for the last ten years. The Collection comprises Camellias, Azaleas, Palms, Crotons, Cycas, Stephanotis, Dipladenias, Orchids, &c., of the finest sorts, and will be sold without the least reserve.

On view the day prior and morning of Sale, and Catalogues had of Messrs. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

N.B.—A conveyance will be provided at Sittingbourne to meet the 12.10 train from Victoria.

Important Notice of a Great Clearance Sale of NURSERY STOCK

MR. J. C. STEVENS has received instructions from Messrs. Lee to offer for SALE by AUCTION, on the Premises, the latter END of MAY, the entire Stock of STOVE and GREENHOUSE PLANTS, GREENHOUSES, FITS, &c., at the Hammersmith Nurseries, the land being required for building purposes.

More detailed particulars in next Advertisement.

Battle, Sussex.

About 1½ mile from the Railway Station, and 5 miles from Bexhill Station on the London, Brighton, and South Coast Railway.

TO AMATEUR GARDENERS, NURSERYMEN, and OTHERS.

MESSRS. WOODHAMS and SON have been favoured by Mr. B. W. Knight, who is relinquishing the growth of Specimen and Exhibition Plants, with instructions to positively SELL by AUCTION, at his North Trade Nursery, Battle, on THURSDAY, May 10, at 12 o'Clock, the whole of his extensive and valuable collection of SPECIMEN STOVE and GREENHOUSE PLANTS, comprising Palms, Tree Ferns, Yuccas, Pandanads, Dracænas, Crotons, Phormiums, and other select plants, the whole of which are clean, healthy, well-grown specimens. Also a quantity of BEDDING PLANTS, comprising Geraniums, Fuchsias, Verbenas, &c.

Catalogues may be had at the place of sale, and of Messrs. WOODHAMS and SON, Appraisers and Estate Agents, Bridock Road, Hastings, and Cockhurst Farm, near Battle.

Moor House Nursery, Ilford, Essex.

Close to the Station.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Howitt to SELL by AUCTION, on the Premises as above, on WEDNESDAY, May 16, at 12 o'Clock precisely, the whole of the well grown BEDDING PLANTS, consisting of the usual assortment, also 700 Tea and other Roses, 100 Camellias in 24 pots, 5 fine specimen ditto, 5 to 8 feet; 65 fruiting Vines, Cyclamens, Azaleas, &c.

On view the day prior to Sale. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, Essex.

N.B.—The NURSERY TO BE DISPOSED OF. For particulars apply to the Auctioneers as above.

Surrey.

The HEATHERSIDE ESTATE, an important Freehold Property, within a short distance of Bagshot and Farnborough, and within easy access of four railway stations, from one of which (Farnborough) London can be reached in about fifty minutes. It comprises a Modern Residence, with Stabling and Outhouses, four newly-erected Cottages, extensive Farm Buildings, Stables, and Sheds, and about 300 Acres of Land, commanding magnificent views, the greater portion of the land being in a high state of cultivation, and planted with a vast assemblage of choice Conifers and other Ornamental Trees. There is a long range of Greenhouses, Forcing-houses, and Pits, and the property has been laid out, at an enormous cost, with well-formed roads, lined with avenues of choice trees, so as to adapt it to the purposes as an Ornamental Nursery Ground in connection with a residential estate, or to its being divided into Lots for Building Purposes, for which the undulating character of the ground renders it peculiarly suitable. The estate will be offered for Sale in its entirety. It is in the heart of an exceedingly healthy and picturesque district. Numerous mansions and villas have been erected and are now being built in the immediate neighbourhood. Possession will be given at once.

MESSRS. DEBENHAM, TEWSON AND FARMER will SELL, at the Mart, on TUESDAY, May 15, at 1 o'Clock, the above-mentioned valuable FREEHOLD ESTATE, which offers a first-class investment, either in its present position as a Residential Property, or with a View to Re-selling or Letting for Building Purposes, for which the charming drives and walks already formed upon it, and the proverbial salubrity of the climate and soil, render it very available. Plans and particulars of

Messrs. ROBINSON AND PRESTON, Solicitors, 35, Lincoln's Inn Fields; of Messrs. KEARY, STOKES AND GOLDING, Solicitors, Tapperbowl Mills; of Messrs. WATNEY AND TILLIARD, Solicitors, 34, Clement's Lane, E.C.; and of the Auctioneers, 80, Cheapside, E.C.

Edmonton, N.

Seven miles from Covent Garden, and close to the Station.

TO BE DISPOSED OF, a capital MARKET NURSERY, about 25½ Acres in extent, comprising a Substantial Dwelling-house, Offices, and Greenhouses in good repair, and several Ranges of Pits. Lease nineteen years. Rent £100. Price £1,250.

Utensils in Trade may be taken at a valuation, at the purchaser's option. Further particulars of

-PROTHEROE AND MORRIS, 98, Gracechurch Street, London, E.C.

FOR SALE, TYNEVILLE VINERIES, St. Aubin's Bay, Jersey, consisting of handsome Gothic Residence, and Gardener's Cottage in keeping; also Outhouses, and between 3000 and 10,000 superficial feet of Glass, heated by hot-water apparatus, and every convenience for saving labour. About 2000 superficial feet of Glass for early Potatos. The whole has been erected within the last six years, and is now in full and early bearing. Such an opportunity of profitable and safely investing seldom occurs. Satisfactory reasons given for selling.

Full particulars of the owner at the above address.

To Fruit Growers and Market Gardeners.

FOR SALE, a compact FREEHOLD PROPERTY, 10 miles by road from London. It comprises a comfortable eleven-roomed House, excellent Buildings, and about 16 Acres of rich Land, 10 now being occupied by young and thriving Fruit Trees in full bearing.

Mr. W. HOUGHTON, Land Agent and Auctioneer, 41, Bishopsgate Street, Bank, E.C.

TO BE SOLD, NINETY-FIVE YEARS' LEASE of SMALL NURSERY, Muswell Hill, near London; Stock, Greenhouse, Frames, &c., all included, £200.

L. N., 2, Thompson Road, Lordship Lane, Dulwich, S.E.

TO BE LET, at the low Rent of £25 per annum, a SMALL NURSERY and MARKET GARDEN, in the neighbourhood of Reigate. It contains rather more than 2 Acres, well stocked with Fruit Trees, Hothouse, Cucumber House, and large Orchard-house, filled with Peaches, &c., and good Residence. The Coming-in about £400. Letters to be addressed to

Messrs. TAYLOR AND CO., 28, Great James Street, W.C.

To Landscape Gardeners.

BOROUGH of WIGAN: MESNES PARK. —The Corporation of the Borough of Wigan invite Landscape Gardeners to submit DESIGNS in Competition for the LAYING OUT of the proposed MESNES PARK in this Borough. Premiums of £50, £40, and £30, respectively, will be given for the First, Second, and Third-best Designs. A Block Plan of the proposed Park, and further particulars, may be obtained on application to the undersigned. Designs to be sent in by June 1 next.

MASKELL WM. PEACE, Town Clerk.

Town Clerk's Office, Wigan, April 19.

ASPARAGUS.—Now is the best time for Planting. Strong plants, at 2s. 6d., 3s. 6d., and 5s. per 100; 20s., 30s., and 40s. per 1000.

JAMES DICKSON AND SONS, Newton Nurseries, Chester.

To the Trade.

ASPARAGUS, Giant, 1-yr. and 2-yr., fine. JAMES BIRD, Nurseryman, Downham.

ASPARAGUS, Giant, 3-yr. and 4-yr., fine, price 3s. per 1 o

R. DAVIS, Crayford, Kent.

EARL BEACONSFIELD FUCHSIA is the greatest novelty of the year. Two First-class Certificates. (See *Gardeners' Chronicle*, April 7, p. 436.) 3s. 6d., post-free. Special Trade offers.

JOHN LAING AND CO., Stanstead Park, Forest Hill, S.E.

STEPHANOTIS FLORIBUNDA.— Four large Plants for Sale, in fine condition, 6-yr. old; would cover a large space. Also fine large GARDENIAS (Intermedia). Apply to

F. FRENCH, Wren Nursery, Camberwell Green, S.E.

DELPHINIUM SMITHII.— The finest novelty of the season; the centre petals are almost pure white, and the outer petals beautiful blue, producing a fine effect, visible at a distance; comes true from seed. Pakets 1s. each, free by post.

T. SMITH, Seed Grower, Long Wittenham, Abingdon.

Pelargoniums, Pelargoniums.

JAMES HOLDER AND SON have a fine healthy Stock of the above to offer, at the following low prices for Cash, viz., 35s. per 100, distinct sorts, hamper and package included; also extra strong plants, in 32-pots, 18s. per dozen, in 48-pots, 9s. per dozen, 60s. per 100, basket and packing extra. Crown Nursery, Reading.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in Planting by the old system. See RICARD SMITH'S SEED LIST for 1877.

Extra Strong SEAKALE, 2s. per dozen.

RICHARD SMITH, Nurseryman, Worcester.

Gentlemen about Planting Beds of Lily of the Valley.

W. F. BOFF has to offer a quantity of imported Clumps that have been used for cut flowers during the spring. They are the best Dutch variety. Price 25s. per 100, free of packing.

203, Upper Street, Islington, N.

To the Trade—Turnip Seeds.

H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.

Seed Growing Establishment, Wisbech.

The Lily Nursery, Ghent, Belgium.

J. VANDER SWAELMEN'S English CATALOGUE for 1877 is now ready, containing one of the largest collections of Lilies, with descriptions, Azaleas, Camellias, &c., Palms, New and Rare Hardy Exotic Ferns, Hardy Cypripediums, Trilliums, Winter and Spring Flowering Plants, &c., Grass and Tree.

Agents:—Messrs. C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

Herbaceous and Alpine Plants (Illustrated).

THOMAS S. WARE'S CATALOGUE of the above for the present year is Now Ready, and includes New, Rare, and Choice Perennials, Bamboos, and Ornamental Grasses, Bog Plants, and Aquatics; also, a few Bulbs. Free on application.

Hale Farm Nurseries, Tottenham, London.

Specimen Azaleas.

F. AND A. SMITH'S collection of the above is now in full beauty, also a large quantity of smaller plants. A visit solicited.

The Nurseries, West Dulwich, S.E.

PRICKLY COMFREY — The most Productive and Permanent Forage Plant grown.—Cut Five times a year. 120 Tons per acre have been produced in one season. Sets, 8s. per 1000, or strong plants £4 per 1000, carriage paid by rail

C. R. FREEMAN, Economic Seedsman, Norwich.

Verbenas, Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other mixed sorts, good, strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, package included. Cash to accompany all orders.

Islington Nursery, Park Street, Islington, N.

Presented (by post) on application,

NEW CATALOGUE for 1877. For rentest and List of Plants offered, with prices, see last week's large Advertisement. Plants true to name, well hardened off, low in price See New Catalogue.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

CALCEOLARIA, Golden Gem, good autumn-struck, from stores, 8s. per 100. CINERARIA MARITIMA, 6d. per 100. ECHEVERIA SECUNDA GLAUCA, 12s. per 100. Large stock of FERNS, in various sizes.

F. STROUD AND SONS, Lordship Park Nurseries, Stoke Newington, N.

Bedding Plants.

F. AND A. SMITH have an immense stock of strong, well-grown HARDY PLANTS, which they offer at moderate prices.

LISTS on application.

The Nurseries, West Dulwich, S.E.

Balsam, Cineraria, and Primula Seed.

F. AND A. SMITH offer the above, saved from their unrivalled strains, in 1s., 2s. 6d., and 5s. packets. Free to the Trade on application.

The Nurseries, West Dulwich, S.E.

For Sale, Tree Ferns, Exhibition Plants.

TO EXHIBITORS.

WILLIAM E. DIXON, having gained nearly One Thousand Prizes, is relinquishing exhibiting, and now offers the whole of his SPECIMEN PLANTS for Sale by Private Contract, from May 1 to 17, after which time he will offer the remainder by Public Auction. Further particulars in future advertisements.

Beverley, Yorkshire.

THE QUEEN of SPRING, "MY DAFFODIL."—The Queen's visit on Wednesday to the Horticultural Gardens will be memorable by the great display of Daffodil Flowers.
BARR AND SUGDEN, 12, King Street, Covent Garden, London, W.C.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Phlox of all the best varieties, with Double PRIMROSES of different colours: AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.
Mr. WEBB, Calcot, Reading.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

To the Trade.—Pelargoniums, Show and Fancy.
JAMES GARAWAY and CO. offer leading sorts, their selection, good plants in 48-pots, to flower in May, at 12s. per 100.
JAMES GARAWAY AND CO., Durdham Down Nurseries, Clifton, Bristol.

CUCUMBER PLANTS.—For Sale, until June, Rollison's Telegraph, Lord Kenyon's Favourite, and Kirkless Hall Defiance, very strong and true, in 60's and 48's. G. COX, 114, Loughborough Road, Brixton, S.E.

Special Offer for Cash.
POT ROSES.—Well set with buds, and coming into bloom. 18s. to 24s. per dozen.
HEAD AND G. LOWE, Uxbridge.

BROCCOLI, Hammond's Imperial White, seed grown by Mr. Hammond, 1s. per packet, post free.
CUCUMBER, Armitage's Satisfaction, five seeds, 1s. per packet, post free.
WILLIAM ARMITAGE AND SON, Seed Merchants, Huddersfield.

AURICULAS.—2000 Alpines and Selfs, in great variety, in bloom, to be Sold, at 6d., 9d. and 12s. each. Now on view at the Horticultural Nursery, Mansfield Road, N.W., adjoining Gospel Oak Station.
Proprietor, EDWARD B. SHENTON.

NEW CHRYSANTHEMUMS. — Fulton, Fulgor, the Nymphs, Lacinatum; strong young plants of the above choice kinds, 2s. 6d. each.
Mrs. Dixon, Conrad, Mdlle. Deleaux, Dictator, Sho-Gakko, Belle Castaise, Lord Derby, Parfait, 1s. 6d. each.
Also a large collection, including all the principal older varieties, from 4s. per dozen.
A descriptive Priced LIST on application to
T. JACKSON AND SON, The Nurseries, Kingston-on-Thames.

REGAL PELARGONIUMS.—
MRS. CLIFTON | MARIE LEMOINE.
CAPT. RAIKES | QUEEN VICTORIA.
The above four splendid varieties free by post for 5s.
KONIG ALBERT, double ivy-leaf, 6d. per dozen.
Trade price on application.
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

Tea-scented China Roses, &c.
WILLIAM FLETCHER begs to announce that the above are unusually fine this season, now in bloom; also all the New varieties, 1875-6-7.
W. F. can also supply ADIANTUM CUNEATUM in large 60's, very fine stuff, cheap.
Ottershaw Nurseries, Chertsey.

To the Trade.
MANGEL WURZEL.
CHAMPION YELLOW GLOBE.
IMPROVED ORANGE GLOBE.
IMPROVED RED.
We offer above in thoroughly guaranteed extra fine stocks, price on application.
F. SHARP AND CO., Seed Growers, St. Albans.

Special "Reduced" Offer for Cash.
SUPERIOR NEW ENGLISH SCARLET RUNNER BEANS, selected as the greatest croppers in cultivation; highly recommended and sure to give satisfaction; price 25s. per bushel Fine Early Longpods, at 6d. Common Windsors, nice sample, at 8s. 6d.; selected broad Windsors, fine sample, Bushel Bags, 6s. 6d. each; 4 Bushel Sacks, 12s. 3d. each. Terms Cash with orders. F. Gee has now only a few quarters of each of the above left, therefore to prevent disappointment early orders are requested.
FREDK. GEE, Seed Grower, &c., Biggleswade, Beds.

New Bedding Geranium, Red King.
JAMES COCKER AND SONS have pleasure in offering the above as the most Scarlet Bedding Geranium yet sent out. It was grown at the Royal Horticultural Society's trial grounds last season, and was awarded a First-class Certificate for its general good qualities. A list with testimonials may be had on application. Strong plants now ready, 2s. each, 18s. per dozen. The Trade supplied on usual terms.
JAMES COCKER AND SONS, Sunnypark Nurseries, Aberdeen.

STOVE and GREENHOUSE PLANTS.—
The following in fine Specimen, suitable for exhibition, will be disposed of for want of room:—Choreozema, variety elegans, 6 ft. wide by 4 ft. 6 in. high; Epacris Eclipse, 5 ft. 6 in. by 4 ft. 6 in.; Habrothamnus jasminoides, 5 ft. 6 in. by 4 ft. 8 in.; Dracophyllum gracile, 2 ft. 2 in. by 3 ft.; Ericas tricolor Wilsonii, 2 ft. 9 in. by 2 ft. 2 in.; R. Spenceri, 2 ft. 10 in. by 2 ft. 8 in.; Dendrobium moniliforme, 3 ft. 8 in. by 3 ft.; Cleredendron Thompsonii, 3 ft. by 3 ft.; Hoya Bella, 3 ft. by 3 ft.—Apply, J. ANDERSON, The Cottage, Gibson's Hill, Norwood, S.

Special Offer of Choice and New Double Geraniums,
IN TWENTY-FOUR DISTINCT VARIETIES.
RICHARD BIGGS is now prepared to send out Twenty-four distinct varieties, true to name, of Double GERANIUMS, including the best and newest varieties of 1876, in all colours, viz., Double White, Salmon Lilac, Rose, Magenta, brilliant Scarlet, Pink, &c., which for the decoration of the Conservatory or Flower Garden are unsurpassed. The set of Twenty-four forwarded free to any address in the United Kingdom for 25s., twelve varieties, 13s. 6d. Post-office Orders payable at the Lewisham Ludgwell Post-office.
RICHARD BIGGS, The Nurseries, Lewisham, S.E.

The Best Hardy Bedding Plant.
CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Extra strong plants, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.
RICHARD SMITH, Nurseryman, Worcester.

Cheap Bedding Geraniums.
ALFRED FRYER offers the following good Beddars at per dozen for cash:—Golden Tricolors; Peter Grieve, 2s.; Prince of Wales, 2s.; Sophia Dumaresque, 2s.; Sir Robert Napier, 3s. 6d.; Mrs. Pollock, 3s.; Sophia Dumaresque, 3s.; Silver Tricolors: Lass o' Gowrie, 4s. 6d.; Queen of Roses, 4s. 6d.; Miss Burdett Coutts, 4s. 6d.; Mrs. John Clutton, 3s. 6d.; Prince Silverwings, 3s. Double Flowered: Marie Lemoine, 3s.; or one of each for 30. No charge for packing, if empties are returned at once; also post-free for 6d. per dozen extra. For Priced LISTS apply to
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

LYE'S FAVOURITE. — The handsomest and best Potato ever offered. Indispensable for Exhibition. This variety will be the greatest Prize Winner of the season. We have purchased the entire Stock of Mr. James Lye, Clyffe Hall, Market Lavington, and parties wishing to grow this remarkably handsome and beautiful variety should order at once, as the stock is getting very limited. It can only be obtained direct from us. Price 5s. per lb. Orders of 20s. and upwards carriage free.
DANIELS BROS., The Royal Seedsmen, Norwich.

RICHARD WALKER has sold right out of Enfield Plants. I have about 15,000 DRUMHEAD SAVOYS, 3s. per 1000; and about 30,000 RED DUTCH, 5s. per 1000; and 500 of the best fleshing SEAKALE in the country, 2s. 6d. per 100; LEMON THYME, 8s. per 100; PENNYROYAL, 8s. per 100; BLACK THYME, 5s. per 100; Scarlet King and pink DAISIES, 5s. per 100; splendid double white ROCKETS, 2s. per dozen; FYRETHRUMS, 2s. per dozen; PHLOXES, 2s. per dozen; new CAMPANULAS, mixed colours, 2s. per dozen; white Spanish ONION SEED, all new and genuine, and intermediate, at 2s. 6d. per lb. Terms cash.
Market Gardens, Biggleswade, Beds.

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18s. to 30s. per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or £5 per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded, £5 to £7 10s. per 100, or 18s. per dozen.

ANTHONY WATERER,
KNAP HILL NURSERY, WOKING, SURREY.

FIFTY THOUSAND MAGNIFICENT DWARF ROSES, in POTS.
ROSES for BEDDING, at 12s. to 18s. per dozen, 100s. per 100.
TEA-SCENTED ROSES, superb, established in 6-in. pots, adapted for greenhouse or conservatory, 30s. per dozen, 200s. per 100. Descriptive CATALOGUES on application.
WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

WILLIAM POTTEN can supply:—
12 ZONAL GERANIUMS, choice new, of 1876, for 10s.
12 ditto, ditto, of 1875, for 5s.
12 LITTLE TROT, the best dwarf, silver variegated, for 3s.
12 KING OF BEDDERS, Double Ivy-leaf, for 3s.
12 CHRYSANTHEMUMS, good large flowering, for 3s.
PETUNIA ROMULUS, a beautiful double pink, 3s. per dozen.
,, NEW, double white, 3s. per dozen.
The above strong healthy plants, post-free.
W. P. has a large stock of fine healthy plants, including the best varieties in cultivation. CATALOGUE free on application.
Camden Nursery, Sissinghurst, Staplehurst, Kent.

DOUBLE WHITE PELARGONIUM, Madame Amelia Baltet.—The best double white yet introduced. Pure white, dwarf habit, free flowering, perfectly double. Received First-class Certificate from Royal Horticultural Society, July, 1876. Strong plants, 2s. 6d., 3s. 6d., and 5s. each, according to size. Trade price on application.
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

Immediate Effect, &c.—Plant Now.
JAMES DICKSON AND SONS beg to draw attention to their very extensive and extremely hardily grown stock of thoroughly well transplanted EVERGREENS, of all sorts and sizes, embracing very numerous specimens of unusually good large HOLLIES, &c., in the best condition for safe removal, for giving immediate effect, biding objectionable objects, &c. Prices, and all particulars, post-free, on application. "Newton" Nurseries, Chester.

New Bedding Tropæolum. "Hunteri"
DOWNIE AND LAIRD have much pleasure in offering for Spring delivery the above Tropæolum, which has been raised by Mr. Andrew Hunter, gardener to Lord Shand, New Hailes House, near Edinburgh. This is an excellent Bedding Tropæolum, surpassing its parent Cooperi, being of a dwarfer habit, and we can with perfect confidence recommend it. The Editor of the *Gardeners' Chronicle* say, "It grows about 6 inches high, is very neat and compact in habit, and a most profuse bloomer, the flowers being of medium size, nice form, and of a bright scarlet colour." Price, per dozen plants, 12s.; each, 1s. 6d. Usual discount to the Trade.
West Coates Nursery, Edinburgh.

VERBENAS.—Strong, spring-struck Plants, beautifully clean and free from disease, are now being sent out by S. Bide, at 6s. per 100, or in pots, at 8s. per 100, consisting of Purple, White, Scarlet, Pink, and many other shades of colour, all true to name.
CALCEOLARIA, Golden Gem and other varieties, good sturdy plants, 8s. per 100, 60s. per 1000.
HELIOTROPE (light and dark), 6s. per 100.
COLEUS VERSCHAFFELTII, 10s. per 100.
BEDDING and other GERANIUMS, Plain and Zonal, in good variety, 10s. per 100.
MRS. POLLOCK GERANIUMS, established in single pots, 20s. per 100.
CRYSTAL PALACE GEM, established in single pots, 15s. per 100.
All the above package-free for Cash.
S. BIDE, Alma Nursery, Farnham, Surrey.

Verbenas, Verbenas, Verbenas.
FRANCIS C. BOFF offers White, Purple, Scarlet, Pink, Rose, Crimson, Maroon, Mulberry, true to name and colour. Also FUCHSIAS, HELIOTROPES, light and dark, all at 6s. per 100, or 50s. per 1000.
LOBELIA PUMILA and MAGNIFICA, 5s. per 100, or 40s. per 1000, all good rooted cuttings, strong, clean and healthy.
Terms—Cash with all Orders.
MAGDALA NURSERY, UPPER HOLLOWAY, N.
(Late of Nottingham Park Nursery, Canonbury.)
N.B.—Address, 17, Magdala Road, Upper Holloway, N.

To Parties Furnishing New Houses.
H. WALTON begs to intimate to the above that he has for sale an unrivalled collection of FLOWERING and FOLIAGE PLANTS of extra size suitable for immediate effect, which must be cleared out to make room. Also an immense stock of STOVE and GREENHOUSE PLANTS of all the newest and most effective varieties.
H. W.'s CATALOGUE is now ready, and will be forwarded post-free on application.
H. WALTON, Edge End Nurseries, Brierfield, near Burnley, Lancashire. Edge End is distant from Burnley, 3 miles; Accrington, 9 miles; Colne, 9 miles; Blackburn, 30 miles; Manchester, 30 miles; Huddersfield, 30 miles; Leeds, 35 miles; Wakefield, 40 miles.

CHARLES NOBLE, Bagshot, offers the following:—
RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1½ to 2 feet, 21s. per dozen, 150s. per 100.
,, ,, ,, for immediate effect, 2½ to 4 feet, and same through, 42s. per dozen, 300s. per 100.
,, Seedling, 1½ to 3½ feet, 9s. per dozen, 200s. per 100.
,, PONTICUM, 1½ to 2 feet, bushy, 6s. per dozen, 35s. per 100.
KALMIA LATIFOLIA, 1 to 1½ foot, buds, for potting, 75s. and 100s. per 100.
ANDROMEDA FLORIBUNDA, buds, for potting, 75s. and 100s. per 100.
ERICA CARNEA, very fine, 21s. per 100.

TO THE TRADE and Large Buyers.
FUCHSIAS, CHRYSANTHEMUMS, COLEUS, HELIOTROPES, SALVIAS, HELIANTHEMUMS, in all the best sorts, 15s. per 100.
PINKS, PENTSTEMONS, PHLOXES, PANSIES, 20s. per 100.
PYRETHRUMS, PÆONIES, CARNATIONS, PICOTEES, 35s. per 100.
IRESINE, AGERATUMS, LOBELIAS (from cuttings), CALCEOLARIAS, MESEMBRYANTHEMUMS, 5s. per 100.
GERANIUMS, Zonal and Nosegay, in great variety, 15s. to 20s. per 100; Bicolor, 20s. per 100.
WILLIAM CLIBRAN AND SON, The Oldfield Nurseries Altrincham.

Cheap Plants.—Special Offer.
WILLIAM BADMAN offers, as under, all healthy strong stuff:—
VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 10z. per 100; well-rooted cuttings, 6d. per 100 per 1000; 12 choice named sorts, 2s. post-free.
CALCEOLARIA, Golden Gem, 5s. per 100, 40s. per 1000.
LOBELIA, speciosa (true), 3s. per 100, 20s. per 1000; Blue stone and pumila grandiflora, all from cuttings, 5s. per 100 40s. per 1000.
PELARGONIUMS, Vesuvius, from stores, 8s. per 100, 75s. per 1000; Jean Sisley, 10s. per 100; Madame Vaucher, 10s. per 100; Master Christine, 12s. per 100: all from single pots.
,, Tricolor, Mrs. Pollock, 20s. per 100: Crystal Palace Gem, 12s. per 100; Flower of Spring, 12s. per 100.
HELIOTROPE, Voltaire, 3s. per 100, good bushy plants, 12s. per 100 rooted cuttings, 2s. per 100.
AGERATUM, Imperial Dwarf, blue, fine bedding plant, 5s per 100; 40s. per 1000.
IRESINE LINDENI and COLEUS VERSCHAFFELTI, crimson leaf, 6s. per 100, 45s. per 1000.
CENTAUREA CANDIDISSIMA, fine silver leaf, 3s. per dozen; 20s. per 100.
Packing included. Terms, cash.
Cemetery Nursery, Gravesend, S.E.

New English-raised Seedling Roses.
MESSRS. BELL AND SON, The Norwich Nurseries, Norwich, are now booking orders for their Two New ROSES, raised in their Nurseries and described and announced below. They have been thoroughly tested here before sending out, and can be recommended with confidence as really distinct novelties.

CLIMBING ROSE, CATHERINE BELL. —Very large flowers, of a deep rose colour, the back of the petals a delicate silvery pink; of exquisite shape, and very fragrant. It is very free-flowering, and of vigorous climbing habit, making shoots 8 to 8 feet long in one season.
Fine plants in pots, 10s. 6d. each. Figured in *The Garden*, March 18, 1876.
"Your Rose, Catherine Bell, is both *belle et grande*."—Rev. Canon Reynolds Hole.

HYBRID TEA ROSE, MRS. OPIE.—Bright salmon-rose tea-scented flowers, with shell-like petals; a most distinct and novel shade of colour amongst Tea Roses. It will form a charming companion to Madame Falcot, and will be as extensively cultivated as that variety when it is known. In flower from May to November. Fine plants in pots, 7s. 6d. each. Figured in the *Floral Magazine*.

Ready for delivery on May 1.
BELL AND SON, 10 and 11, Exchange Buildings, Norwich.

NEW PLANTS FOR 1877.

B. S. WILLIAMS

BEGS TO ANNOUNCE THAT HE IS NOW SENDING OUT FOR THE FIRST TIME THE UNDERMENTIONED NOVELTIES:—

ABUTILON, "PRINCE OF ORANGE."

A garden hybrid of free branching habit, and a most profuse bloomer, producing a succession of bloom nearly all the year. The colour is of a pale orange, richly veined with orange-scarlet. This will make a fine plant for conservatory decoration.

Price 10*s.* 6*d. each.*

* ABUTILON ROSÆFLORUM.

A garden hybrid raised in this establishment, the result of a cross between A. Darwinii and A. Boule de Neige; it has the dwarf free branching habit of the first-named parent, and the fine bold well-shaped flower of the second; the blossoms are produced in great profusion, and are rosy pink, shaded and veined with a richer tint of the same colour.

The *Gardeners' Chronicle* says of this plant:—"Your new hybrid Abutilon is a very pretty and distinct variety, with bell-shaped drooping flowers of a pleasing salmon-tinted rose colour veined with rosy crimson it will no doubt make a very useful decorative plant."

Price 10*s.* 6*d. each.*

ACALYPHA MUSAICA.

A very handsome species, imported by us from the South Sea Islands. The leaves are large and deeply serrated, of a bronzy green, richly variegated with various shades of orange, coppery red and crimson. This plant was one of the twelve New Plants which obtained the Gold Medal at Amsterdam, April, 1877. *Price* 21*s. each.*

* ADIANTUM PALMATUM (Moore).

This handsome and distinct species, now offered for the first time, will make an excellent companion to A. farleyense, owing to the large size of its pinnæ and the length of its fronds. It was discovered by M. Roezl at an altitude varying from 10,000 to 11,000 feet, in Peru—a fact of great importance, as it may be cultivated in a greenhouse temperature. Mr. Moore says of this beautiful Fern:—"The rhizome is creeping, and the fronds are of an indefinitely elongated form. A very noticeable feature in the plant is the flexuose or zigzag character of the rachides, most marked near the apex of the fronds and the rachides of the primary pinnæ. The pinnules are herbaceous in texture, smooth, large, from 1 to 1¼ inch in breadth, distant and very distinctly stalked, the stalks varying from ¼ to ¾ of an inch; the terminal ones are usually wedge-shaped, while the lateral ones are usually truncate at the base, so as to become semicircular in outline: they are deeply cut down into from three to five large lobes, which are again more or less parted; an oblong sorus terminating each of the divisions in the fertile portions." This has received a First-class Certificate.

Price 21*s. each.*

AGERATUM, "LADY JANE."

A very superior distinct and compact form of Ageratum, with dense green foliage and robust constitution, growing from 12 to 14 inches high. The flowers when fully expanded are a bright blue, produced in abundance throughout the season. It is admirably adapted for either beds or lines.

Price 3*s.* 6*d. each,* 30*s. per dozen.*

* ANTHURIUM ORNATUM.

The Anthuriums comprise a very large family; some of them are unsurpassed for the beauty and usefulness of their flowers, and others for the magnificence of their foliage; but the one now offered combines both these features in well-grown plants. The petioles are about 3 feet long, leaves light green and cordate in shape, from 9 to 12 inches broad, slightly veined with white; the flowers are thrown well above the foliage on stout flower-stalks; the spathe, which is pure white, is from 6 to 8 inches in length, and 2¾ in breadth, tapering towards the apex; the spadix, which is about 6 inches in length, stands up very conspicuous, being nearly black, but covered with a violet hue, slightly dotted with white. This most interesting plant should find a place in every collection.

Price 42*s. to* 63*s. each.*

ARALIA FILICIFOLIA (Ch. Moore).

This is a very elegant foliage plant, suitable when small for table decoration. The stems are of a deep olive colour, blotched with pale green; the leaves are dark green, glabrous, twice pinnately divided, with a single lobe at the end; the pinnæ are about eight in number on each side of the midrib, each one being divided nearly to the base into linear, minutely saw-toothed and spine-pointed segments. The younger leaves are more finely cut than those first formed. It forms a pretty subject for dinner-table decoration on account of its extreme elegance. This plant was introduced by us from the South Sea Islands.

Price 21*s.* to 42*s. each.*

ARECA FLAVA.

This elegant and distinct species was raised from the same importation of seed as A. purpurea, but is totally distinct from that plant. The stem and petioles in this species are orange-yellow; leaves pinnate, pale green in colour.

Price 21*s. each.*

ARECA PURPUREA.

An elegant, neat growing Palm. Leaves pinnate; the stem and petioles are of a bronzy purple colour, which makes a very striking contrast to the pleasing green colour of the leaves. We have only at present seen this Palm in a young state, having raised it from seed received from Madagascar. It is very distinct, at least in the small state, from any Palm in cultivation; and on account of its dwarf and compact habit, and its graceful appearance, will be found to be admirably adapted for dinner-table decoration.

Price 21*s. each.*

* CROTON CAMPTOPHYLLUS (Masters).

A very narrow leaved form. Leafstalk ½ to ¾ inch, green in the centre, paler at both ends Leaves 6 to 9 inches long by ¾ inch wide, in form linear-oblong, dilated at the base, and with a central yellow stripe. The apex of the leaf is obtuse or shortly pointed. The leaves are variously twisted and curved. This species makes a good dinner-table plant. One of our introductions from the South Sea Islands. *Price* 21*s. each.*

CROTON FALCATUS (Masters).

A loose form of habit; leaves 15 to 18 inches by 2 to 3 inches, leafstalk 1 inch long, pink in the centre, paler at each end. The leaves are strap-shaped, dilated and rounded at the base, sword-shaped, or sickle-shaped, with a dark purple midrib and margins, and with irregular blotches of yellow. The under surface is pale purple with green veins. This will make a splendid and distinct exhibition plant. Also one of our introductions from the South Sea Islands.

Price 21*s. to* 42*s. each.*

* CROTON FASCIATUS (Masters).

A bold, broad-leaved form; leaves 9 to 10 by 4 to 5 inches; leafstalk about 1 inch long brownish in the centre, paler at either end. The blade of the leaf is inversely egg-shaped, tailed rounded at the base, of a lively green colour, traversed by bright yellow veins, and marked with a few irregular spots and blotches. It is a fine variegated kind, of bold habit, and will prove a fine plant for exhibition purposes. One of our introductions from the South Sea Islands.

Price 31*s.* 6*d. each.*

CROTON MICROPHYLLUS.

This pretty graceful growing Croton is a garden hybrid raised in this establishment; the leaves are from 9 to 12 inches in length, and ½ an inch in breadth, lanceolate in shape; the stem and petioles are yellow, tinged with crimson; the leaves are sometimes half coloured, whilst in others the costa is marked with crimson, surrounded with a band of rich yellow—the margin pale green, splashed and speckled with the same colour. Will make a pretty table plant.

Price 21*s. each.*

CROTON NOBILIS.

This is a very elegant and distinct species, of free branching habit, with drooping leaves 18 to 24 inches in length, and about ½ an inch to 1 inch wide; ground colour dark green, the midrib being in the young state orange-yellow, changing with age to bright crimson; the remainder of the leaf is beautifully blotched and marbled with orange-yellow and crimson. This plant will be found invaluable as a decorative plant on account of its rich markings, and the graceful habit of growth. This was discovered by our collector, Mr. Goldie, in New Guinea, who says it is one of the most beautiful species he has seen.

Price 21*s. each.*

* CROTON PARADOXUS (Masters).

A narrow-leaved form, with short footstalks, purplish in the middle, paler at either end. The blade of the leaves measures 10 to 12 inches in length by ½ inch in width, the leaves are in form linear-oblong, with a spiny point. They are at first green, but subsequently become variegated with yellow or cream-coloured stripes and spots, especially in the centre, on either side of the pink midrib. The under surface is paler, and the central portion of a pale pinkish tint. Some of the leaves are twisted in the centre, others are "interrupted," the blade not being continuous throughout. This will form a compact plant for table decoration. Introduced from the South Sea Islands. *Price* 21*s. each.*

* CROTON, "QUEEN VICTORIA."

We have great pleasure in offering the first hybrid Croton that has been raised in this country. It is the result of a cross between C. Weismanni and C. interruptum. It far exceeds in beauty any of the imported species offered up to the present time. It is of medium growth and free branching habit, a most desirable feature in the formation of good specimens; the leaves when well matured are from 9 to 12 inches long, and about 2 inches broad, oblong-lanceolate the ground colour of the leaf is rich golden yellow, beautifully mottled with green; the midrib and the primary veins are of a rich magenta colour, changing with age to a vivid crimson; the margin of the leaf is unevenly banded with carmine, often extending as far as the midrib; and so harmonising with the rich yellow as to produce a gorgeous effect. It has received a First-class Certificate.

Price 42*s. each. Also a few extra-sized plants, prices on application.*

B. S. WILLIAMS' NEW PLANTS, 1877—(*Continued*).

DENNSTÆDTIA DAVALLIOIDES YOUNGII (Moore).

The following description of this beautiful plant is taken from the *Gardeners' Chronicle* of March 24, 1877 :—" This fine new garden Fern comes to us from Australia. It is no doubt very nearly related to the old Dicksonia davalliodes, *alias* Sitobolium davallioides, now referred to the genus Dennstædtia, but it is much larger in its growth than we have ever seen that plant, of which for practical purposes it may therefore be regarded as a giant form. In its native state it is said to produce fronds 17 feet in length ; and as seen in this country, under pot culture, it has caudices as thick as one's finger, and fronds of 7 or 8 feet in length. To this stout and vigorous constitution it adds the elegance and gracefulness of minute subdivision, so that its fronds, though large, are utterly devoid of coarseness, and it is, in fact, a remarkably ornamental plant, well adapted for occupying any bold and prominent position in a stove rockery, or even as a pot plant in a collection of stove or greenhouse Ferns it will always hold its position. The caudex, as already described, is as stout as one's finger, and of creeping habit, progressing forward somewhat freely, and throwing up its amply spreading fronds at intervals. The stipes is stout, nearly ¾ inch in diameter, and of a darkish brown colour below, golden-brown above, and quite smooth. The fronds are nearly ovate in outline, and decompound, the pinnæ 1½ foot long, the pinnules 5 to 6 inches long, lanceolate-acuminate, and the ultimate pinnules, those of the third order, ½ to ¾ inch long ; these ultimate pinnules are obliquely oblong, deeply cut into blunt oblong-toothed lobes, of which those at the base of the anterior side are the largest. The sori are small, placed near the base of these ultimate lobes in the sinus of one of the anterior marginal teeth. The fronds are herbaceous in texture. It will thus be seen that this Fern, while growing to a large size, is one of the most finely cut of all the large-growing sorts, of herbaceous texture, and when throwing out its boldly arching fronds, from an elevated position on rockwork, or from a large pot set up on a pedestal, it will have a very fine effect. It was unanimously awarded a First-class Certificate by the Floral Committee when exhibited at South Kensington on the 7th inst., and gained a similar award at the spring show of the Royal Botanic Society on Wednesday last."

Price 10*s*. 6*d*. *to* 21*s*. *each*.

DIEFFENBACHIA MARMORATA.

The leaves of this fine variety are from 12 to 18 inches in length, and about 6 inches broad, ovate in shape ; the colour is light green, unevenly splashed and spotted with creamy white, representing a variety of caricatures ; the leaves are of a thick leathery texture. It is one of the handsomest and most distinct species we have seen.

Introduced by our collector, M. Patin, from New Grenada. This plant was one of the twelve New Plants which obtained the Gold Medal at Amsterdam, April, 1877.

Price 42*s*. *each*.

ERANTHEMUM, "EL DORADO."

This is a very fine species, with ovate leaves, from 4 to 6 inches long, and from 3 to 4 inches broad : the ground colour is a bright golden yellow, slightly veined and mottled with pale green. This species will make a charming addition to this ornamental group of plants.

One of our introductions from the South Sea Islands. This plant was one of the twelve New Plants which obtained the Gold Medal at Amsterdam, April, 1877.

Price 10*s*. 6*d*. *each*.

NEW FIG, "HARDY PROLIFIC."

The fruit of this hardy Fig is about the medium size, pear-shaped, rather tapering towards the stalk. The flesh is very sweet and luscious. It was introduced from France some few years ago, and has proved itself perfectly hardy. It must become a general favourite, as it is a very abundant bearer either in pots or in a cold house, as well as on an open wall ; it also pens earlier than any other variety we know of.

Price 10*s*. 6*d*. *each*. *Extra-sized Fruiting Plants*, 21*s*. *each*.

NEW FUCHSIAS FOR 1877.

FUCHSIA "BEATRICE."—This is a single variety, the tube is rather short and stout, sepals deep crimson ; corolla reddish-purple, good-shaped flower. Price 7*s*. 6*d*. each.

FUCHSIA "MONSTROSITY."—The tube of this flower is rather short and stout, also the sepals ; these are of great thickness, and instead of reflexing in the usual way, peculiarly clasp the corolla, which is purple shaded with violet. This variety is of good habit, and must become a splendid exhibition flower. Price 7*s*. 6*d*. each.

FUCHSIA "CLIPPER."—Tube and sepals carmine-scarlet, broad and well reflexed ; corolla deep purple shaded with violet. This is a single variety, and will make a good exhibition plant. Price 7*s*. 6*d*. each.

FUCHSIA "IMPROVEMENT."—The tube and sepals of this variety are pure white, the latter well reflexed, of good substance, the corolla carmine shading to rose. This is a seedling raised from the old "Duchess of Lancaster." Price 7*s*. 6*d*. each.

FUCHSIA CARMINATA.—Tube and sepals bright carmine, the latter very broad and well reflexed, showing well the corolla, which is a deep violet ; the petals are very round and smooth. This will become a favourite for exhibition and general purposes. Price 7*s*. 6*d*. each.

FUCHSIA "MRS. BURROUGHES."—The tube of this variety is long and stout, pure white ; the sepals are also white, and much reflexed ; the corolla, which is barrel-shaped, is a crimson-lake. Price 7*s*. 6*d*. each.

* FUCHSIA PENDULÆFLORA.

The character and growth of this hybrid species is quite distinct, and being of rather a robust growth will become valuable for pillars or trellis-work for the conservatory ; the leaves are from 3 to 4 inches long, ovate, acuminate, and glabrous, having a violet midrib ; the flowers are produced in clusters from the axils of the leaves and the terminal shoots ; the tubes are from 3 to inches in length, trumpet shape, rich crimson shaded with maroon.

Price 10*s*. 6*d*. *each*.

* GLADIOLUS PAPILIO (Butterfly-flowered Gladiolus).

This beautiful species was introduced from Cape Colony some few years ago in the Kew Gardens, where it flowered, and was figured ; and the following are a few extracts taken from the *Botanical Magazine* :—" The Cape Colony abounds in species of Gladiolus, amongst which that now figured appears the most beautiful, though not the most gorgeous, that has hitherto been made known. Nothing can well exceed the delicacy of the pale purple of the upper petals or the vividness of the deep purple and golden yellow markings of the lower ones." We received this from one of our correspondents at the Cape.

Price 10*s*. 6*d*. *to* 21*s*. *each*.

NEW LATE KEEPING BLACK GRAPE, "ALNWICK SEEDLING."

This Grape was exhibited before the Fruit Committee, South Kensington, February 6, 1876, under the name of "Clive House Seedling," a name the committee have since thought fit to alter. The following is the description given by the Fruit Committee :—" It is a seedling between the Black Morocco and an unnamed variety raised at Wortley. The bunch shown was of fair size and well shouldered, and the berries large, oval in form, and jet-black in colour, with a thick skin ; the flavour was decidedly good, partaking of the rich sparkling flavour of the Black Morocco, but much sweeter." It has kept well till February, and will, no doubt, keep longer and prove a better Grape for general cultivation than the "Black Alicante." This has been awarded a First-class Certificate.

B. S. W. has much pleasure in offering this fine new Grape, "believing it to be a decided acquisition ; the stock offered is from the original plant. Early orders are respectfully solicited, as the stock is limited.

To be sent out in October. Price will be duly advertised.

* HIBISCUS DENNISONII.

The habit and character of this Hibiscus is quite distinct to any other species ; being very dense and compact, with thick glaucous leathery ivy-shaped leaves ; the flowers are large, of a creamy white, and very handsome ; admirably adapted for pot culture.

Price 10*s*. 6*d*. *each*.

IRIS ROBINSONIANA.
(The Wedding Flower of Lord Howe's Island.)

A gigantic species, attaining a height of 6 feet or more, with proportionately large sword-shaped leaves, and large pure white flowers marked with golden yellow on the outer petals. The flowers are about 4 inches in diameter, and very evanescent, but as they are numerous and quickly succeed each other, the plant retains its beauty for a long time, and is one of the most beautiful species ever imported. It is a native of Lord Howe's Island.

Price 21*s*. *each*.

LOBELIA, "BLUE GEM."

This variety grows about 6 inches high, and is of medium growth, a little more spreading than "Compacta ;" it produces an abundance of large cobalt-blue flowers, with a white eye. This Lobelia is a splendid bedder, and cannot fail to become a general favourite for bedding purposes.

Price 5*s*. *each*, 42*s*. *per dozen*.

NEW FORCING PINK, "DUCHESS" (Clarke).

There are few plants to excel the Pink, especially in the months of March and April ; this can only be obtained by having such habit of growth that will withstand a little excitement in the early months ; the variety now offered is by the same raiser as "Lord Lyons," "Derby Day," &c. This will be found quite distinct to any previously offered. The colour is of a delicate and beautiful tint of lilac-pink, with faint rosy lilac blotches in the centre, the petals large, stout, and finely rounded, with a rich perfume ; the flowers are large and solid, without the bursting of the pods which is a defect in most Pinks. The habit is robust and vigorous, and blooms in great profusion. A valuable early forcing variety.

Price 10*s*. 6*d*. *each*.

* PANAX LACINIATUS.

This very elegant plant will be a valuable addition to a class much in request for table decoration ; it is of medium growth, and when about 12 or 18 inches in height its elegance can scarcely be surpassed. The stem is smooth and slender, slightly mottled with brown, the leaves are alternate, and the leaflets deeply cut or laciniated, of a light or pleasing green colour. Native of the South Sea Islands. Awarded a First-class Certificate.

Price 10*s*. 6*d*. ; *extra sized plants*, 21*s*.

* PELARGONIUM, "DR. MASTERS."

A splendid forcing variety, belonging to the group of "Capt. Raikes" and others. It is of dwarf sturdy habit, a most important feature in a Forcing Pelargonium ; the trusses, which are large, are thrown well above the foliage in great profusion, it is semi-double, the upper petals having large black blotches in the centre, with a narrow margin of rich crimson, the lower petals having a smaller blotch, with a broader margin of the same colour as the upper ; this will prove most invaluable for market purposes and for bouquets.

Price 10*s*. 6*d*. *each*.

PHOTINIA SERRULATA VARIEGATA.

A pretty variegated shrubby growing plant, its habit of growth is more branching than the original type ; the leaves are striped and spotted, at first with creamy white, changing when matured to a rich golden yellow, with an uneven margin of the same colour ; will do well in cold house or conservatory ; we expect it will prove hardy in some parts of England.

Price 21*s*. *each*.

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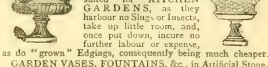
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F. & B. are the sole makers of the well-known Patent "CLIMAX" LAWN MOWER, with Back Delivery, from 25*s.* each; NEW PATENT LAWN-EDGE CUTTER, which entirely supersedes the Shears; PATENT GARDEN PLOUGH, &c.

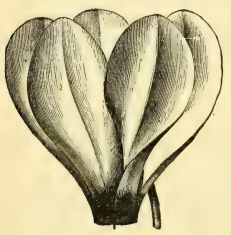
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THE NEW ROSE, QUEEN OF BEDDERS (NOBLE).

Perhaps the Finest Rose for Bedding ever sent out.

COLOUR OF "CHARLES LEFEBVRE."

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that a plant 18 inches high had 84 Buds and expanded Roses upon it on the 6th September, 1876, and flowered continuously from June until November, on the 20th of which month (1876) it was still in bloom.

Good Plants will be sent out, in strict rotation, at 10s. 6d. each,
COMMENCING FIRST WEEK IN MAY.

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Messrs. JAMES VEITCH & SONS

Are now sending out these fine new Zonal Pelargoniums, remarkable for the size of their trusses brilliant colouring, and fine shape of their flowers.

They are the best yet offered for pot culture for Conservatory, and comprise the following Varieties :—

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IRENE, price 7s. 6d. each.
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GLOBOSA MAJOR, price 5s. each.

Price of the above set of seven, one plant of each, 42s.

DISTINGUÉ, a double blush white, 7s. 6d. each. | EDELWEISS, double, nearly pure white, 7s. 6d. each.

Full descriptions of the above are given in J. VEITCH & SONS' CATALOGUE of BEDDING PLANTS, which will be forwarded free on application.

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Strong Plants, 42s. per 100; 25s. per 50; 15s. per 25; 9s. per dozen.

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April, 1877.

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MESSRS. BECKWITH & SON,

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Have much pleasure in offering the above Pelargonium as the best White ever sent out, and having a large Stock can offer it at once.

It has received a First-class Certificate from the Royal Horticultural Society.

Price for Strong Plants, in 5-inch pots, coming into flower, 7s. 6d. and 10s. 6d. each; a few Large Specimens, in 24-size pots, 2 guineas each.

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EPIDENDRUM SCEPTRUM	15 0
CYPRIPEDIUM CAUDATUM	1 11 6
DENDROBIUM PIERARDII	10 6
CYPRIPEDIUM VILLOSUM	15 0
CŒLOGYNE CRISTATA	1 1 0
CATTLEYA MENDELLI	2 2 0
„ WARNERI	1 1 0
BATEMANNIA COLLEYII	10 6
CATTLEYA LEOPOLDII	15 0
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☞ By sending names of those already possessed, different varieties can be given, and purchasers will have a good selection made for them.

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Mr. Wm. Bull's Illustrated CATALOGUE is now in the Press, and will be issued in a few days, and can be had on application, price 1*s*. It contains Names, Descriptions, and Prices of a quantity of New Plants, now being sent out for the first time.

Establishment for New and Rare Plants,
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Sutton's Improved Miniature Aster.

A profuse flowering variety, of dwarf compact habit, remaining in bloom for a considerable period, hence it is invaluable for growing in pots for conservatory or drawing-room decoration. We have this season succeeded in saving six distinct colours, which greatly increases the value of this beautiful Aster for bedding purposes.

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Six varieties, separate, 5s.

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TO OBTAIN THE
Best Garden Lawns and Croquet Grounds
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SUTTON'S LAWN GRASS MIXTURE,

Which forms a close velvety turf in a very short time.

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SATURDAY, APRIL 28, 1877.

SOCIETY OF PAINTERS IN WATER COLOURS.

A FEW hours may be pleasurably and profitably spent in the exhibition-room of this Society at 5, Pall Mall East. The exhibition contains several excellent figure subjects, many landscapes of uncommon truth and beauty, and a few pictures illustrative of flowers and fruit. To our thinking (especially at the water-colour exhibitions), the landscape painters are always in the ascendant. 15, "The First Snow of Autumn on the Sea Fell Range," H. Moore, is an admirable picture. 17, "Loch Marce—a Lifting of the Mists at Sunset," Alfred W. Hunt, is extremely natural and beautiful: the rising mists and the effects of distance are excellent. 20, "Snowdon" (or as the catalogue gives it, "Snowden"), Thomas Danby, appears to us to be far too hard and harsh, and to fail in the good qualities of the last, and in those of 42, "The Unveiling of the Mountain," Alfred P. Newton; in this, the effect of mist being blown off a snow-clad mountain is finely rendered. 51, "On the Way to School," R. Thorne Waite, is a beautifully painted group of happy English rustic children going to school; one child carries a few plants of ripe corn; it is harvest time, the golden corn-fields are seen in the distance, and the field-labourers of autumn are busy at work: strange to say, the artist has introduced Irises in full flower by the brook side, forgetting that these plants belong to the spring and summer, and not to the autumn, moreover the plants painted belong to the gorgeous purple Irises of our gardens, which do not grow wild by English brook sides at any season.

64, "A Golden Swarm," E. K. Johnson, is a large and elaborate picture, containing several excellently painted figures grouped in a garden full of flowers of all sorts, as Roses, Poppies, Campanulas, Scabious, Cloves, Nasturtiums, Sweet-Williams, Larkspurs, Violas, &c., all evidently studied from Nature with great care; by an oversight of the artist, most of the Violas are made to face the spectator. 119, "View from the Orme's Head—Sunset," Robert Barnes, is a finely executed and admirable landscape, painted by the famous figure-artist who has so long delighted us with his excellent paintings of children, and his equally excellent drawings on wood of similar subjects for the *British Workman* and *Band of Hope Review*. A man of true genius succeeds in all he undertakes 126, "A Break in the Clouds," Francis Powell, is remarkable as a painstaking study of sea and sky only. 151, "Spring Flowers," Maria Harrison, is a study of Acacias, Camellias, and Anemones, and much better than previous efforts by this artist; the picture is, however, weak and poor both in drawing and colour. 178, "Yellow Water Lilies and Rushes" (*i. e.*, Bulrushes), by the same artist, is better than the last, but lacking the truth and spirit of Nature. 183, "Fruit," by the same artist, is far more ambitious, and in the same degree less successful than the two former; the drawing is poor throughout, especially in the Vine leaves, and no rosarian could endure to look upon the red Roses on the left of the picture. 182 and 147 are unworthy of a place on the walls; the drawing in both is that of a mere beginner, and

the colour belongs to the Berlin-wool school. 199, "Geraniums and Wallflowers," E. F. Brewtnall, is a richly painted picture of these flowers, grouped together with one or two white Azaleas in a formal vase; the combination of rich red-brown colour in the Wallflowers and the scarlet of the Geraniums is remarkable, and suggestive for future efforts. The principal flower of the scarlet Geranium is shown with four only instead of five petals, the fifth having fallen on to the table at the base of the vase, where it may be seen. 274, "Peaches," Maria Harrison—the fruits are well painted, but the foliage is bad in drawing and colour; the abominable and ubiquitous moth puts in his usual appearance. 209, "The Rock Rose, &c.—Mountain Flowers," by the same artist, is a group of Helianthemum with a spray of some little wild Geranium, moderately well executed. 218, "An Interesting Scroll," F. Alma Tadema, A.R.A., a small classic picture of a young man seated amongst marble columns, and intently reading a scroll; the drawing, perspective, and colour, are perfect, and every portion of the picture is the result of ripe study and correct knowledge; the classic feeling extends to the ivory-inlaid frame. 277, "Hiding," Robert Barnes, is in its way a gem of drawing and colour. 289, "Blackberries, and the Blossoms," Maria Harrison, has the merits and defects of the other pictures by this artist; the flowers of the Musk Mallow are shown in the background, but no leaves or stems are visible.

There is a complete flood of Venetian subjects in this year's Exhibition. For a time the Grand Canal has been deserted, and the slums have been selected for illustration. Possibly these Venetian holes and corners may have great æsthetic merits, but we have similar side alleys in plenty, and equally curious, bordering our English Grand Junction Canal. There are several figure subjects of the first class, especially two by Sir John Gilbert, which have all the solidity of oil, with the brilliant transparency of water. Birket Foster has two conscientiously-painted pictures, less in size than usual (as is now frequent with this artist), being figure subjects set in excellently painted landscape.

As we said before, the transcripts of English landscape bear the palm; the works of this nature are numerous and thoroughly well executed. Whenever we see these mimic running brooks, sunlit meadows and leafy glades, the opening bars of the never-dying "Pastoral Symphony" sound in our ears, and make us long for the unbounded pleasures of a country life.

HAARLEM AND ITS BULB FIELDS.

A VISIT to Haarlem and its bulb fields, together with an inspection of the numerous and spacious warehouses where the bulbs are stored, can alone serve to furnish a reply to the question—Where do all the bulbs come from? Hyacinths and Tulips constitute the chief field crops of the immediate vicinity of Haarlem; Crocuses are grown elsewhere; while Narcissi, Fritillarias, Spiræa japonica, Anemones, and Ranunculi, though grown in considerable, nay, large quantities, are still quite subsidiary to Hyacinths and Tulips. At a short distance from the sea, protected from the severer blasts by low dunes or sand-hills, but still wrapped in an atmosphere laden with saline moisture, the Hyacinths and Tulips are grown in oblong rectangular beds, about 4 feet in width, each containing about 500 bulbs more or less. The soil is almost pure sand, with little or no "heart" in it; indeed, it seems only to serve as a means for diffusing cow manure, which is applied in enormous quantities. In the spring the land is dug, if such a term can be applied to the mere stirring which so light a soil demands; the manure is dug-in in profuse abundance, and Potatos are planted. When these are removed in August, the land is deemed fit for the planting of the Hyacinth bulbs. In the German agricultural colleges the method of water-culture is largely adopted for experimental purposes. Particular plants are grown in water, to which, according to circumstances, definite quantities of particular salts are added. In this manner, by careful observation and experiment, the exact proportion of any particular ingredient that may be requisite as food is ascertained. Now the bulb culture at Haarlem reminds one very much of the method of water-culture just alluded to. The sand in which the bulbs are grown corresponds to the water, the manure to the particular salt added to the water for feeding purposes. How little cohesiveness there is in the soil is shown by the circumstance that the workmen affix to their heavy wooden sabots flat pieces of board wherewith they beat down the loose soil pretty much as the natives of Dungeness on the shores of Romney Marsh employ "backsters" to enable them to walk the more easily on the loose shifting shingle of that locality. Even horses are provided with similar "sand shoes." The flowers are carefully cut ere they wither, in order that the bulbs may not be too much exhausted, and in order to prevent the attacks of mildew, which would endanger the foliage and proper ripening of the bulb. Hence one sees in the canals boatloads of cut Hyacinth spikes, the pathways and roads are strewn with the fragrant blossoms, rubbish heaps are made beautiful to the eye and pleasant to the nose by the mounds of parti-coloured blooms. Children come staggering along bearing huge bunches of the flowers, just as English children do with Cowslips or Primroses, and dainty young ladies trip along with their more select assortment,

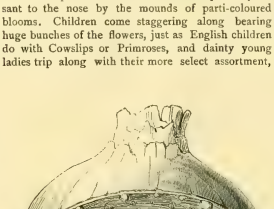


FIG. 77. HYACINTH PREPARED FOR PROPAGATION.

the final destination of which may be seen as one passes the windows of the residents. But the bulk of the "spoil," if we may so call it, is returned to the land. Fancy manuring with Hyacinth flowers: and yet this is what is done, just as English farmers plough in their green crops or their stubble. No doubt this is a profitable practice, but on the spot the visitor is apt to wonder why the perfume makers do not utilise the flowers for the manufacture of perfume as they do about Nice.

The multiplication of Hyacinths has been described in these columns on frequent occasions, so that it may suffice to say, that it depends on the great tendency that the bulbs and bulb-scales have to throw off adventitious buds or offsets. By slicing the base of the bulb or by scooping out the central portions (see fig. 77) a large crop of small bulbs is formed along the injured edges. Particular varieties differ much in their power of producing these offsets, but it may serve to give some idea of the quantities required, and of the time occupied in getting up a stock, when we say that on the average a period of five years is required to get up a stock of a new variety. As may be imagined the land is extremely valuable, so that not an inch of space is wasted, and only those bulbs which can be grown profitably are cultivated. Crocuses, for instance, do not pay for cultivation on such highly rented land.

The warehouses in which the bulbs are stored after lifting, resemble fruit rooms on a large scale. They are solid, well-built substantial structures of two or three storeys. Every care is taken to ensure an equable temperature and freedom from damp. The bulbs are placed on wooden trays, ranged one above another, and every means taken to secure thorough ventilation. Single varieties, and we think with justice, are the most in demand in England, but the French still prefer the double ones. Among the single white varieties, La Grandesse was this season particularly fine; Snowball is another very fine white, and Belle Blanchisseuse is another; while among double whites La Tour d'Auvergne may be mentioned. Schiller is a fine pink variety; Noble par Merite is of a similar colour, but double; Jeannie Deans is also a good rose-pink colour, of dwarf habit. Tubiflora, of similar colour, is remarkable for its large bells; while Romeo is to be admired for its deep rose colour. Macaulay is perhaps the best red. Among blues, King of the Blues deserves special mention, for its colour and nice dwarf habit. Bienenkau (?) is a single blue with a noble spike; General Havelock is a dark blue flower of much merit; Solfaterre, when seen in quantities, is very striking, presenting a mass of pink flowers with yellow tips. Haydn is one of the best lilacs.

Narcissi were a little past their best at the time of our visit, the poeticus section not being yet in bloom. Among the Polyanthus section, Bazelman major (white) and Newton are among the best, while of the bicolor group the form known as Horsfieldii is even an improvement upon Emperor. The variegated Crown Imperial is not very popular in England, but here, seen in quantities, it is remarkably effective.

One bulb farm is very much like another, though they vary in extent, and notably in clean cultivation and general keeping. Our notes were principally taken in the establishments of Messrs. Bijvoet, Krelage, and Polman Moy, to whose kindness we are indebted for much of the information contained in these cursory notes.

BELSFIELD GARDENS, WINDERMERE.

A DETAILED account is given of this fine place, the seat of H. W. Schneider, Esq., by your able correspondent, Mr. Baines, at p. 743, December 12, 1874, and as I had the pleasure a week or two ago of calling upon Mr. Chaplin, Mr. Schneider's efficient gardener, I have thought that a few notes, respecting the very fine collection of specimen and half-specimen plants at Belsfield, would prove interesting. On entering the kitchen garden, where the principal ranges of glasshouses are erected, and which is situated on a nice slope facing south and south-west, we come to the Azalea-house, where there is a good collection. We next come to the hard-wooded plant-house; the centre stage is occupied with a considerable number of huge specimens and also numbers of half specimens in the best of health. The plant-stove is a commodious structure, where there are many plants of great dimensions, comprising Medinilla magnifica, 11 feet high and 9 feet through, with 174 bunches of flowers; Allamandas Hendersoni, Chelsoni, and nobilis, 4 feet high and 6 feet through; two nice plants of Franciscea calycina major, 4 feet high and 4½ feet through; several pairs of Eucharis amazonica, from 3 to 5 feet through; Clerodendron Balfourianum, 4 feet high and 6 feet through; Gardenia florida and G. radicans, by the dozen, from 3 to 4 feet high and 3 to 3½ feet through, well set with flower-buds. In the same house there is a nice healthy stock of small plants for decorative purposes.

The Camellia-house is occupied with a good collection of Camellias, which are planted out, and looking remarkably well—hundreds of flowers, and fine leathery foliage. In a small house of Orchids, which are growing vigorously, are several pans of Dendrobium nobile, 4 feet high and 6 feet through, all of which had flowered well; fine pots of Calanthe Veitchii and C. vestita rubro-oculata, the bulbs of which were very strong; good examples of Odontoglossums, Lycastes, &c.

There is a good propagating house, with a pathway down the centre. On one side is a clean and healthy stock of small plants for decorative purposes, consisting of Crotons, Dracænas, Aralias, Palms, Coleus, &c., in variety. On the opposite side are the propagating cases, all full with the various bedding plants. At one end of the case is a good example of Bertolonia superbissima, 15 inches through.

The fernery reached, we were much struck with a wonderful specimen of Davallia Mooreana, 6 feet high and 11 feet through, a very fine plant. In the same house are large specimens of Cibotium Schiedei, Cyathea Smithii, C. dealbata, Todea superba, Lomaria zamiæfolia, L. gibba, Adiantum farleyense,

A. gracillimum, and numbers of small plants in variety of Adiantums, Pteris, Davallias, Lycopods, &c.

The conservatory, which is a noble structure, was very gay with flowering and fine-foliage plants, conspicuous amongst which are plants of Monochætum ensiferum, 4 feet high and 3½ feet through, covered with bloom—a good old plant we very seldom see grown well; Azalea mollis and A. sinensis (the best variety of the latter), Lily of the Valley, Spiræa japonica, S. palmata, Lilacs, Hyacinths, Tulips, and Narcissus, in quantities, and a complete mass of bloom. The house, on the whole, was a fine sight, and the plants were arranged with good taste. There are numbers of frames, most of them heated with two rows of 4-inch piping, the occupants of which are Cinerarias, Calceolarias, Pelargoniums, Roses, Violets, bedding plants, &c., all in good health. Vines, Pines, and Peaches are grown extensively, and in all the different houses showing fruit most satisfactorily; there are Strawberries in all stages of growth, and promising for a good crop.

It is gratifying to know that Mr. Chaplin has not only worked up a most creditable collection of plants at Belsfield, but has, through the kind permission of Mr. Schneider, erected a commodious house for the young men to live in; the house is pleasantly situated on an elevated site close to Lake Windermere, and is fitted up with the best accommodation, comprising kitchen and back kitchens, mess and sitting-rooms, with nice bedrooms on the second flight, where all is furnished in the most comfortable manner, with wardrobes, drawers, beds, bedding, carpets, &c. I feel sure that nothing has been spared to make everything comfortable for the young men at Belsfield; and I think were head gardeners only to place the matter reasonably before their employers the dilapidated and out-of-the-way places we too often meet with in which young gardeners have to live, would in most cases be replaced and made comfortable homes for them. [A very good suggestion. Eds.] Any one who may feel disposed will find Belsfield well worthy of a visit, and I know will receive, as I did, the utmost kindness from Mr. Chaplin. The gardens throughout speak for themselves as to Mr. Chaplin's good management and general abilities as a gardener.

R. Greenfield, Warwick.

GUERNSEY FRUIT.

By the end of this month most fruit shelves will be empty, and it is time to look forward to the new year's produce. There are, however, a few Apples and Pears which have late-keeping properties deserve notice. With me the best Apples now, and which will keep well into May, are decidedly Baldwin (the American Woodpecker) and the too little grown Pomme d'Api (Lady Apple). A dish of these two Apples intermixed is not to be beaten just now, as the Baldwin has become of a rich tawny brown, and the Pomme d'Api, having had some leaves removed in August, is richly coloured with flames of scarlet. Neither Apple has, of course, the flavour of an earlier fruit, but they are firm and good. Reinette du Canada also keeps till now, but this is unusual here. Duke of Devonshire and Court Pendu-Plat also survive, but neither in good condition. The last—such a favourite of our youth—hardly thrives on the Paradise stock in strong soil, but shrivels. Many fine sorts were gone by the end of March, among these White Nonpareil, Uellner's Golden Reinette, and Lodgemore Nonpareil. Sykehouse Russet is a splendid Apple. The kitchen varieties did not keep well this winter. Rymer was exhausted during March. As to late Pears, I have now but two sorts remaining—both very new, but I doubt if they will ever ripen.

The last Covent Garden produce show did not, I see, bring forward anything remarkable in Apples and Pears—at least, of English growth. Presently native produce will be superseded by that from California and the South of Europe, unless we plant more good sorts, and thin out more of the crop so as to get finer fruit.

The Guernsey produce has done well at the show in Figs and early Potatos, the last receiving a bronze medal. It should be remembered that the island is considerably smaller than Jersey, and has an inferior exposition, being also loftier generally. Both islands, however, have many rivals, and increasingly so, in early growths.

Among the numerous catalogues sent me the best foreign one is certainly that one of Messrs. Simon-Louis (near Metz), which is painstaking, and aspires to be a good fruit manual, very cheap, and worthy of being studied. In it the famous Chaumontel Pear is styled the "Guernsey Chaumontel," an honour which will be disputed. Among the nineteen synonyms attached is that of "Bézi de Chaumontel," which the late M. André Leroy, of Angers, told me he considered to be the original designation. A German friend of mine who has spent several summers in this island took this winter some very good specimens of the Chaumontel Pear from me to Prince Bismarck, whom he knows well, and has just brought me back the message that the great Chancellor considered them the "most delicious Pears he had ever eaten," adding that "he had always heard that Guernsey—not Jersey be it here solemnly remarked—was noted for its Pears." This is a new feature in fruit history, it being generally customary to rank all Channel Island produce as of "Jersey growth." In the midst of impending misery and bloodshed how strangely does this sound, but it also speaks well for the Prince's sense of right, and that he, at least, does not approve of the Channel Islands being classed with France at the last London shows! *T. C. Bréhaut.*

M. CHARLES VAN GEERT'S NURSERY, ANTWERP.

On the outskirts of Antwerp, surrounded, indeed, on all sides by houses, is the nursery of M. Charles Van Geert. It is of considerable extent, flat in surface, alluvial as to soil, and stocked with a choice collection of hardy trees and shrubs, destined for ornamental purposes, and for the fruit garden. A small but choice collection of herbaceous plants is also to be seen here, and in the houses a collection of the most useful and popular greenhouse and window-garden plants. The nursery in question serves as a kind of show-card for the larger establishment belonging to the same proprietor at some little distance from the town. The plants are for the most part grown in oblong rectangular beds, or quarters, nearly allied, or in other cases contrasting varieties being grown side by side for the purposes of comparison and study—a plan as advantageous to the vendor as to the purchaser. Hornbeam hedges and arcades, such as are common in the Low Countries, but which have been for the most part discarded in England, traverse the garden in various directions. For training fruit trees the following very simple method is adopted:—Poles some 9 or 10 feet long, previously creosoted, are plunged into the ground, and made to incline one to another at the top—two, three, or four pairs of them being connected together at the top by a cross-bar. The trunks of the trees are placed along the poles, and the shoots trained, as may be desired, by training-sticks affixed in various directions. The plan is simple and efficacious. The durability of the kyanised poles is shown by the circumstance that some put up in 1866 seem as sound now as when first erected. Flax refuse, under the name *vlas*, is largely used for bottom-heat in the same manner as is the similar material known in the Edinburgh nurseries as "pob."

The special features of the nursery consist in the excellent collections of coniferous shrubs, Hollies, and Boxes, other evergreens being for the most part too tender for the climate. The plant lately sent out as Othera japonica seems to be the same as Ilex japonica, at any rate it is here grafted on the Holly. Ilex camelliæfolia is a particularly handsome form, which does well here, while I. crenata major is interesting from its close resemblance to Rhododendron ferrugineum. Among deciduous shrubs noticeable early in April were bushes of Forsythia suspensa, all ablaze with flower, and the beautiful Cerasus sinensis pendula fl.-roseo, which, grafted on a clean stem of a common Cherry like a standard Rose, makes a most ornamental shrub for the lawn or margin of the shrubbery. The red-leaved Peach is also effective, not only for its blood-red leaves but for its flowers. It was interesting also to notice the change of habit in Cephalotaxus drupacea. The original branches ascend so as to give the shrub a fastigiate form, but as the bush grows older the lowermost branches assume more or less of a horizontal direction, thus forming a cup around the central mass. Without writing a catalogue we cannot enter into further details as to this nursery, but it is one which the connoisseur in hardy plants will do well to visit when the opportunity presents itself.

THE GENUS AGAVÉ.

(*Continued from p. 363.*)

9. *A. (Littæa) xylacantha*, Salmdyck; Jacobi, Mon., pp. 45 and 209; Nachtr., p. 16; Bot. Mag., t. 5660 (fig. 84).—Acaulescent. Leaves not more than twenty in a rosette, ensiform, diverging irregularly and often curving, 1½—3 feet long, 2—3 or even 4 inches broad at the middle, scarcely at all narrowed downwards, narrowed gradually upwards to a brown pungent point 1 inch long, ¼ inch thick in the centre, a slightly glaucous dead green, not vittate on the face, marked with a few darker green lines on the back, furnished with a broad pale-brown horny border and few very large irregular hooked deltoid often geminate teeth, which reach a length of ½—¾ inch and a breadth of ¾—1 inch, with the green of the blade running into them at the base in a semicircle. Scape 5—6 feet long, its bracts subulate, all ascending, the lower ones 6—8 inches long. Spike dense, rather shorter than the scape, its bracts linear subulate, 1—1½ inch long; peduncles and pedicels each ½—¾ inch long. Perianth green, 1½ inch long; ovary oblong-cylindrical, ¾ inch long; tube campanulate, very short; segments lanceolate, ascending, ½—¾ inch long. Filaments inserted at the throat of the tube, 2—3 times the length of the segments; anthers above ¼ inch long.

A native of Mexico, long known, and now widely spread in collections. A full coloured figure will be found in the *Botanical Magazine*. The broad horny border of the leaf, and the broad irregular teeth, distinguish it at a glance from all the other species of the section. A. Vanderdonckii of gardens belongs here. A perbella (fig. 82), hybrida, and xylacantha vittata (fig. 80), are three garden names for a striking dwarf variety with vittate leaves and smaller, more crowded deltoid-cuspidate prickles than in the type. I cannot by the description distinguish from the dwarf forms of this species A. amurensis, Jacobi, Monogr., p. 46; A. Kochii, Jacobi, Monogr., p. 211.

[B] Parviflæ.

10. *A. (Littæa) Poselgerii*, Salmdyck; Jacobi, Monogr., pp. 40 and 205; *A. Lechuguilla*, Torrey, in Bot. Mex. Bound., p. 213; *A. heteracantha*, Engelm. Notes, p. 18, in part.—Trunk 4—6 inches long. Leaves 20—30 in a dense rosette, rigid, ensiform, 1—1½ foot long, 1½—2 inches broad at the middle, narrowed gradually from the base to a brown pungent point 1 inch long, ¼ inch thick in the centre, ½ inch thick at the base, dull green, with a broad pale band down the face, rounded and marked with numerous distinct green lines down the back, the margin furnished with a continuous straight moderately broad edge, the teeth moderately close, lanceolate, uncinate, 2—3 lines long. Scape, including the spike, reaching a length of 6—10 feet. Perianth 15—18 lines long. Ovary oblong or oblong-cylindrical; tube very short; segments purplish, ½ inch long. Filaments quite twice as long as the segments; anther ½ inch long. Capsule oblong, 8—12 lines long.

A native of Texas and the North of Mexico, gathered by Karwinski, Wright, and others. My description of the leaves is taken from the plant as grown in the London collections, and of the flowers from Dr. Engelmann's notes and the numerous specimens in the Kew herbarium. There is no published figure, and I am not aware that it has flowered on this side of the Atlantic. Dr. Engelmann unites it with A. heteracantha, but the two plants as grown in the English collections are, I think, distinct. A. Poselgerii is much dwarfer than heteracantha, with not more than half as many leaves, which are narrowed gradually from the base to the point, and few larger more spreading prickles.

11. *A. Kerchovei*, Lemaire; Jacobi, Monogr., p. 213 (fig. 78); *A. Beaucarnei*, Lemaire; Jacobi, Monogr., p. 215.—Acaulescent. Leaves 20—30 in a rosette, stiff, rigid, typically ensiform, 6—12 inches long, 1—2 inches broad above the dilated base, narrowed gradually to a pungent spine 1 inch long, dull green, with a distinct pale central band, ½ inch thick at the centre, ¼ inch thick at the base, rounded on the back without any stripes of dark green, the margin with a continuous moderately broad grey border, the irregular grey lanceolate curved teeth ½—1 inch long. Inflorescence unknown.

Introduced from Mexico about 1863 by Verschaffelt, and named by Lemaire in compliment to the Baron Kerchove von Ousselghem. It is now widely spread in our collections. I saw at least half a dozen different forms at Mr. Peacock's in 1872. The most striking varieties are *inermis*, distributed by Ortgies, dwarf, with spines entirely obsolete; *pectinata*, leaf 1 foot long, 2½ inches broad above the dilated base, without any central band; *macrodonta*, Lemaire, figured in Mr. Saunders'set of photographs, and the same plant

now at Kew, leaves 1½ foot long, 1 inch thick at the base, ½ inch thick in the middle, without any distinct central band and with copious irregular grey lanceolate prickles 3—4 lines long; and *diplacantha*, Lemaire, with very few distant, small, often geminate teeth. Judging from the description, *A. rigidissima*, Jacobi, Nachtrag, ii., p. 66, differs only from Kerchovei by its more minute distant deltoid teeth.

A native of Mexico, introduced recently by Verschaffelt. I have seen it only at Mr. Peacock's. It comes nearest Kerchovei, but the leaves are more numerous, thinner and narrower, and the border is narrower and the teeth smaller. Perhaps it may be, as suggested by Baron Von Ellemeet, a dwarf form of lophanta.

This also is probably a Mexican species, but I do not know its history; and although it is now widely spread in our collections, I do not find any account of it in print. It is marked by its dwarf habit, bright green vittate leaves, of which both the edge and prickles remain brown longer than usual. I take a plant which I examined in Mr. Peacock's collection under the name of Agave Inghamii to be a variety of the same species with broader leaves, 1½—2 inches broad at the middle, 1—1½ inch above the dilated base. Even the typical plant, as will be seen from the figure, has leaves much less ensiform than those of Kerchovei.



FIG. 78.—AGAVE KERCHOVEI.

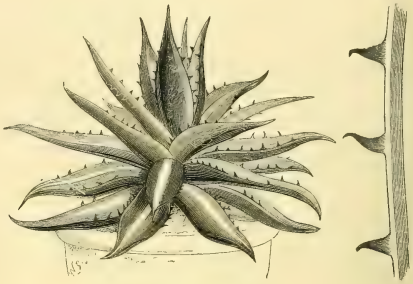


FIG. 79.—AGAVE ROEZLIANA.



FIG. 81.—AGAVE XYLACANTHA.



FIG. 80.—AGAVE XYLACANTHA VITTATA, HORT. = PERBELLA, HORT.



FIG. 82.—AGAVE PERBELLA, HORT.

19. *A. Nissoni*, Hort. Verschaffelt.—Acaulescent. Leaves 30—40 in a rosette, stiff, rigid, typically ensiform, 5—6 inches long, ¾—⅞ inch broad above the dilated base, narrowed gradually to a pungent spine ½ inch long ½ inch thick at the base, ⅛ inch thick in the centre, glaucous green, with a distinct pale central band, margin with a continuous very narrow grey border, furnished with copious linear spines ⅛ inch long. Inflorescence unknown.

13. *A. Roezliana*, Hort. (fig. 79).—Acaulescent. Leaves 20—30 to a rosette, stiff, ensiform, 6—7 inches long, 1—1½ inch broad at the middle, narrowed to a bright reddish brown, pungent spine ½—¾ inch long, bright glossy green, with a distinct pale band down the centre, ⅛ inch thick at the base, ½ inch thick at the middle, broadly rounded on the back without any darker green lines, margined with a continuous moderately broad border, red-brown at first, fading into grey when old, furnished with copious spreading lanceolate little curved teeth 3—4 lines long. Inflorescence unknown.

14. *A. Victoriæ-Reginæ*, T. Moore, in Gard. Chron., n.s., vol. iv., p. 485, with woodcut; Flore des Serres, xxi., p. 169, with woodcut; *A. Consideranti*, Carrière, in Rev. Hort. 1875, p. 429, fig. 68.—Acaulescent.

Leaves 40–50 to a rosette, stiff, rigid, lanceolate, ½ foot long, 18–21 lines broad above the dilated base, narrowed gradually to a rather obtuse point, which is tipped by a black pungent spine ½ inch long, which has usually 1—2 small deltoid cuspidate spines on each side of it, ½ inch thick in the centre, dead green, margined with a continuous white border, like that of filifera, not splitting up into threads, but leaving distinct white vertical bands where it is pressed against the neighbouring leaves. Inflorescence unknown.

A native of Monterey. My notes were taken upon Mr. Peacock's specimen at the exhibition of the Royal Horticultural Society in October, 1875. It is a most striking and curious species, and doubtless should be regarded as forming a distinct group.

Erratum, p. 369.—The leaves of Agave splendens are 2 feet long, not 12 feet, as printed. *J. G. Baker.*

BRITISH GARDENERS.

Alexander Anderson.

Mr. Anderson, the subject of the present illustration, was born in the parish of Redgorton, in Perthshire, on July 24, 1820, soon after which his parents removed to the parish of Kinnoull, in the vicinity of Perth, and in the parish school there he received the greater part of his education. When sixteen years of age he was apprenticed for three years to the Messrs. Dickson & Turnbull, nurserymen, Perth, to learn the profession of a gardener. The nurseries at that time were under the superintendence of Mr. Anderson, the present proprietor, and those who know him will bear out the statement that a more energetic man could not have been found for drilling his pupil into active habits in the acquirement of his profession. After going through the usual initiation in digging, raking, pruning, &c., for a time, he was transferred to the glass department, where the propagating of choice and ornamental plants was extensively carried on. Here he began to learn the names of plants, the remembering of which proved to be somewhat difficult at first, but he found that by writing them over once or twice they were impressed on the memory with little trouble, and this practice he has often recommended to young men since. The collections of herbaceous, bulbous, and exotic plants were extensive, and afforded an excellent opportunity of getting familiar with their names and characters, and by drying specimens, and forming a herbarium of alpine and exotic plants, he made fair progress in gaining knowledge. During the summer season he devoted his spare time to making short excursions in search of alpines, collecting, drying, or arranging specimens, as circumstances required, and by the end of his apprenticeship had thus acquired a rather bulky collection. In winter he devoted the time to improving his education, by attending evening school, from which, it is his desire to record, that he gained much advantage, his elementary training being thus kept in practice, and a better appreciation of the value of education made him now the more industrious. In this respect he was happily situated, as the "Fair City" afforded ample opportunities for young men improving themselves.

"During my last year of apprenticeship," he writes, "I was afforded the opportunity of seeing a little of the first part of forestry, by being sent out in charge of some contract planting, which the firm had undertaken, the produce of which are now large trees. My engagement having now been fulfilled, I was sent as a journeyman to Invermay Gardens, then under the care of the veteran Mr. Muirhead, a renowned Pine and Grape grower in those days. Here I found a rich locality for alpine plants, many of which were new to me; but I only remained a short time. I next went to Kinnaird Castle, in Forfarshire, under Mr. Hovell, who, after I had been some time there, promoted me to the charge of the forcing department. I remained here for two years, when I was recommended to Mr. Easson, of Camperdown, Forfarshire; at that date one of the best-managed gardens in the country. Mr. Easson (now factor on the estate) was a most exemplary man and a good gardener. The first Earl of Camperdown used to say of him that 'he did more good than the parish minister.' After being here for some time I was placed in charge of the houses, which were pretty extensive, though Pine growing was being abandoned. I spent over two years here, and profited not a little, as a better managed place I have never seen, taking the allowance for doing so into account.

"I had been engaged for three months before I left to go to Oxenford Castle, Edinburgh, as foreman under the gardener, a man of most indomitable energy and tact, fond of landscape work. His time being fully occupied with the changes and improvements in the park and grounds, the management of the garden and houses consequently devolved a good deal upon me. Sir John Dalrymple had succeeded to the Earldom of Stair shortly before this as eighth Earl, and had set about remodelling the place.

"After seeing a good deal of rough work gone through in road-making, terracing, pulling down and building up, when nearly two years here I was recommended by the late Mr. M'Nab of the Royal Botanic Gardens, Edinburgh, as gardener to Lord Southampton, Whittlebury Lodge, Northamptonshire, where I stayed two years. Having saved a few pounds in money, I took the advice of the late Mr. J. C. Loudon to some extent, and spent £40 in travelling and seeing all the principal gardens in and around London. I never regretted this outlay, and though not on the Continent, as Mr. Loudon advised, I profited considerably by seeing many of the best places in England.



"I was then offered the remodelling of a fine old place in Dorsetshire (Kingston House), once the residence of the famous Mr. Pitt, by Mr. Ferguson, of Aylesbury, who had undertaken the work and the supplying of the plants. I had to come to London before it was quite finished, and did not return; and being asked at this time to become a candidate for my present situation, I did so, and being successful in my application I entered upon my duties in September, 1848.

"I have had the honour to serve three successive Earls of Stair during the time I have been here—over twenty-eight years. They have all been great patrons of horticulture, and I have received every encouragement from them, and most of all from the present Earl, who has authorised me from time to time to renew the whole of the glass structures on the place upon more modern principles than hitherto, and otherwise permitted me to effect improvements in the place when necessary. During my gardening career I have endeavoured to have as few hobbies as possible (we all have some), dividing and devoting my energies as equally to all subjects under my care as circumstances would permit. I never was a keen competitor in the general acceptation of the word, but I have entered the lists occasionally, with what results the records of the Royal Horticultural of London and Royal Caledonian Horticultural Societies will testify. Certificates of merit and money prizes from the former, and medals from the latter, for collections of fruit and vegetables, at various times have been won. My great aim through life has been to make two blades of grass to grow where one grew before, and sometimes I have succeeded."

On the occasion of the fruit show at South Kensington on Nov. 6 and 7, 1861, we find, on reference to the *Proceedings of the Royal Horticultural Society*, i. 707, that Mr. Anderson carried off the first prize for a collection (twenty-two dishes) of Pears, thereby beating all England, though, as the *Scottish Farmer* observes, "Oxenford is by no means a land of Goshen, either as regards soil or climate." To him, "therefore, belongs the greater meed of credit for producing under the circumstances better Pears than those with which they were brought into competition, although grown in some of the very best gardens in England"—to wit, Frogmore and Heckfield. "Mr. Anderson, operating in an ungenial climate, has, like a wise man, consulted reason and science, and hence by these means has overcome the natural disadvantages by which he is beset. Now these means are both simple and rational, consisting of protecting the blossom in spring, and *frequently lifting the trees*, so as to keep their roots near the surface, that they may enjoy the fullest amount of solar heat." Mr. Anderson prefers root-lifting to root-pruning, and considers the lifting to be check enough upon over-luxuriance and late and imperfect ripening. The sorts of Pears exhibited as above, as we learn from Mr. Anderson, were these:—Beurré d'Aremberg, Beurré Diel, Beurré de Capiaumont, Beurré Clairgeau, Buchanan's Spring Beurré, Colmar, Colmar d'Aremberg, Crassane, Doyenné Gris, Duchesse d'Angoulême, Easter Beurré, Flemish Beauty, Glou Morceau, King Edward's, Louise Bonne of Jersey, Maréchal à la Cour, Marie Louise, Napoléon, Poire Neill, Rousse Lench, Suzette de Bavay, Winter Nelis.

Forestry.

Erecting and maintaining cheap, substantial and efficient Fences around plantations is a department of work connected with forest operations which has hitherto in general received little attention. Cheapness of fencing is a primary consideration, if for no other than this reason, tha the money so expended is sunk for such a length of time that, whether with or without interest, it amounts to a very large sum by the time the plantation is ripe either for cutting down or laying open for pasture. Indeed it is frequently found that the principal and interest of the money laid out upon fencing a plantation has amounted to a sum exceeding that of the value of the trees it was erected to protect. I shall not attempt here to enumerate, describe, or specify the different kinds of plantation fences in common use, but assume that a plain, substantial common iron fence upon wooden posts is approved of and adopted. Such fences possess advantages over all others peculiarly their own. They can be erected on the shortest notice, are the cheapest of any other of equal service, are adapted to any clime, soil or situation, and subject to every conceivable modification as a plantation fence. So much for the primary advantages of wire fences, and now for their future and continuous maintenance. This no doubt depends greatly upon the kind and quality of the materials of which they are composed. Iron pillars and standards are considered the most durable framework for a fence, and next to iron mature Larch or old Scots Pine. I removed a fence last year composed partly of malleable iron and partly of Larch, and found many of the iron pillars 1¼ inch square quite eaten through with rust, not only at the surface of the ground, but at other parts. The intermediate standards, also of malleable iron, 1½ by ¾ inch, were completely eaten through, and it was remarkable to

notice also how differently different pillars were affected by corrosion—some being comparatively little worn, while others were nearly extinct. The fence had stood over forty years, and was fully and freely exposed to the influences of the sea, from which it was distant from half a mile to one mile. The Larch posts in the fence were of sound wood, evidently cut in the winter season, and erected with the bark on. They, too, like the iron pillars, differed greatly as to decay, nor were they invariably most decayed at the surface of the ground — some indeed were quite sound there, while the upper parts were completely rotten. The fence, as far as could be ascertained, never in any way received paint or other application for preserving it. To appearance the iron and wire had originally been painted, but the wood was neither charred, tarred, nor in any way treated for preservation, nor had the iron or wire, apparently been for at least 30 years.

A frequent enquiry is, What can be done to wooden posts in order to make them last longest? The answer I am prepared to give is, Do nothing to them at all, at least if the wood is well matured and hard grown. Creosoting wood, as in preparing railway sleepers, either by placing the posts in tanks or barrels, and allowing them three or four weeks to absorb the liquid, is unquestionably of great advantage to sappy, young and immature wood of any kind, and when time and opportunity is at command it should be adopted on the ground of economy; for young Scotch Fir posts, Spruce and young Larch, &c., will endure at least three times longer by creosoting than otherwise. By placing the posts vertically in the liquid, it enters the vessels of the wood by absorption, while by hydraulic pressure it is forced into them as is done in preparing railway sleepers, pile wood, and large scantlings. Opinions are very conflicting regarding the effects of peeling or shaving off the bark of posts, and this is not to be wondered at, when so many and different influences are operating upon the wood. The question also of charring posts is one of no small importance, and ought to be settled for the guidance of those of limited experience, and small means and opportunities of arriving at a conclusion. To my mind it does no good, and therefore must do injury, for by the process a certain portion of woody tissue is lost without any equivalent advantage being gained. After a wire fence is erected, and the wood is dry, the whole fence should be gone over with a coating of tar. The wood, except what is covered with its own natural bark (the best of all protections against decay), should be dressed with Archangel tar in a hot state, unless in the heat of summer, when it is liquid enough without heating. It should be heated only, and not boiled, as in the latter state it encrusts too much, and falls off in scales. The wire, staples, and all iron-work should receive a coating of prepared coal-tar, which costs about 6d. per gallon. The latter operation should be frequently repeated, say every third or fourth year, according to distance from the sea, exposure, and quality of wire, &c. Though coal-tar is frequently applied to woodwork of various kinds (and I participate in its application), it does no good by way of preserving timber or wood of any kind. It darkens the wood and makes it all of one hue, but beyond this its good effects are imaginary.

In erecting wire fences some secure the posts by means of pitting them, and ramming the earth in with a beater; others dispense with the earth taken out, and secure them with stones instead, at least at the surface; others, again, neither use the natural earth taken out of the holes nor stones, but strong clay instead, which they aver preserves the posts longest sound. Some, again, drive the posts with heavy mallets, first making holes with an iron piercer the exact shape of the foot of the post that fills it.

All these, and many more systems and practices of erecting wire fences are adopted, each possessing some modicum of advantage over others. But with these, as with most other things, certain effects are produced having only a very faint and shadowy connection with the assigned cause, and it not unfrequently happens that between certain effects and believed causes no connection whatever exists. This is very evident in regard to charring posts. All know that charcoal itself is all but indestructible, but few take the pains of examining the charred broken post, and observing that it is not the charcoal that has decayed and given way, but the wood underneath the charred surface which the charring helped to crack and open, to the injurious admission of air and water. Having, however, already exceeded my limited space, I must conclude for the present, and take up the subject again. *C. Y. Michie, Cullen House, Cullen, April 23.*

Florists' Flowers.

Sending out Dahlias.—The first day of May is the traditional time for the dealers to send out Dahlias. It is a custom which has prevailed in the trade for years, and though under special circumstances the time for sending out new varieties may be hastened by a few days, yet the first day of May is the usual time for commencing. It requires up to that time to get the plants well hardened off and fit to travel, and nurserymen have cleared away by that time the heaviest pressure of their spring orders. After all, there remains but a little space of time in which to crowd many details—not much more than two months, and during that time the work of propagation is carried on at high pressure. The roots are placed in the propagating-pits early in, and towards the middle of, February. Propagation commences according to the number required of any one variety, some being in greater demand than others. As a rule, cuttings taken through March make the best plants, as they are of the right age not to become stunted with long keeping—a danger which besets some, and they are in good time without forcing. The first cuttings are often too large and sappy, and are thrown aside, unless it happens to be some scarce variety, and then all that can be are struck. The cuttings are first of all put into suitable-sized pots in a light sandy soil, and plunged in a brisk bottom-heat, frequently in dung-heated pits. As soon as the cuttings strike root they are potted singly in thumb-pots, again placed in a bottom-heat to root thoroughly, and then in a frame with a somewhat cooler temperature. Finally, they are placed in cold frames on an ash bottom, kept close for a few days, and then allowed to have air till somewhat hardened off. Towards the end of April it is necessary to get the plants arranged in their sorts for sending out. Advantage is taken of a fine morning to get this done. The plants are taken from the frames, each variety is placed together, and when the process of sorting is complete they are returned to the frames according to the numbers they bear, for it is an invariable rule to keep the varieties under number, beginning with the lowest and going on to the highest. This greatly facilitates the execution of orders. As soon as the plants are arranged they are sprinkled overhead, the lights shut down close, and they soon recover from any flagging caused through exposure.

Mr. Keynes of Salisbury, Mr. Turner of Slough, and other large growers send out thousands of Dahlias during the first three weeks of May. The plants are in thumbs, or very small 60 pots, a stake being placed to each plant and securely tied. They are laid in layers in oblong hampers, and carefully packed with soft moss, and in this manner the plants may be sent to the northernmost parts of Ireland or Scotland without taking harm. As soon as the plants are received they are unpacked, sprinkled, kept close for two or three days to recover the effects of the journey, then repotted, and grown on as fast as possible.

A goodly number of plants is always left on hand after the May and June trade is over. They are generally potted into small or medium 60-pots, and then stood out-of-doors in some out-of-the-way place for the summer. In the autumn, when the foliage has quite died down, they are turned out of the pots, and are sold as pot-roots during the winter. Some varieties there are better blooms from pot-roots than from cuttings struck in spring, and this is one of those matters of observation that falls to the experience of Dahlia cultivators. Sometimes persons are found ridiculing the "jargon of florists," but it really represents a number of useful facts reduced to practice.

An old florist once found it necessary to caution purchasers of new Dahlias against being too covetous, illustrating the lesson he wished to convey from his own experience. He states that on one occasion he cut off the tops of some plants as soon as they were received from the nursery. By this operation he certainly doubled the number of his plants, but at what a loss?—for he goes on to say he so weakened his plants in constitution that they became incapable of producing either early or perfect blooms. They had already been subjected to as great a strain in the way of increase as they could well bear. *R. D.*

—— The award of a First-class Certificate to a Gold-laced Polyanthus is an event so novel at South Kensington that it deserves more than a passing notice. It is not the fault of the Floral Committee that many years have passed since any gold-laced Polyanthus received such honour, as that body has proved itself cheerfully ready to recognise merit in that direction the first time of asking. The fault has rather been found in the fact that seed-stocks of the gold-laced Polyanthus had so far degenerated that flowers worthy of recognition as both new and meritorious were not to be had. Mr. Smith's worthily named Duke of Wellington is probably but the beginning of a new break of a favourite but too long neglected old florists' flower; others will no doubt soon follow in its wake, and the comparative regeneration of the gold-laced Polyanthus may thus become a pleasing reality.

Garden Operations.

PLANT HOUSES.

Greenhouse Hard wooded Plants.—Oranges.—These plants will now be much better for being in a close warm temperature, something similar to that which Camellias like. Large plants that have stood in conservatories through the winter will be benefited if they can be transferred to a vinery now in active work, where fire-heat is regularly used. Such as require more root-room should now have larger pots or tubs. With careful management Oranges may be kept in a healthy condition with simple greenhouse treatment, but when no heat is given them during the season of making their growth they rarely make so many roots as when grown warmer, consequently should not have so much pot-room, and ought to be very carefully watered during the winter. Like all other large-leaved evergreen plants, they cannot bear to have the soil about their roots too dry; but, on the other hand, it never must receive so much water as to become sodden. When Oranges get into a bad condition through loss of root they very soon show it by the sickly condition of the leaves and their premature decay, together with the weaker branches dying off. With plants that are in this state the best thing is, before growth commences, to turn them out of the pots, remove all soil that is sour or all sour or in an unhealthy condition, cutting all decayed roots back to the sound portion, and transfer them to pots or tubs only large enough to admit the reduced ball and a couple of inches of new soil all round. Bottom-heat is absolutely necessary to restore these plants when in the condition described, but in the plant-stove room can seldom be found for them, neither would it be advisable to put them there as the temperature is usually too high for them even in a healthy state, and when out of condition, like all other plants, they cannot bear too much excitement; under any circumstances 60° during the night is sufficient, with a proportionate rise by day. If on the floor of a vinery at work, as already hinted, a body of fermenting material could be placed, and the pots or boxes plunged, it would be the most certain means of restoring them. Epacrises that have flowered in succession through the spring and are now out of bloom, should be cut freely back before growth has commenced—the erect growing kinds especially, if not subjected to this treatment annually, soon get naked and unsightly at the bottom. Successional flowered plants of Acacias and Pimeleas should be similarly treated, and if all can have a place in a little closer atmosphere for a couple of months they will be much benefited. Habrothamnus elegans is a most effective conservatory plant, grown as a standard on stems from 4 to 6 feet high, according to the dimensions of the house it is to occupy. From its ability to make rapid growth it can be got up to a useful size in a very short time. If young healthy plants are now selected, with single straight stems, and kept trained to a stick until they have attained the required height, then stopped as necessary during the summer so as to induce the production of a sufficient number of shoots at the top to form a head, and all that break below rubbed off, giving them plenty of pot-room, they will need nothing more.

Azaleas, though not generally so treated, very well bear cutting back. The natural habit of the plants is such that with a reasonable amount of foresight as to stopping and training in their younger stages, they do not often get naked or leggy at the bottom; but where they have been allowed to get into this condition, they will bear cutting in so far as a reduction to half their size. Further than this it would not be safe to go, for with these, as with most other plants, especially such as are of a hard-wooded nature, there is a considerable loss of root consequent upon heading-back; but cutting-in must only be practised on plants that are in a healthy condition, with plenty of roots, as if deficient of these, and consequently in a weakly state, heading-back would most likely entail their destruction. After being thus cut-in the plants, if possible, should be stood in a house or pit where the atmosphere can be kept a little close and somewhat moist.

Soft-wooded Greenhouse Plants.—Early-sown Cinerarias intended to come into flower by the close of the year will be ready for pricking off into pans. This is much better than allowing the seedlings to stand crowded together in the seed-pan, for if ever these plants become drawn no after-treatment can give them the stout, sturdy appearance, with large healthy leaves at the bottom, which they have when well managed. A little more seed should now be sown to furnish plants to succeed the earliest. A sowing of Primulas ought to be made, and the double varieties should be increased from cuttings, though all the colours make useful decorative plants. The pure whites alone are of much worth for cutting, as the blush-tinged and different shades of red have a dingy appearance in bouquets or vases. Cuttings strike freely in an ordinary warm temperature, and to be successful in the cultivation of double Primulas, so as to get them to a considerable size and increase fast, they should be treated to an intermediate temperature and plenty of light. Where subject to a cool, damp atmosphere through the winter they make little progress. Put them well up to the leaves, leaving no bare stem, by which means they are much less liable to rot off at the collar. Solanums should at once be planted out; cuttings and seedlings after previously being sufficiently hardened, and old plants after being cut clean in, turned out of the pots, and most of the soil shook from the roots; they ought to have a situation fully exposed to the sun, receive water at the roots when the weather is dry, and occasionally a syringing overhead. Plants thus grown through the summer, lifted and potted in the autumn, are very much superior in their foliage to those that are grown in pots altogether, but it is necessary to plant them out early, or the berries do not acquire their golden colour sufficiently soon for autumn use. They will stand a good many degrees of frost. *T. Baines.*

Orchids.—The majority of the plants in the different divisions will now be showing signs of growth and activity; in some cases, however, the latter advances will mainly be devoted to the formation and maturing of the flower-spikes and the blooms, for with such that flower before the period of growth it is always desirable that the treatment given should in some degree at least, and that so far as it can be managed in a mixed collection, be in accordance with the various periods of growth in which the individual plants may at any time happen to be. For instance, the amount of water at the roots, as well also as the atmospheric moisture that is required to perfect the blooms of the greater part of the Dendrobiums, is a much less quantity than the same plants require when growth has started and is pushing on vigorously; and not only do these suggestions apply to this, but also to many other genera. Yet, though it may seem that such a course is the most reasonable, there are a few that, as it were, demand individual treatment to bring them up to a blooming and freely growing condition. D. Cambridgeanum may be cited as one of these, for after the growth is formed and the flowers have appeared, the newly made bulb commences to root, and for the next three months at least it will be necessary to give it copious supplies of water, so that the newly developing roots may thoroughly plump up the new growth, for the strength and vigour of the bulb made this season will in this case, more than in many of the others, indicate pretty certainly the size and healthiness of the one we may look for the following year. The eleland and lovely D. Devonianum will now require careful treatment, for it is very apt to start into growth before the flower-buds are formed along the bulbs, in which case the young break draws, as it were, part of the strength from the flowering bulb, and as a consequence the number of flowers is perceptibly lessened, for, instead of flowering freely a good part of the length of the bulb, the blooms are only developed at very irregular intervals. To obviate this the plants at present should not be subjected to much heat, for if it is kept just quietly moving, and but a small quantity of water given, the flowers come on much more freely and last much longer in freshness and beauty than if bloomed in heat, and then stood or hung in a cool house. Strong bulbs of this will sometimes bring four, five, and even six flowers at a single joint, in which case it is one that is justly admired, and deserving the high encomiums that are passed upon it. Many of the recently imported varieties seem to possess a much stronger constitution than some of the older plants exhibit; and at the same time the colours of the flowers, more particularly the rosy pink tips of the sepals and petals, are much superior to what has hitherto been considered the usual tints of this species. D. Bensonæ, lituiflorum, crystallinum, &c., on blocks or in baskets, will also be showing flower. These may now be dipped in water a few degrees warmer than the temperature of the house, but do not make a practice of keeping them at present continually wet, but see that the previous dipping has well drained away or the young breaks damp off. This remark applies to D. Bensonæ more particularly, for when this is not in active growth the water required is of the smallest quantity. The collection as a whole must now have greater attention in the matter of water. The quantity must be increased at the roots; the atmosphere at the same time, by damping the floors, walls, and syringing between the pots, &c., must also be considerably moistened. See, however, that once a day the houses are permitted to get moderately dry, that the superfluous damp may be got rid of. This should be accomplished by the admission of fresh air, which now may be given at every favourable opportunity, using chiefly the bottom ventilators. Should the day, however, be very hot and clear, a little on the top may also be given. Be careful to run down the blinds at such times, that nothing may be caught by the fierce rays of the sun. *W. Swan, Rathmichael.*

FRUIT HOUSES.

Pines.—After a prolonged continuance of murky and sunless weather such as we have experienced this spring, there will be a tendency in the foliage of plants which are subjected to high degrees of temperature, which will render it liable to injury from powerful sunshine; watchfulness will therefore be necessary whenever it is likely to be potent, the ventilators at the top of the house should be slightly opened early in the morning, in the foliage of condensed moisture betimes, and the materials if required for shading purposes he ready at hand. Amongst the many contrivances in this way, none in our estimation meets the case with so little trouble and expense as a mixture of new milk with enough slacked lime to give it consistency; this should be applied on the outer surface of the glass with a brush when it is dry, and for a considerable time it will serve to accomplish the object desired without excluding too much light from the plants. Shading Fine plants, existing those without roots, is still a questionable matter with many; we, however, practise it annually in the case of houses with large squares of glass which contain plants in near proximity to it, and with beneficial effects. We elect to have the sturdy growing section of plants, such as Queens, Smooth Cayennes, &c., nearest than to feed from the glass when they are fruiting, and slightly less when in course of preparation for doing so, taking the measurement in question from the top of the pots; the erect-growers require proportionately more, which is usually supplied by giving these sets the back or middle place, as the state of the structure may require. Let the ordinary daily requirements as regards treatment be scrupulously performed; keep the temperatures well up, as before indicated; and let the maximum point be the rule, with the aid of solar influences. *G. T. Miles, Wycombe Abbey.*

Vines.—Examine the inside borders in early houses where the Grapes are taking their last swelling, and, if necessary, give sufficient water to keep the soil in a healthy growing state until after the stoning is over. If form this operation early in the day, and add a little fresh mulching to keep the moisture in the borders. Keep up a constant circulation of warm air, but avoid draughts. Allow the temperature to rise to 85° with sun-heat, gradually reduce it in the afternoon, and if perfection in colouring and finish is the object, let the house range low at night. Watch for red-spider, and sponge with clean or weak tobacco-water if sulphur is objected to, as White Frontignan and some other delicate kinds are sometimes injured by its use on the pipes. If the outside mulching has become cold a portion of the inside may be removed, leaving sufficient to protect the surface-roots from injury and to prevent the borders from becoming dry. The usual attention to stopping, tying, and removal of surplus bunches in succession-houses must not be neglected for a single day, as every bunch which is not wanted increases the labour on the Vines, and robs those intended to ripen. Muscats, in many places now in bloom, will require a high range of temperature by day to insure a good set. Allow it to fall to 70° by night, with a little air. Go over the bunches with a camel-hair pencil when the sun is shining, and keep the points turned up to the light. Take advantage of every ray of sunshine in the management of late houses by giving air early in the day, with fire-heat, and close about 3 P.M., according to the state of the weather, with plenty of moisture. Late Grapes may be shut off until the house falls to within 5° of the night temperature, which should not exceed 60°. Examine inside borders, and water freely with tepid liquid manure; if well-drained they cannot receive too much when the Vines are in active growth. Newly planted Vines should be kept close and moist until they show signs of having taken to the soil, when they may be encouraged to make short-jointed wood by judicious ventilation and full exposure to light. *W. Coleman, Eastnor Castle.*

Cucumbers.—The past mild winter having been unusually favourable to the continuous growth of Cucumbers, old plants which have been in bearing since November will now begin to present an untidy appearance, and if they have been heavily cropped the chances are that they will not be free from red-spider. Where this is the case, and the house is divided into compartments, this section should be cleared of its occupants, all soil and plunging material removed, the glass, woodwork, and walls thoroughly cleansed, and new hills may be formed for the reception of vigorous young plants, which will come into bearing in a very short time after this date, and give less trouble with more satisfactory results. Let the hills for summer work be placed as far as may be convenient from the pipes which supply top-heat. Use loam somewhat heavier than that recommended for winter, and secure bottom-heat from fermenting materials in preference to that which is given off by hot-water. If old plants must be retained, crop lightly, give more water at the roots—tepid liquid manure answers best, top-dress with good loam, and syringe copiously. If shading is resorted to, the material should be of the lightest texture, and I look upon this as being more necessary to the protection of fruit than foliage. Plants in pits and frames will now be coming into bearing; dress over as often as the state of the weather permits, and keep wood and foliage thin and clear of the glass. Use glasses for keeping the fruit clean and straight. Ventilate freely early in the day, and close about 3 P.M. with plenty of moisture. If after renovation of the linings steam is likely to be troublesome, a little air must be left on at night. *W. Coleman, Eastnor Castle.*

KITCHEN GARDEN.

The ground hitherto occupied by the various winter greens and Broccoli will now be ready for turning up in preparation for future crops, and on such plots as require deep trenching the stems may be laid in the bottom of the trench and a dressing of fresh soil spread over them to hasten decay and check the increase of slugs; if manure is required it should be spread over the surface and forked in after the trenching is finished. Plots which were trenched last year will not require it this, and in that case the old stems should be wheeled to the rubbish yard, the manure required be spread over the surface and deeply fooked in with long-tined three-pronged spuds; and previous to getting in fresh crops a good dressing of quick-lime over the whole surface thus disturbed, will be of great advantage, especially if the soil be at all wet.

Considerable attention will be required in keeping up successional sowings of the various seeds required for salading purposes. As before recommended, the various sorts of summer Lettuces, both Cos and Cabbage varieties, may with great advantage be sown in drills and thinned out to the requisite distance, and if this is done at short intervals there will be no need for transplanting; at the same time where a large supply is required it is scarcely possible to avoid transplanting, in the case of the Cos varieties, as ground becomes vacant, these however will require more copious supplies of water than those left undisturbed. Within the next ten days it will be safe to get in the main crops of Scarlet Runners and Dwarf French Beans; deeply trenched and highly manured ground will realise an abundant and succulent produce. The Scarlet Runners will require a good space between the rows, or what is better, single rows with spaces between sufficient to occupy five or six rows of Walcheren Cauliflower or Dean's Snowball Cauliflower, both of which would leave the ground vacant about the same time as the Runners, and the shade afforded by the tall Beans would be of great advantage to the well-doing of the Cauliflowers. The principal sowing of Red Beet should now be got in at once: a light and deeply trenched soil, well manured the previous year, is best for this crop; and as a straight and fleshy root is a great desideratum, if it is necessary to manure the ground for the crop, it should be done late in autumn or early in winter, and no opportunity omitted to knock it about, so as to get the soil and manure homogenous, for if the manure is turned on in lumps the roots will surely send out forks in search of it, and the roots are liable to be broken off when preparing for cooking, the Beet when placed on the table will be found to have lost a great portion of its colour. Successional sowings of Peas and Windsor Beans must be kept up, and as the present sowings of Peas will be coming to maturity during the hottest parts of the year, the present and all succeeding sowings should have a little extra attention by way of keeping the roots cool; an excellent way is to take out a trench and fill it with good manure on which to sow the seed, but if this cannot be done recourse must be had to a thick covering of manure on each side of the rows and copious supplies of water. The main sowings of Celery will now be ready for pricking out: see that the plants are properly supplied with water and shaded for a few days, as the great object is to avoid checking a free growth. All the sorts of Broccoli for autumn and winter months should now have especial attention, and, as it is probable that the spaces intended for them are yet occupied, the plants should be at once pricked out on a sheltered border and shaded. Brussels Sprouts will also come under the same rule, but the earliest crop of these should be permanently planted out in rich soil as soon as the plants are large enough. *John Cox, Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, APRIL 28, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, May 2 { Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. Opening of Messrs. G. Jackman & Sons' Exhibition of Clematis at Regent's Park. Sale of Orchids, at Stevens' Rooms

THURSDAY, May 3 { Linnean Society: Meeting, at 8 P.M.

FRIDAY, May 4 { Sale of Orchids, at Stevens' Rooms. Sale of Scientific Instruments at Stevens' Rooms.

AN example has been set at the rising city of PETERBOROUGH, in the arrangements for a PUBLIC PARK, that may be advisedly imitated by many other towns. In some instances we fear this example comes too late, but there are as yet many towns with an increasing population that have open plots of lands within easy distance, which have not been cut up into irregular patchwork by little independent land-jobbers and speculative builders. It is these towns, which have escaped this petty building mania that has too often resulted in making suburbs hideous, that we would invite to consider what has been done at Peterborough. With a view to convey to our readers the importance of this question, we have given a reduced illustration on p. 533. This plan of the park and land towards and around it, which is systematically laid out for building upon, almost speaks for itself. But there are a few details which are full of interest.

Peterborough has sprung into a town of importance simply because it is the junction of four leading railway systems, viz., the Great Northern, the Great Eastern, the London and North-Western, and the Midland. Stamford ought to have been in this enviable position, but through the prejudice and nearsightedness of some landowners the Great Northern Railway was prevented from running parallel with the great north turnpike road. Stamford, therefore, has stood still while Peterborough has increased greatly in manufacturing and commercial importance, upon which naturally follows a greatly increased and increasing population. The Great Northern Railway Company's repairing works are a mile or so north of the town, where a suburban village, which oddly enough has been named "New England," has been built; while Messrs. BARFORD & PERKIN'S works for steam-ploughs, steel mills, water-ballast rollers, and other machinery and implements, have greatly increased of late years, and added to the business and prosperity of the town. We mention these points because the projectors of the admirable arrangements which we have illustrated have reserved plots for other factories; and negotiations, which have been so far successful, are going on with a view to establish branches of factories which are now flourishing at Nottingham, Derby, and other midland towns. It is thus shown, we may add, that a rare combination of refined taste and business foresight has guided the few enterprising promoters of this land project, who in less than two years have transformed a farm and a few straggling plots of land into one of the best laid out suburban estates that we know of in connection with any town.

The estate altogether consists of about 146 acres. The land was mainly bought of the Ecclesiastical Commissioners, who, we are informed, have acted very meritoriously in disposing of land at fair prices when it was represented to them that to do so would promote the prosperity of the city. This estate may be described as in the form of a Jew's-harp, and, as will be seen, it has something of the form of that instrument—the two roads which form the handle of the figure running conveniently down to the centre of the town, that is, to the top of The Causeway, as the wide street in the centre of the city is termed.

The details of the transformation of this estate are something marvellous, considering that it was originally a speculation by four men of business, and that they have taken less than two years, as we have intimated, to carry them out. The outlines would of course be the first object with men who set themselves to work so systematically. There are two miles of main road on the two sides and around the head of the estate. This road is uniformly 50 feet wide, and it is planted on both sides with Plane, Lime, and other trees, 33 feet apart. The proprietors have had one sale—the darker shaded plots of our illustration being the result—a part of the conditions of that sale being, the vendors hold themselves responsible for 5 miles of drainage under the roads and other places, and for 10 miles of fencing in front of and between the plots. There are 500 plots laid out, of various sizes to suit the taste and means of purchasers. Conditions are at the same time very properly laid down for purchasers to abide by. In some instances, when the plots are short and suitable for small houses, the gardens in front are to be 12 feet in depth. This arrangement, with the 50 feet roadway, will give an open space of nearly 21 yards between the fronts of these houses. At other parts a frontage of 30 feet must be left, and at other places there must be a reserve of 50 feet, so that there will be front gardens varying from 12 feet to 50 feet for planting with shrubs and making into flower beds, while the width between the lines of houses will range from upwards of 20 yards to nearly 35 yards. These conditions refer to the roads of the narrower part of the estate near the town. The restrictions in regard to the style and value of the houses in the semicircle at the head of the estate, and beside the roads looking over the park, are more in harmony with the large grounds which are set out in the plans.

The park, as will be observed, is in the form of a horse-shoe, and conveniently situated in the centre of the estate. It is 22 acres in extent, and the way in which it has been laid out is most convenient and tasteful. It is divided into four quarters by promenades, which run at right angles from a raised mound in the centre. The raised mound is about 8 feet high and 150 feet in diameter. A pagoda will be placed in the centre for shelter at all times, and for the use of a band on gala days; this is approached by four sets of stone steps. The promenades are 25 feet wide, and ornamental trees are planted on each side. The fringe of the park is formed of raised beds and serpentine walks, the background of the beds being planted with choice shrubs and permanent flowering plants, while nooks and fringes are left for Pelargoniums and other summer bedding-plants. The north-east and south-east quarters are left in turf for such games as football, bowls, and cricket matches. The north-west quarter is reserved for ornamentation by choice shrubs and plants, while the south-west quarter is being supplied with a small lake and a sunken pool and fountain, bordered with rock-beds, for the growth of aquatic and other suitable plants. Any one who has seen the Lower Grounds at Aston, near Birmingham, may anticipate what a charming spot is here designed by the proprietors.

This park, however, has been formally offered to the Corporation of the City, and as the terms are very easy, and certainly easier now than they ever will be again, the authorities, we should think, will not let the opportunity slip out of their hands. One part of the terms is singularly fortunate. A few years ago the widow of a successful tradesman of the city made a present of 4 acres of valuable land to the Corporation on condition that it should be preserved as a recreation ground in memory of her husband. This recreation ground (A) has, however, never been properly appreciated: the Corporation have not ornamented it in any way, and it is left as a bit of rough pasture for boys and girls to romp on as the fit takes them. The proprietors of the estate, however, have offered to make an exchange of a part of their park for these 4 acres of recreation ground. As this enclosure is nearer the city, and, therefore, more valuable for a factory or other business premises, they have offered 3 acres of the park in its present state for 1 acre of the recreation ground. This will cover 12 acres of the park, and, therefore, leave only 10 acres to be purchased with money by the Corporation. Fortunately the benevolent lady who presented the recreation ground is still living, and has kindly consented to the exchange being made, expressing her pleasure at the same time that her gift is likely to aid in leading to something more worthy of the town. On these grounds we hope, with Mrs. STANLEY—the name of the lady referred to—that the Corporation will meet the liberal offer made by the present proprietors of the park, and secure for ever an open space that will be a worthy imitation of the noblest acts of our own time, and a perpetual example for posterity to emulate.

We may add that in the absence of Government exercising any paternal control over the arrangement of building lands adjacent to rising towns, men of business there, either as enterprising private men or in their corporate capacity, may advisedly pay a visit to Peterborough, and see for themselves how great and good a work may be done, both for the present generation and for posterity, by a few neighbours taking a matter of this kind in hand and setting to work with energy, judgment, and good fellowship. The proprietary, we are informed, has recently been converted into a company of six shareholders. Another sale of plots has, we believe, taken place this week, but we have not heard the result. We are informed, however, that the original shares would readily sell at a premium of from 25 to 30 per cent. While, too, the main chance has been well looked after in this enterprise—as it always should be if men would have the power of doing good—the moral interest of the people has not been overlooked, for sites have been set apart for churches, schools, clubs, and other modern institutions; indeed, nothing of importance appears to have been overlooked. This is why we say this estate is worth visiting, and the action of its proprietors worth imitating.

—— THE AMSTERDAM BOTANIC GARDEN is by no means worthy of so large and wealthy a city, and forms an unpleasant contrast with the neighbouring zoological garden. The outdoor department is specially meagre, partly, indeed, from want of space. The most remarkable tree in it is a Taxodium distichum, with the habit of an English Oak rather than of a Conifer. Its clean unbranched bole can barely be spanned by two men with outstretched arms, and the whole aspect is so different from ordinary specimens of this species that it is at first difficult to persuade one's-self of its identity, particularly when devoid of leaves. A shrub marked Ribes grossularioides, neither leaves nor flowers of which were expanded at the time of our visit, is also remarkable for its habit, the upper branches spreading horizontally or slightly bending downwards at the tips, forming a flat-topped shrub of peculiar appearance. The glass-houses are numerous, mostly lofty, narrow and ill-suited for plant growing. Most of them, moreover, are double-glazed, and, in some cases, the outer covering is removed during the summer months. Fine specimen Palms, Pandanads, Cycads, and Tree Ferns, constitute the chief features of the collection, but some of them are suffering from the restricted space in which they are placed. We may briefly enumerate

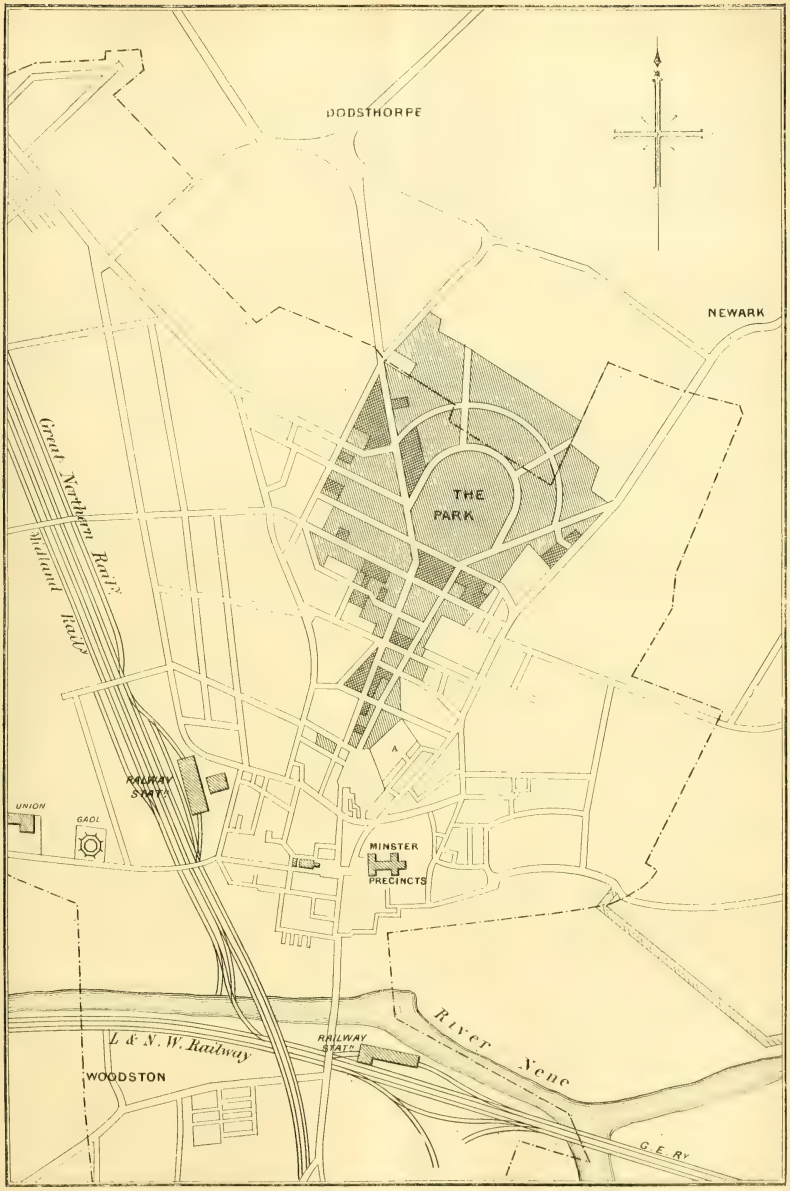


Fig. 84.—Plan of the Land Company's Estate, Peterborough.

the following species as being well represented :—Palms—Phœnix spinosa, Calamus gracillimus, Sabal umbraculifera, very fine ; Astrocaryum Ayrie?, Caryota Cummingii, Areca rubra, &c. Cycads—Ceratozamia mexicana, female plant, in fruit ; Encephalartos Altensteinii, E. Lehmanni, E. longifolius, a noble specimen, with a trunk 16—17 feet high, and as thick as one's body ; Cycas circinalis, dividing at the summit into three branches ; C. Rumphii, of which the top has been cut off, but from which new offshoots are in the course of formation ; a very handsome specimen of Cycas glauca, and Zamia Miqueliana. Among Ferns we may cite Alsophila australis, Angiopteris Willinckii, and various species of Cibotium and Cyathea. A lofty specimen of Strelitzia augusta also deserves notice, as well as a bush of Cestrum aurantiacum loaded with white pyriform berries. In one of the greenhouses are fine specimens of Protea cynaroides, Banksia serrata, Knightia excelsa, and other Proteads, now rarely seen in this country. The Victoria-house serves in wintertime as a store-house for Heaths and other plants which are turned out in summer. The collections as a whole make one think that the Amsterdam folk by no means appreciate the richness of their possessions, or understand the requirements of students.

—— The decoration of wild banks, wilderness walks, and the like, if judiciously done, is one of the most satisfactory of garden procedures. We have in view just now a stretch of undercliff covered in places with a thicket of common wild CLEMATIS. Why not introduce here and there among it plants of Clematis Jackmanni, or other of the gorgeous varieties of this genus? In the undercliff at Folkestone, as also in the Isle of Wight by Ventnor, and many similar localities, there would, with a little care at first, be ample means of establishing these plants in quantities sufficient to provide for a large amount of depredation by small boys, and yet leave a large surplus for those whose stiffened limbs would only permit them to admire at a little distance. At Folkestone just now plantations of black Austrian Pine are being made along the slopes of the sandstone cliff, and temporarily fenced off, so that it would be easy to introduce the Clematis likewise.

—— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, April 30, when the adjourned discussion on the paper read by Mr. J. SHAW at the last meeting, on "The Rivers Pollution Prevention Act, 1876," will be resumed. The chair to be taken at 8 o'clock.

—— TILLANDSIA USNEOIDES, a wonderfully curious form of Bromeliaceæ, is flowering in the stove at Kew. It is a rootless epiphyte, forming a tangled mass of wavy, slender stems and narrow leaves, all over silvery, with minute scales, bearing tiny green flowers of delicate perfume. It is a native of the West Indies, Central America, and the South United States, growing in great profusion on the Cypress trees on the Mississippi, and hanging in large beard-like masses it gives the trees a strange, gaunt appearance. In Jamaica it is known as "Old Man's Beard," and is called also American Moss. It is used in America in the preparation of an ointment for hæmorrhage ; the stems are used for stuffing purposes, after removal of the outer parenchyma, by steeping in water. In this condition it is known as vegetable hair, and is said to have been imported to this country. The stems are remarkable from being without spiral vessels. The leaves are so narrow as to be scarcely distinguishable from the stems at a short distance, and are curious from nearly all being terete for a space near the middle, while either channelled or flat above and below that portion. The flowers are produced about two together at the ends of the branches, the petals are narrow, bright green, and translucent, spreading above the tips of the sepals. It has been said that Tillandsias have no roots, but this, though true of the present and perhaps some other species, is not true of all, as an inspection of those in the Orchid-house will testify. The cultivation of this plant is not difficult, provided a healthy growth to commence with. It is nearly always received dead, or nearly so, often from being packed in large damp masses. For cultivation it should be laid thinly on suspended pieces of Tree Fern stems, with the temperature and moisture of a stove. It will live a long time without water, but is easily weakened by struggling to grow in a dry atmosphere. The stems on which it is placed should be treated with water as if to grow an Orchid. Seeds of this plant, gathered from the same importation, have germinated.

—— There is just now in bloom at Mr. KINGHORN's nursery at Richmond some fine GLOXINIAS, both named varieties and seedlings, and among them is a pure white erect-flowering variety, with blossoms of a snowy whiteness and of the finest form. It is named Comtesse de Naidaillac. Lord Derby, with the lobes shaded maroon, and a pure pale cream-coloured throat ; and Duchess of Teck, crimson, with a shaded lilac margin, are also very fine. Among the seedlings raised by Mr. KINGHORN there are some delicately reticulated flowers that have much novelty of character.

—— One of the finest Palms shown at the recent Amsterdam Exhibition was a young plant of PLECTOCOMIA ELONGATA, the stem and under-surface of the leaves of which are covered with white meal, the stem, moreover, bearing regular spiral coils of formidable spines. The large pinnate leaves run out at the points into a long lash-like tendril, beset with hooked prickles.

—— We learn that M. PLANCHON is to edit the *Flore des Serres* of VAN HOUTTE, an announcement which will be received with satisfaction by all those who are interested in the correct determination and nomenclature of the plants they cultivate, while the subscribers in general will be glad to receive something more than mere repetitions of the plates of the *Botanical Magazine*.

—— We have received from Mr. JOHN GRAY a fine bloom of SOLANDRA GRANDIFLORA, cut from a specimen flowering at Lord BROWNLOW's, Ashridge Park. The bloom, which is of an orange-yellow colour, and much resembling a Brugmansia in form, measured nearly a foot in length. The foliage is very handsome, and we agree with Mr. GRAY that such a beautiful subject should be more often seen in collections.

—— Mr. J. MASTERSON, late foreman at Hatfield under Mr. BENNETT and Mr. THOMSON, has been appointed to succeed Mr. W. GARDINER in the management of Sir G. R. PHILLIPS' garden at Weston House, Shipston-on-Stour. Mr. GARDINER has been at Weston House forty-four years.

—— The last number of REGEL'S *Gartenflora* contains some particulars of the CLIMATE OF different parts of RUSSIA and its effects on vegetation. The writer also gives some statistics of the quantity of fuel consumed in the botanic gardens of St. Petersburg during the first half of last December. While we were busily engaged keeping the water out, our friends in St. Petersburg were combating the fierce cold. From December 1 to 15 the temperature for a part of the time there was from 63° to 75° of frost, and during the remainder of the period from 40° to 63° of frost. The average quantity of fuel used daily in the botanic gardens was 150 centners of coke and 13 cords (7 feet square by 2½ long) of solid Birch wood, and 2 cords (7 feet every way) of Pine wood ! We do not know the extent of the glass in the Petersburg gardens, but the expense of preserving the collections through the winter must be enormous !

—— We learn from the *Wiener Gartenfreund* that a movement is being made in Austria to obtain an Act for the PROTECTION OF BIRDS, for which committees are forming in all parts of the empire.

—— For the next two or three weeks the FRUIT ORCHARDS will be decked in all their beauty, and persons in search of joys yet untasted may well give the country a few visits whilst the trees are robed in their floral coverings. If the keen cold east winds of last week present the total of weather severity to be experienced during the customary and invariably critical period of Blackthorn winter we may look upon the abundant Plum blossom as safe to produce a good crop. Last year, although an immense bloom was seen, no fruit followed, and, although the deficiency was generally attributed to the severe frosts and ungenial weather that prevailed during the blooming period, there can be little doubt that the heavy crops of the preceding year affected the fertility of the blossom. The Pear trees are remarkably full of bloom, many being literally masses of white, and if only a tithe should set, there will be an abundant crop. The Apple trees also are full of promise. Some will be a perfect garland of flower ; the Manx Codlins especially will soon be singularly beautiful. The rich rosy tints of the Apple blossom renders that the most ornamental of all hardy fruits, and, therefore, the first week in May will find the orchard districts peculiarly attractive. Cherries, as with other standard fruits, are full of all the promise that masses of flower blossoms can give. Gooseberries constitute one of the most valuable of bush fruits, and present appearances indicate a very plentiful crop. With nearly all our hardy fruits it is entirely a question of weather, and remembering the comparative rest enjoyed by the trees last year, there is good reason to hope for an abundant crop of all kinds.

—— A "cute American suggests, as an efficacious mode to discover the DIFFERENCE BETWEEN A MUSHROOM AND A TOADSTOOL "to eat it." If you live it's a Mushroom, if you die it's a toadstool. This method may possess the merit of originality, but it will not bear the test of experience, inasmuch as if it is a Mushroom you are no wiser in future difficulties, and if it is a toadstool the tragic result renders the knowledge gained of no further use to the experimenter, and certainly the game is scarcely worth the candle. Probably it is wisest in all cases of doubt to give yourself the benefit of the doubt, and abstain from partaking of the tempting fungus.

—— A plant rarely seen now, but which is worthy of being more frequently grown, is CODONANTHE DEVOSIANA, a Gesnerad with small, opposite, ovate, somewhat fleshy leaves, and irregularly funnel-shaped white flowers. The plant is a trailer, sending out adventitious roots, and is well adapted for hanging baskets for conservatories. We saw it lately so employed in the Botanic Garden at Brussels, and were struck with its effectiveness for the purpose mentioned.

FERTILISATION OF PLANTS.*

I PURPOSE devoting this and the remaining contributions to self-fertilisation. Before, however, making out my case, I would wish to guard against being misunderstood ; for my criticisms have, I fear, led readers to imagine I would underrate Mr. Darwin's laborious investigations and their important results. This would be far from my intention. The chief of these results may be briefly summed up thus :—1. Crossing with a distinct stock usually gives enormous advantages, which are continued into subsequent, often many generations. Every element of vigour and prosperity is enhanced. That is clearly established. 2. That more moderate advantages accrue from an intercross with another plant of the same stock, and that the relative advantages of such, over self-fertilisation, gradually disappear in successive generations. 3. The crossing of different flowers on the same plant generally does little or no good, such benefit being mostly (?) in the case of self-sterile plants. 4. Self-fertilisation. This last, Mr. Darwin says, is "injurious," and produces "evil results." Now, it is here where I am compelled to differ from his conclusions, and my previous criticisms have been mainly directed to this point. Allowing for individual exceptions, I maintain that, as a broad general principle, self-fertilisation in the vegetable kingdom is not "injurious" in any ordinary sense of the term. I may be wrong, but that is my conviction, and the present communication will supply my reasons for so thinking.

On p. 26, while recommending his readers to study certain cases in particular, in which "the crossed plants are superior to the self-fertilised in a marked degree," Mr. Darwin adds :—"As instances of self-fertilised plants being equal or superior to the crossed, the experiments on Bartonia, Canna, and the common Pea ought to be first named ; but in the last case, and probably in that of Canna [and he might have added Bartonia, for the plants were unhealthy], the want of superiority in the crossed plants can be explained ;" the explanation being, that as Canna and the Pea have been long cultivated by self-fertilisation, intercrossing did little or no good. But there are other

* *Cross and Self-Fertilisation of Plants.* By C. Darwin. Murray.

instances, such as the case of "Hero," Mimulus, Reseda, Eschscholtzia, &c., to which this cause does not apply, and which were much superior to their intercrossed rivals.

I will now quote three passages of importance. "We should always keep in mind the obvious fact, that the production of seed is the chief end of the act of fertilisation; and that this end can be gained by hermaphrodite plants with incomparably greater certainty by self-fertilisation than by the union of sexual elements belonging to two distinct flowers or plants" (p. 3). In speaking of the superiority of self-fertilised seedlings of Ipomœa to those raised from flowers fertilised by pollen taken from other flowers on the same plant, he says:—"This is a remarkable fact, which seems to indicate that self-fertilisation is in some measure more advantageous than crossing, unless the cross bring with it, as is generally the case, some decided and preponderant advantage" (p. 61).

Lastly, Mr. Darwin observes:—"The most important conclusion to which I have arrived, is that the mere act of crossing by itself does no good. The good depends on the individuals which are crossed differing slightly in constitution" (p. 27).

Considering them in detail, I shall endeavour to show how self-fertilised plants can and do fulfil the conditions here spoken of by Mr. Darwin.

The following are some of the chief facts connected with the self-fertilisation of plants:—

1. The majority of flowering plants are self-fertile, and very few are known to be physiologically self-sterile.

2. Many are morphologically, but not physiologically self-sterile.

3. Both physiologically and morphologically self-sterile plants become self-fertile under changed conditions.

4. Flowers may become self-fertilising (1) by the withering of the corolla; (2) perhaps by its excision; (3) by closing; (4) by remaining closed, never having opened; (5) in the absence of insects; (6) by transportation to a different climate; (7) by reduction of temperature.

5. Highly self-fertile varieties may appear under cultivation.

6. Self-fertilisation may be secured by special constructive adaptations.

7. Inconspicuous and cleistogene flowers are habitually and highly self-fertile.

8. Self-fertility does not decrease, but may increase in successive generations.

9. Though plants may acquire increased constitutional vigour by crossing, self-fertile plants may gain the same by transportation to other climates.

10. Of plants requiring insect agency and of self-fertilised, the latter are best fitted to survive under migration.

11. When free from competition, self-fertile plants are equal and often superior to the intercrossed.

12. There is no waste of energy with self fertilised plants, as occurs in the production of a profusion of pollen by intercrossing and anemophilous plants.

13. Highly self-fertile and long cultivated self-fertilised forms derive little or no benefit from an intercross, and may derive none from a cross with a new stock.

14. Self-fertilised plants are in every way as healthy as the normally intercrossed plants.

15. Plants may be physiologically or else morphologically self-sterile, or both combined; but under certain circumstances many, and probably all such plants acquire or regain the power of self-fertilisation. Mr. Darwin records several cases, as, for example, the Brazilian Eschscholtzias, of which he says, "their self-fertility had evidently increased greatly by being reared for two generations in England." It was similar with Abutilon Darwinii. Some plants of Reseda odorata, as already stated, are self-fertile, while other plants are self-sterile. Verbascum phœniceum fluctuates in the same way; and while V. Thapsus is self-fertile, V. nigrum is self-sterile. Lobelia fulgens was self-sterile in Germany, but Mr. Darwin found it self-fertile. This, like the Brazilian Eschscholtzia, appeared to become self-fertile in consequence of the lower temperature of England; for the latter became again self-sterile in Germany. Orchids may be both morphologically and physiologically self-sterile, while even in some cases the pollen acts as a poison on the stigma of the same flower.

Mr. Darwin regards such self-sterility merely as an "incident," and not due to natural selection to prevent self-fertilisation.

Plants adapted for insect agency may be, and generally are, however, self-fertile. This occurs with many Leguminosæ; Pisum sativum is habitually self-fertilised, so is Phaseolus vulgaris, but P. multiflorus has not yet regained the power, and is still morphologically self-sterile. Again, dichogamous flowers, such as pale varieties of Pelargonium, Primula and Dianthus, may gradually become self-fertilising by maturing their stamens and pistil together.

In speaking of the "immediate cause" of self-sterility Mr. Darwin attributes it to the environing "conditions." These, I think, should be called the "proximate" causes, the immediate or ultimate cause being, as I conceive, the preponderating influence of the corolla and nectariferous whorls, which thus by undue growth destroy the equilibrium between the essential organs. Whatever, therefore, may be the cause at work which checks the growth, or development, or energy, in whatever way shown, by the corolla, glands, and nectaries, and perhaps in part the stamens, that same energy is now diverted into the pistil, which thus matures simultaneously with the stamens, and, therefore, earlier than it would otherwise have done. What led me to draw this conclusion was an examination of the order of "emergence," as well as the subsequent growth of the floral organs of a large number of plants; such order being frequently as follows with flowers having conspicuous corollas:—sepals, stamens (if in two whorls, that opposite the sepals arises first, then that opposite the petals), pistil, and lastly the corolla. The latter grows subsequently very rapidly, and then, of course, exceeds the other parts very greatly. On the other hand, with inconspicuous self-fertilising flowers, the pistil often emerges simultaneously with or before the stamens. The former condition I take to be the immediate cause of proterandry, and the latter that of self-fertility; or if the pistil become too much stimulated the equilibrium is again destroyed, and proterogyny is the result. But if energy be diverted from the corolla, as seen in the pale Pelargoniums, then it passes into the next whorl which appears in the order of succession, *i.e.*, the pistil; this latter now regaining its power of growth arrives at maturity simultaneously with the stamens, and self-fertilisation is the result.

Under heading No. 4 I have given six causes, and possibly there may be others which may thus bring about self-fertilisation.

Mr. Darwin alludes to withering of corollas of Viola tricolor, and I can corroborate it, for I found flower-buds of Tradescantia crecta in September last with the corollas shrivelled and matted round the ovary, thus keeping the style bent down upon it and the stigma in contact with the anthers; a number of capsules ripened, and the seeds contained perfectly formed embryos. Mr. Darwin alludes to Buttercups fertilising themselves by closing at night, and perhaps we may generalise upon that; at all events it is suggestive that flowers which close in diffused sunlight (as Anagallis arvensis, Mesembryanthemum, Daisies, &c.), in the evening, or at night, may do so for this very purpose.

The above observations led me to deduce the expectation that if the corolla were cut out, the proterandrous or otherwise sterile flowers might become self-fertilising; and I was most agreeably surprised to find cases recorded by Mr. Darwin which exactly fulfilled my prediction, though the operation was performed for a different purpose. "Kurr," writes Mr. Darwin, "removed the whole corolla from a considerable number of flowers, and these yielded seeds. Flowers which are self-fertile would naturally produce seeds under these circumstances, but I am greatly surprised that Delphinium Consolida, as well as another species of Delphinium and Viola tricolor, should have produced a fair supply of seeds when thus treated" (note, p. 420). Now, such a result exactly corroborates or proves my deduction, but I hope to test it fully this year, and would be extremely glad if any one would assist me in doing so by thus removing the corollas together with some of the stamens, as well as alone, especially before development, and carefully protecting those flowers thus mutilated from the approach of insects. Of course it need only be done in the case of proterandrous flowers.

Another cause of self-fertilisation is the lowering of the temperature. Allusion has already been made to this in the case of the Brazilian Eschscholtzia, which, though self-sterile in South America, became self-fertile in England. Mr. A. Bennet also called attention to the fact that some of our wild flowers, when they blossom in winter, do not open their buds, and are self-fertilising in consequence, and I can corroborate his observations by many other instances. The *rationale* being, as I believe, that the reduction of temperature checks the growth of the corolla and the secretion of the glands.

Again, certain white and pale coloured varieties are great seeders; and this, again, I suspect, is another cause of the same kind, for whiteness represents loss of vigour. Mr. B. T. Lowne informs me that he found the garden Balsam became white if the soil was deprived of ammonia, but if it be artificially supplied the colour returned—an important fact, to which I would call the attention of horticulturists.

If such be the true explanation of proterandry and self-fertilisation, the question is resolved into one of degrees of compensation, and, so far at least, has nothing to do with "injuriousness" whatever. In fact, it is an absolute loss (and therefore an "injury") to a plant to be self-sterile, for its facility of propagating is therefore largely, if not entirely, checked.

Though I agree with Mr. Darwin that "the inefficiency of a plant's own pollen [physiologically] is in most cases an incidental result [of differentiation], and has not been specially acquired for the sake of preventing self-fertilisation," I cannot agree with him in drawing a different conclusion for morphologically self-sterile plants, for he adds: "On the other hand, there can hardly be a doubt that dichogamy . . . that the hetero-styled condition of certain plants, and that many mechanical structures, have all been acquired so as to check self-fertilisation and to favour cross-fertilisation;" and yet he shows that when plants lose their dichogamy they regain great self-fertilising powers, which he then considers to be an advantage to the plant. Elsewhere, too, Mr. Darwin says "it is difficult to avoid the suspicion that self-fertilisation is in some respects advantageous."

My explanation is that it is simply an unavoidable result of the loss of equilibrium between the pistil and corolline and nectariferous whorls. As long as insects visit a flower they are continually keeping up a sort of irritation at that region; the whole weight of the insect is often thrown upon the corolla. If it be a terminal flower, the insect alights on any petal or petals, and nothing induces the flower to become irregular; but if the flower be axillary, it alights on the anterior side and so (I assume theoretically, until it can be demonstrated or disproved) causes the corolla to be bilateral, by determining a flow of nutriment to that part; though what innate forces may regulate the special peculiarities of structure in different flowers is at present quite incomprehensible.

This constant irritation and the continual drain upon the secretive organs must stimulate them to develope more and more, just as a man's arm increases by work, or the mammæ may be made to secrete for prolonged periods; so that, in my view, it is not that insects have gone to the flowers because they were first conspicuous, but have actually themselves determined their conspicuousness. The process may have been a slow one, only affected in many generations; the result has been that nourishment has been delayed from the pistil, and the flowers have become in the majority of instances dichogamous. On the other hand, in the absence of insects, there is no such increase of energy in the outer whorls at the expense of the gynœcium, so that the balance is restored and self-fertilisation resumed. *George Henslow.*

(*To be continued.*)

Home Correspondence.

The Cucumber Disease and "Salus."—Will Mr. Worthington Smith kindly come to my aid in fighting the Cucumber disease? Starting in an entirely fresh house, everything went merrily as marriage bells until the first Cucumbers began to swell, then the old enemy appeared on Tender and True, though seeds, and, in fact, plants, to make doubly sure, were had from a fresh place. The plants were instantly pulled up and burned. The disease has, however, got hold of other varieties, and we are dressing each fruit, leaf, and speck of skin affected, with Salus, that eats through the leaves, and utterly destroys them in a very short time. The Salus seems to penetrate through them, causes them to bleed a sort of crimson fluid, and then they are gone. If it does not kill the spores it destroys the leaves and the plant. But will it destroy the spores or prevent them

from spreading on to Melons? These and all young Cucumber plants have been dressed all over, every morsel of leaf and stem, with a mixture of equal parts lime, soot, and sulphur. Can Mr. Smith or any one else suggest anything better or more potential, or must this evil be endured through another year? It seems to be in the seeds or the plants, as it is physically impossible to have been left in the house after sulphur fumigations, three coats of paint, hot lime, whitewashings, &c. Neither can it be in the soil, which is entirely fresh. Can certain sorts, such for instance as Tender and True, be more subject to the disease than others? Is it constitutionally tender? It shows no signs of it; in fact, all our Cucumbers were extraordinarily strong and vigorous this year, so that were it possible for vigour to throw off or resist the disease it had a rare chance of doing so. But it is all seemingly to no purpose, and these funguses are to be our masters seemingly, notwithstanding that scientific men know all about them, and can tell us anything excepting the one thing of practical importance—how to kill them, or protect our plants from their ravages. *D. T. Fish.*

Peaches Setting.—I thought all good gardeners had learned that neither the syringe nor a bunch of feathers were now required to set Grapes or Peaches. I find in practice that it very seldom happens that the pollen is not dry enough at some time during the twenty-four hours, and in passing through the houses, a slight tap of the trellis with the hand is all that is required. I send you a few shoots cut from a house, 112 feet in length, not heated, and where the climate is really damp. The great secret is plenty of air and little heat when in bloom for Peaches, and plenty of heat, with air, for Grapes. The Turkish bath system is not to be recommended in either setting or growing fruit for table. The aim of every gardener ought to be to fill his houses with sunbeams and pure air. *G. Dodd, Woodstock Park.* [The shoots received amply bear out Mr. Dodd's statement. EDS.]

The Best Thing at the Late Amsterdam Exhibition (see p. 500).—That quite unique collection of printing connected with the history of Tulips exhibited in two great glass cases belongs to Mr. E. H. Krelage, of Haarlem, who long since prepared a most serious work on the history of bulb-growing in Holland. *H. G. Kchb. f.*

The Fruit Prospects Round Fulham were never more promising than they are at present. The orchards are quite a sight with Plums, and early Pears close upon them (April 10). In 1875 they were in full flower after a severe winter on the 24th, and in 1876 they were in full flower, and Pears about the same stage as at present, on April 6, also after a very severe winter. Last year we had a sharp frost and heavy snow on the 14th, which did great injury to the fruit crop; let us hope we shall escape it this year. The late month of March has considerably retarded the otherwise forward season; we had young trees of Williams' Bon Chrétien on the Quince in flower on the 28th February, and they were very little forwarder on April 1. To all appearance Apple blossom will be late, and so far safe; in 1875 I noted a fine lot of Lord Suffield in full blossom on April 29. *E. W.*

Early Beatrice and Early Louise Peaches.—These Peaches well deserve to be called early. I started the fire in the early house here on January 6, and out of seven trees of different sorts, one being a Nectarine, these two were the last to open their blossoms, indeed Early Beatrice was quite ten days later, yet after fifteen weeks only I am presented with ripe fruit from both, on the 21st of this month —exactly fifteen weeks from the date of setting the house to work, and yet at no time have the trees been pushed, the mean night temperature in mild weather being 65°, and in cold 60°, air being put on by day at about 70° unless the day was very cold. The trees are young, having been planted only two years last autumn. Early Beatrice is carrying a crop of seven dozen fruit, and Early Louise five dozen, all of fair size, and beautifully coloured, especially the first-named; the other sorts in the house will not be ripe for a month yet. *W. Armstrong, The Gardens, Denham Court, Bucks.*

The Orchids at Peterborough House, Fulham.—In Mr. Burnett's time this fine collection was one of the best round London, but on a change of management they got sadly neglected. Mr. Roberts, the present gardener, has had charge of them for a little over two years, and by unceasing attention and skilful management they are beginning to take an honourable position at the meetings of the Royal Horticultural Society. I called the other day, and was delighted to note the general improvement in all departments. The following are a few of the more noteworthy objects. In the greenhouse there are fine plants of Erica Cavendishiana, Azaleas, Camellias, Roses, Lily of the Valley, &c. In the early vinery there is a fine crop, the second house is breaking, and on the shelves there is a promising show of Strawberries, kidney Beans, and about the houses fine lots of Roses and other things. The plant-stoves contain many well done plants, notable amongst which are Thunbergia Harrisii, not generally met with—its large lavender flowers are very showy; Eucharis and Gardenias in quantity. Ferns, and on the roof a very large Stephanotis floribunda. Pines are not grown in quantity, but they are very promising. On one side of this house there is a fine lot of pot Vines in 12-inch pots, with eight good bunches on them; and a nice lot of kidney Beans, for which there is a great demand. Mr. Roberts grows the old Negro. In this house there is a very large Vanilla aromatica, which bears well; the roof is covered with Allamanda Hendersoni. The Orchid-houses proper are a very useful set of double houses, two front and two back, which is the best arrangement for all plant-houses. The following are in perfection at the present time:—Sophronitis grandiflora, Dendrobiums Pierardi, macrophyllum, very fine; chrysotoxum, with sixteen spikes on it, a noble plant—another just opening with seven fine spikes; aggregatum, with nice spikes; Oncidiums sphacelatum, altissimum, and fine plants; nubigenum, with twenty-five flowers; and ampliatum; Phalænopsis grandiflora and Schilleriana; Cattleyas Skinneri, Mendelii, amabilis, and labiata; Lycaste Skinneri, Cypripediums Lowii, longifolium and barbatum. Other fine plants are intermixed with them of Anthuriums, Dracænas, Maranta Veitchii, Todeas, Hymenophyllums, Trichomanes, Hæmanthus, Adiantum farleyense, and a quantity of large economic plants, in which Mr. Terry takes a great interest. The Peach-houses are not over large but useful, and some of the trees are remarkably well set. In one of them there is a fine batch of Azaleas, which did not come to call for the last meeting of the Royal Horticultural Society, not having been all forced together before, Callas, and Solomon's Seal, well done; quantities of bedding stuff, &c. In the Cucumber and Melon houses there is a fine crop of the former and promising plants of the latter, with a fine lot of ripe Keens' Seedling Strawberries on the shelves, Roses, Bouvardias, Spiræas, and bedding-out stuff in quantity. Several useful pits are well filled with a general stock of bedding and forcing things. This fine collection of plants is a great source of enjoyment to Mr. and Mrs. Terry, and a credit to Mr. Roberts, their enterprising gardener. *F.*

The Royal Horticultural Society.—Permit me to add a few words to my former letter, chiefly in reply to a strong partisan of the Royal Horticultural Society, who wrote under the signature of "A Country Fellow" a lengthy letter, perhaps "bad and long" in my own, though I hope not so "unthinking." Your correspondent admits by implication all I advance, insists on some undisputed side issues, appeals to me and others not to be unkind and ungenerous, and boasts of the glorious past of the Society. On this last point, which is one chief contention in favour of "A Country Fellow" tells me I am "unkind, unjust, and untimely." Surely not untimely! Surely when the public is appealed to in *misericordiam*, if not actually in *formâ pauperis*, the public may and should express an opinion on the merits. Kindness seems likely to have nothing to do with the matter, except in the form of courtesy to opponents. Injustice I will confess on reason shown. I speak of the Royal Horticultural Society as indefinite in its purposes, and weak and mistaken in its efforts. "C. F." defends the Society by pleading that it is in extremity, is scorned, is neglected, and explains this as a third-rate poet explains a not dissimilar neglect, by the ungenerous and ill-natured habit of the critics. Why does the Royal Horticultural Society want sympathy and support? One would guess, no doubt unkindly, that it had earned neither. "C. F." renders a point of my obvious ignorance. I was born and bred a gardener, and although during most of my life all my best energies have been given to severe and continuous professional labour, yet I see enough of horticultural people and things to know well how matters lie. As our gardeners' friend, Mr. Wilson, says in his genuine (if not too ingenuous) way, Chiswick is "really useful." Of course it is; no one ever said it was not. Can any human being, however, say that Chiswick moves or trains the horticultural world, or even that the throes of Chiswick in labour are felt beyond its walls? Is Chiswick ever quoted, even as, for instance, the Royal Institution is quoted? I never remember seeing any leading journal or hearing any leading gardener refer to the authority of Chiswick for any single principle there worked out and verified. The great step gardening has now to make is from the individual and empirical to the general and scientific stage. Gardening is now almost wholly a personal accomplishment, and must ever be so until head gardeners cease to regret their lack of early scientific training, and young gardeners complain that no means of such education are offered to them. I urged that the Royal Horticultural Society is bound to lead this movement by establishing, not an otiose and *dilettanti*, but a missionary professoriate; by educating and certifying young gardeners, as is done in Germany; by instituting important public debates, such, say, as those of the Geological Society, which would guide journalistic and public opinion, and so forth. "C. F." says the Royal Horticultural Society is doing all this, and has done it for decades! "C. F.'s" terrible seriousness prevents the possibility of his joking, so it must be my ignorance again, and the Society's stealthy way of doing good. As to Mr. Fish's letter I fear "C. F." will consider that writer at least as ignorant and even more warlike than I am. For Mr. Fish, with, I think, a strained sense of honour, declines to take a guinea membership as an instalment with the open intention of securing a vote also hereafter. Mr. Wilson is too Arcadian for a warrior, and Mr. Fish complains that Mr. Wilson has changed his front. Well, a man may very reasonably be guided by events which he cannot control, and Mr. Wilson half persuades me in his letter that the only means of regenerating the old debenture-ridden Society is to join it as an Irreconcilable *mens agitat molem*. *T. Clifford-Albutt, Leeds, April* 25.

The Altered Day.—So successful was the result of the crude efforts made on the 18th by the Covent Garden growers to produce a grand show at South Kensington, and so gratified were the majority with the result, that many intimated that they would shortly have another fête with improved arrangements, and on a wider and more representative basis. Such proffered assistance as these growers are capable of granting to the Society is well worthy the acceptance of the Council, both for the present and the future; and before the change of day for the shows is definitely entered upon, it will be worth while to inquire whether these Covent Garden exhibitions could be possible on Tuesdays. It must be remembered that Tuesday is a full market day, whilst Wednesday is an off-day, and, therefore, one on which the growers have more leisure; moreover, it is possible for them to get their plants direct from the show on Wednesday evenings to the customary Thursday's market. Of course, it is entirely a matter for them to settle, but their opinion should be asked, I have made inquiry of many regular exhibitors, but fail to find any that appeared to be anxious for the change of day. As far as exhibitors are concerned, there is no reason to suppose that it will benefit them in any way, and, with but negative results in that direction, it shows but little good sense on the part of the Council thus to create a change that may in the present tentative state of the Society be productive of disastrous results. Wednesday has so long been associated with the Society's meetings that a very strong case is required to show that any benefit will follow the change. The only show that will clash with the Society's meetings this summer is the Botanic show on July 4 and 5, as on previous occasions—the last show at South Kensington being a notable example—when the two meetings have been held on the same day, the Royal Horticultural Society has not suffered, it seems absurd to make so great a change for such a small reason. Moreover, when plants in quantity have to be brought a long distance, it is possible that much of the work of preparation will be thrown on to the previous Sunday. It may not be out of place here to suggest, in the event of further exhibitions of Covent Garden produce taking place, that it will be well if, in the case of plants, groups less in size and more representative be invited, and that a larger number of growers be induced to compete; especially should some effort be made to secure collections of the hardy plants, of which so many millions are annually sold in the market. Later on it would be well to provide for the exhibition of vegetables of home growth, such as Peas, Beans, Potatos, and other varieties, in bushels or other bulk; and, finally, in or about September, or at least in the height of the fruit season, an exhibition of home-grown market fruits. No doubt these shows would be largely supported, and would bring in a vast number of growers from outside districts whose names are little known. The Society has received a capital impulse, it will be the height of folly not to seek and encourage its further development. *An Exhibitor.*

The May for Decorative Purposes.—Has "B. T." ever tried the double scarlet, white, or pink May for church or other decoration, lettering, devices, &c., with a pad or on a base of damp moss or cotton-wool? If not, perhaps "B. T." will be so good as to do so before condemning it as unsuitable on account of its fragility. Treated thus it is, on the contrary, at once among the most durable, as it certainly is about the most beautiful material for these purposes. The single is of fair durability treated thus, but the double lasts long and continues many days as fresh as when gathered. Forced Mays, if not over-

pushed, are also far more lasting than those gathered at the natural season. No good fairies would think of fixing May or other flowers on to the dry gallery, altar, and pulpit fronts or other boards, as Holly leaves are impaled for lettering, which appears to be your correspondent's ideal of church decoration, otherwise the flowers could not fade in half an hour. By simply mounting flowers for lettering, as for bouquets or wreath-work, with a modicum of damp material, the double Mays retain their freshness through the longest services—or days either for that matter, as your correspondent will find after a fair trial. *D. T. Fish.*

Running to Waste.—The missing link is now as it were being gathered up. The working man is now able if he will to save something, and there is a safe place where he may put it, in the Post Office Savings Bank. It is not enough to open certain doors, write up certain inscriptions, and trust to a general dissemination of knowledge; there requires to be a living agent coming into contact with the man, and giving him at least equal opportunities for saving as for spending. It is true we are very slow in these matters, but experience has taught us that it is not enough to establish a savings bank, and trust to its magnetic influence to draw people to its doors. Happily the law has recognised this fact, and has provided collectors in many districts in connection with the Post Office Savings Banks, and the results to many have been both striking and gratifying. Such agencies as these do a vast deal towards encouraging habits of prudence and thrift among the working classes. Among a large portion of those who earn wages the possibility of saving seems scarcely to have entered their thoughts. The working man has his various fads one of which he has dealings with, and why not have his banker also? Let him have such a friend, and the publican and the pawnbroker perhaps may feel the change for the worse; but the butcher, the grocer, and the working man will be so much the better. Taken in the aggregate, the earnings of the working classes at the present day are colossal, and it is really grievous to see in many cases how this magnificent revenue is misapplied and wasted. The more freely the money pours in, the more recklessly it is very often flung away. It is in vain to hope that the working classes will be raised to their true dignity while this process goes on. No rate of wages will effect a substantial improvement until the rate of saving goes up to its proper point. It depends chiefly on two words—industry and frugality—that is, waste neither time nor money, but make the best use of both. Without industry and frugality nothing can be done, with them everything. Diligence is the mother of good luck. It often seems as if the mass of working men were unconscious of the value of money. Let the man who spends his wages as fast as he gets them look at the gin palace. He there sees what his money can do. Some of its light and warmth might be in his own dwelling, if he would only learn to put his money in the right place. Let him be told that the State has taken some care of him, and has provided a bank where all he can save will be absolutely safe. Let him have a friendly visitor in the collector, who will invite him in his own room to save money, and show him exactly what he is to do. It is not the interest of employers, and certainly it is not the interest of society at large, that the enormous collective wages of the working classes should run to waste. A saving man is a safe man, and one who by shutting himself in youth generally secures both leisure and ease in old age. We admit that habits of saving are not unknown to those classes, but that which has been done in this respect is only a faint indication of the rich harvest that remains to be reaped, and every endeavour should be made to help the working man to save. He can generally be trusted to earn and get good wages, but what to do with his money when he has got it is the problem over which he commonly breaks down, and where he most needs the grasp of a true and friendly hand. The folly of many a one in this is that he is always looking for something to turn up. By too much waiting things often turn down. The law of saving is as inexorable as the law of the tides. There are certain styles of behaviour which lead to honour, usefulness, and success. I should like to fire the ambition of young people especially to be industrious, and to exercise forethought and economy. A gloomy aspect should never be put on their expectations. There is little hope of a young man if he begins life cowed down. One smile of encouragement is often of more value to him than gold. I would say to you, Young man, do not fret or complain; go with ready hands and a cheerful face to your work, and be careful of your hard-won earnings. It is a welcome document that tells of providence among the working classes. No doubt there are instances of improvident waste among them also, and this phase of their character is too often kept before the public eye with wearisome persistency. With some doubtless it is often a true though a sad sketch, but it is a relief to turn from those to a higher grade of the community—higher, because they use their opportunities more profitably. There are thousands who earn good wages, and who, if they used means aright, might gather a little store against old age, or the probable contingency of ill-health. There is no sum too small for a thrifty person to lay by, as there are abundant facilities for the humblest equally with the richest in the savings bank. Still there are fewer persons using this provident organisation than there might be, far fewer than the happiness of the community suggests as being necessary. It is something, however, to know that if we are not as exemplary in this respect as we might be as a nation, still we are tending towards improvement. Glasgow, for instance, has nearly three millions of money in the coffers of its savings banks belonging to one hundred thousand depositors, mostly working men. Providence is a virtue in itself, and that it is also a benefit to the community in a variety of ways the use of those banks by the class for whom they were designed, the above statement sufficiently demonstrates. It is quite evident that when once a person opens an account he is reluctant to withdraw his money, and takes it out in the smallest possible driblets that his exigencies will allow of. What a thriving class have to be added to the bank organisation more extensively. The more they take this counsel the better for themselves and for the community. *John Downie, West Coates, Edinburgh.*

The Gold Medal given by the City of Hamburg to Messrs. Hyvoet Brothers (see p. 505).—This beautiful gold medal presented by the City of Hamburg, but by the Gartenbau-Verein für Hamburg, Altona and Umvegend. *H. G. Rchb. f.*

Local Museums.—While fully endorsing your remarks on this subject (p. 471), I should like to offer a word of advice to those who may propose to start one. The great bane—I had almost used another monosyllable, initialed with the third letter of the alphabet—of local museums, is the omission to empower the curator to refuse to exhibit objects which are unsuitable. I know the difficulties which surround this question. Mr. Alderman Somebody sends a head of a South African antelope, or something else which has as little to do with the objects for which the museum was created as a Queen's silver penny or an American Indian's tomahawk, and yet it must be placed in the collection, because the worthy alderman presented it! Then, again, empty shelves and cases look so ugly; and it is so nice to see the room filled, no matter how. Much of this may be obviated by the originators, if they would only determine beforehand the special branches which the particular museum shall illustrate, and authorise the "return with thanks" of all objects which do not conduce to this end. *An Old Curator.*

American Blight on the Auricula.—Not having seen the Auriculas that were alleged to be infested with American blight, I know nothing about them practially, but the mention of the matter in the papers has suggested to me that a random shot by one whose eyes are shut might, by a fluke, hit the mark. I once had a dry border covered with Lysimachia Nummularia, the common Moneywort, and this was attacked by a Phylloxera to such an extent that the roots were literally embedded in the white flocculent matter peculiar to the insect. My random shot is in that direction; and I suggest that, if the Lysimachia is relished by a Phylloxera, so may the Auricula be. *Shirley Hibberd, Stoke Newington.*

The Proposed "Journal of Forestry."—I observe at p. 469 a paragraph in reference to the proposed *Journal of Forestry*, in which, while welcoming the announcement of the new venture, you express the hope that it will not interfere with the proceedings of that useful body, the Scottish Arboricultural Society. As chairman of the meeting of those gentlemen who resolved upon supporting the efforts to start such a journal, and as one of the Vice-Presidents of the Scottish Arboricultural Society, in which, as you are aware, I have for many years taken the deepest interest, will you permit me to say, in case the paragraph referred to may be (quite unintentionally I daresay) misleading, that the founders of the proposed *Journal of Forestry* are all good friends and allies of the Arboricultural Society; and in endeavouring to establish such a magazine independently of the Society, we believe we are "lengthening the stakes and strengthening the cords" of that institution, and that the proposed journal will afford those enthusiastic foresters who are members of the Society the means of interchanging the ideas and views from month to month throughout the year—a facility the Society cannot of itself afford them; and that the journal will be also a valuable aid to the Society itself in recruiting its ranks by disseminating and making known to a wider area than its own immediate membership its usefulness and worth. *Robt. Hutchison, Carlowrie.* [We are glad to learn that the relations between the proposed new journal and the Society are such as our correspondent states, and heartily wish it success. EDS.]

Hurricane at Inverary Castle.—During the raging of the storm on the 16th inst. several large Silver Firs, Beeches, and the last of the old Cedars of Lebanon, were blown down, but the chief injury caused by the last wind was where the old Beeches were forked in their branches, owing to the wet penetrating quite down through the trunks of the trees. Such trees were rent asunder, and, when the whirlwind got in amongst the branches, they were twisted out and tossed about in all directions. Outwardly those old Beeches look fair and comely, but within they are full of rottenness and decay. *John Cait, Inverary Gardens.*

Extraordinary Set of Peaches.—"Vitis" in this week's issue is unfortunate in citing Mr. Miller's practice against the syringing theory of setting Peaches. Has not Mr. Miller, according to his own statements in the *Gardeners' Chronicle* about two years ago, been a "setter with the syringe of twenty years' standing"?—and does not his present success show that he is quite right? We cannot suppose that Mr. Miller has at this date given up a practice that he had demonstrated by nearly a quarter of a century's experience to be the best. Our early Peaches this winter set every flower. They were thinned twice before stoning and once afterwards, and "Vitis," or any one else, is welcome to come and see what sort of a crop is on the trees now. As "Vitis" has put the question to me, I may state that I have never advocated "camel's-hair pencils," "bunches of feathers," or other "artificial fertilisation" practices of that kind. "Vitis" should keep himself read up in the *Gardeners' Chronicle*. *T. Simpson, Worthy.*

The Weather in North Notts.—The unprecedented rainfall of 22.03 inches has been registered here in six months, namely:—1876—October, 2.01 in.; November, 3.59 in.; December, 6.05 in: 1877—January, 4.29 in.; February, 2.55 in.; March, 2.64 in.: total, 22.03 in. The rainfall in April is likewise much above the average, for up to this date (23d) 2.65 inches have fallen. From the continued saddened state of the soil vegetation is very backward in this district, but there is now a prospect of a change for the better, as the wind has shifted out of the cold north-easterly currents into the south, and the temperature has risen considerably in the last few days. Gooseberries and Currants are in full flower at present, and should the frosty mornings keep off, there will be full crops from the abundance of blossoms. Of late years the crops of these fruits have been injured by spring frosts two years out of three here. Pears, Plums, and Cherries are likewise showing abundance of blossom-buds, which are now about opening, and should the weather now keep favourable, heavy crops may be expected, to make up for the losses last year. The Apples, being later in flowering, stand a little better chance of setting their fruit this year, and they likewise promise well as regards full crops. The Apricots, Peaches, and Nectarines have set plenty of fruit here, but the trees, being protected on the walls with glass coverings, they are independent of the weather. *William Tillery, April 23.*

A Floriferous Tulip.—The following remarks may probably interest some of your readers. Having in my garden a Tulip which appears to be a permanent variety, having for the last three seasons produced two flowers on one stalk, and this year I was greatly surprised on looking at it to find from four flower-stalks ten buds, viz, four on one, three on another, two on another, and one on the fourth, a much weaker stalk. I never remember seeing such (except in the Tulipa persica) till I first saw this three years ago with two flowers on one stalk. It is growing in the border under the house, which has not been disturbed for years. Perhaps some of the readers of the *Gardeners' Chronicle* may have noticed a similar case. *T. S. C.*

Ivy on Damp Walls, &c.—While highly appreciating the beauty and usefulness of the many varieties of Ivy for covering unsightly buildings, forming picturesque and quaint objects, and other decorative purposes, yet there are many unwelcome and serious objections to its use in covering costly buildings and good workmanship, for let the building be brick, stone, or wood, it will soon spoil and decay if it be covered with Ivy. The practice of planting Ivy on houses for the purpose of keeping them dry is a great mistake. The notion that Ivy will keep a house dry is deeply rooted in the minds of many, but I am thoroughly convinced of the reverse being the case. I may instance a coach-house covered with Ivy, in which the damp was spoiling the carriage; the Ivy was destroyed, and the place soon became quite

dry again. One of the lodges to this place was stripped of its coat of Ivy by a severe gale; it remained off a few days, and the lodge-keeper begged us to destroy it, as the place had not been so free from dampness for many years. I might give many other illustrations in proof of my statement. I saw a piece of Ivy growing through a wall 14 feet thick, the size of one's wrist. It had lifted several tons of masonry as it increased in size. The parish church steeple here, which is 100 feet high, was once covered to the top with Ivy; it is now cleared off, and shows the destructive nature of its old green coat. Foresters generally have a dislike to Ivy growing on trees, as it soon spoils, and even kills them. If grown on plaster-covered walls it soon causes the plaster to decay. Ivy will not adhere to perfectly dry walls or dead trees without some kind of fastening. The Irish Ivy is the best for covering, being a rapid and dense grower. *T. H. Goodacre, Elvaston.* [Ivy on buildings should be kept closely cut in. EDS.]

Clianthus puniceus.—At Woodstock Park may be seen a very fine specimen of Clianthus puniceus, or Glory Pea of New Zealand. At this time of year no other plant I know of can compete with it for the gorgeous racemes of coral-like blossoms. The plant here is planted out in the conservatory and trained up the rafters and spandrils of the house; it also covers part of the trellis of the back wall. The plant in question is very old, and has been allowed to ramble and blend its shoots with those of Vistaria chinensis, which is planted at the other end of the same house, and, as if by common consent, the two plants are always in bloom at the same time, when the effect is very beautiful. I would strongly advise those who may have to cover large pillars, &c., in lofty conservatories to try those two plants trained up and through each other, and allow the Glory Pea to make plenty of young wood, and they cannot fail to have pillars or arches of great beauty and elegance. *G. Dodd, Woodstock Park.*

Primulas: their Culture and Treatment.—These are the most useful greenhouse plants we have, and yet many fail to grow them to perfection. I generally sow the seeds on March 1 in pans filled with loam, sand, and leaf-mould, well mixed together. The soil in the pans is pressed down and covered with silver-sand, and then sprinkled over with water, and allowed to stand a few minutes before the seeds are sown. The seed-pans are placed in the Cucumber-house and shaded with wet brown paper. I sprinkle the surface over when dry, and when they come into rough leaf I move them into an intermediate house for a few days, then pot into 48-sized pots. The compost I use is made up of two parts loam, one part silver-sand, and one part rotten manure mixed with a little cocoa-nut fibre, a few bones and oyster-shells broken fine and mixed all together; they are then put back into the intermediate house till the next move into 30-sized pots, and then I put them into a cold frame till the final move, into 18 size, which are the pots I use for flowering. I generally grow about seven dozen, and flower one-half from September till March, while from the other half I take off the flower-spikes until the beginning of March; these are now in full bloom. As regards watering, I may say I always give water overhead, and during the winter months I never let them get too wet or too dry: if Primulas ever get thoroughly dry they seldom recover from the check it gives them. I have sent you a few blooms of my own growing which are 2 inches in diameter; this strain of seed, which I have grown for the last fifteen years, was obtained from the firm of Dickson, Brown & Tait, Manchester. *S. Brooks, Mortfield, Bolton.* [A very good sample indeed. EDS.]

Reports of Societies.

The National Auricula Society's Show at the Crystal Palace: *April* 24.—The first Southern show of the National Auricula Society has come and gone, leaving behind it only pleasant memories. It was truly a grand show as to quality, and in the matter of extent was considered on all sides to have been the largest ever seen. It was a great day for the florists, of whom there was a strong gathering, and many were the hearty greetings between the redoubtable growers of North and South, old friends in print and by correspondence, though strangers in the flesh. Owing to the backwardness of the season, the Northern flowers generally were behind time, so that but few could compete with their Southern rivals. Those, however, who did come up to town—*i. e.*, the Rev. F. D. Horner, Mr. Ben Simonite, and Mr. S. Cooper, of Timperley—made a bold front, and well-nigh cleared the board of the more valuable prizes. The Rev. F. D. Horner was irrepressible, and showed in fine form; and Mr. Ben Simonite, the worthy Sheffielder, contributed some magnificent blooms—if he does live in the most smoke-begrimed spot in the busy Northern town. Mr. James Douglas and Mr. Turner well represented their Southern brethren, though they were not so successful in the prize lists; but with the enthusiastic florist a defeat to-day means a determined struggle for victory on the morrow, and our Northern friends must look well to their plants for next year, or their laurels will be tarnished. We say next year, as though a show in the South next spring was a settled thing, which at present it is not, but the expression of a hope that the National Society would make a Southern show an annual fixture in its programme, was so universal amongst the florists present, that there can be but little doubt of its being the correct thing to do, or that it will be done. The success of the show on this occasion was too decided to allow of its being dropped; and judging by the great amount of interest taken in the flowers by the general visitors to the Crystal Palace, and the admirable arrangements made by the Company's officials, Mr. G. Thomson and Mr. F. W. Wilson, we can only hope that the Crystal Palace may again be the trysting place. In the afternoon the judges, exhibitors, and friends of the movement lunched together, Mr. Charles Turner, in the absence of the President, F. Whitburn, Esq., taking the chair. The toast of the day was "Success to Floriculture, especially desiring continuance and prosperity to the National Auricula Society," proposed by Mr. Turner, and replied to in most suitable terms by the Rev. F. D. Horner. "The Judges" was replied to by the Rev. F. Tymons, Cloghran, Drumcondra, Ireland; and "The Exhibitors," proposed by Mr. Llewellyn, was acknowledged by Mr. Ben Simonite and Mr. James Douglas. "The Horticultural Press" was proposed by the Rev. F. Tymons, and responded to by Mr. Shirley Hibberd and Mr. Thomas Moore. "The Executive of the Southern Show" was proposed by the Rev. F. D. Horner, and replied to by Mr. S. Hadwell, who took occasion to say that the valuable assistance which had been received from Mr. Thomson and Mr. Wilson. The judges were the Rev. F. Tymons, Mr. Thomas Moore, Mr. J. Douglas, York, and Mr. Anthony Parsons, and their awards were received with great satisfaction.

In the class for twelve dissimilar varieties there were five competitors, and the Rev. F. D. Horner, Kirkby Malzeard, Ripon, came in 1st, with John Simonite (Walker), Charles E. Brown (Headly), Smiling Beauty (Heap), Pizarro (Campbell), Champion (Page), Ann Smith (Smith), Freedom (Booth), George Lightbody (Headly), Anna (Trai), Prince of Greens (Trail), Charles J. Perry (Turner), and Lancashire Hero (Lancashire); Mr. Ben Simonite, Rough Bank, Sheffield, 2d, with Pizarro, Talisman (Simonite), William Bradshaw (Simonite), Lovely Ann (Oliver), Prince of Greens, Metropolitan (Spalding), Complete (Sykes), Queen Victoria (Simonite), George Lightbody, Lancashire Hero, Frank Simonite (Simonite), and a seedling maroon self; Mr. James Douglas, gr. to F. Whitburn, Esq., Loxford Hall, 3d, with Colonel Champneys (Turner), Pizarro, Lady Sale (Smith), Alderman Wisbey (Headly), John Waterston (Chapman), Mrs. Smith (Smith), Master Napier (Campbell), Charles J. Perry, Robert Trail (Lightbody), Eliza (Sims), Smiling Beauty and Lancashire Hero (Lancashire); and Mr. Turner, Slough, 4th, with Mrs. Sturrock (Martin), Crucifix (Clegg), General Neill (Trail), Robert Trail (Lightbody), J. Waterston, Charles J. Perry, Colonel Champneys, Pandora (Turner), Squire Chilman (Wilmer), Lord Elgin (Finlayson), Peacemaker (Turner), and a seedling. The other competitor, Mr. H. Jones, Carrow House, Norwich, had John Waterston, Duke of Wellington (Dickson), Formosa (Smith), Miss Willoughby (Hufton), Charles J. Perry, Squire Smith (Chapman), General Bolivar (Smith), Countess of Wilton (Cheetham), Duke of Cambridge (Dickson), Imperator (Litton), and two seedlings.

For six dissimilar varieties, the Rev. F. D. Horner was also 1st, with Lancashire Hero, Prince of Greens, Smiling Beauty, Pizarro, Lightbody, and Trail's Anna; 2d, Mr. James Douglas, with Beauty (Trail), Colonel Taylor (Leigh), Charles J. Perry, Admiral Napier, Colonel Champneys, and Lancashire Hero; 3d, Mr. Ben Simonite, with Lord Palmerston (Campbell), Sims' Eliza, Fanny Crossland, Lancashire Hero, Beauty, and Lovely Ann (Oliver); 4th, Mr. Turner, with George Lightbody, Highland Queen (Horsefield), Charles J. Perry, Mrs. Sturrock, Admiral Napier, and Colonel Champneys; 5th, Mr. H. Jones, with General Neill, Countess of Dunmore (Lightbody), Eliza, Miss Willoughby, Formosa, and Countess of Wilton.

Again, in the class for four dissimilar varieties, was the Rev. F. D. Horner 1st, with Smiling Beauty, George Lightbody, Prince of Greens, and Pizarro; Mr. Turner coming in 2d here with Charles J. Perry, Colonel Champneys, Alderman Wisbey, and Mrs. Sturrock; Mr. Douglas 3d, with Smiling Beauty, Eliza, Colonel Champneys, and a green-edged seedling; and Mr. H. Jones, with General Neill, Helen (Wilson), Mrs. Smith (Smith), and Miss Willoughby.

In the class for pairs the Rev. F. D. Horner also held his own, coming in 1st with George Lightbody and Charles E. Brown; Mr. James Douglas 2d, with Lady Richardson (Gairns), and Charles J. Perry; Mr. Ben Simonite 3d, with Charles E. Brown and Samuel Barlow—a green-edged variety of his own; the Rev. B. H. Margetts, Lydiington, Uppingham, 4th, with Napoleon (Trail) and Beauty; and Mr. Turner 5th, with Charles J. Perry and Colonel Champneys; Mr. H. Jones showing General Neill and Formosa.

In the four classes for single specimens the Rev. F. D. Horner was well-nigh invincible, taking by far the largest share of the awards. For a single green-edged variety he was 1st with Champion, 2d with Prince of Greens, 3d with Colonel Taylor, 4th with Lancashire Hero, and 6th with Rev. George Jeans (Trail); Mr. Douglas being 5th with Lord Palmerston, 7th with Lovely Ann, and 8th with a seedling—a promising flower, with a deep violet-purple body colour. Amongst other varieties shown we noted Countess of Dunmore, from Mr. S. Cooper, The Hollies, Timperley; George Lightbody, Anna, Imperator, and Apollo (Beeston), from the Rev. F. D. Horner; Highland Boy (Pollock), from Mr. Douglas; Lady A. Wilbraham (Oliver), and Sir John Moore (Lightbody), from Mr. Turner.

In the grey-edged class seven out of the eight prizes offered went to the Rev. F. D. Horner, viz., the 1st, with George Lightbody; 3d, with Alderman Charles E. Brown; 4th, with Alma (Lightbody); 5th, 6th, and 7th, with Lancashire Hero; and 8th with Alexander Meiklejohn (Kay). The 2d prize went to Mr. Douglas, who had Robert Trail. Mr. Douglas also showed specimens of Colonel Champneys, George Lightbody, and John Waterston, and Mr. Turner examples of his Colonel Champneys and Fletcher's Mary Ann.

With white-edged varieties the Rev. F. D. Horner took three out of six prizes awarded, *i.e.*, 1st, with Smiling Beauty; 2d, with Catharina (Summerscales); and 4th, with Taylor's Eliza. Douglas coming in 3d, with Catharina, and 5th, with Ann Smith; and Mr. Turner 6th, with Headly's Arabella.

The next class, which was for single selfs, was better contested, and five out of the eight prizes fell to the Rev. F. D. Horner. These were, the 1st with Pizarro; 2d, with Argyll (Campbell), 4th with Blue Bell, 5th with Metropolitan, and 8th with Lord of Lorne (Campbell). Mr. Douglas was 2d with the new Ellen Lancaster (Pohlman), Mr. Ben Simonite with a rich rosy crimson seedling, and Mr. Turner 7th with Penelope (Turner). Ellen Lancaster also came from Mr. Horner, Metropolitan, Othello (Netherwood), and Mrs. Sturrock from Mr. Douglas; Mrs. Smith, Master Hole (Turner), and Lord Lee from Mr. S. Cooper; and Formosa from Mr. Turner.

Three fine collections of fifty plants each were staged, and they made a fine display. The 1st prize went to Mr. Turner, the 2d to Mr. Douglas, and the 3d to Mr. S. Cooper. Space forbids our giving the names of more than a few shown in this class, and we have selected for mention only such varieties as were not exhibited in any of the previous classes. In Mr. Turner's collection from these were Mrs. Purves (Turner), Clipper (Turner), Garnet (Turner), James Douglas (Turner), Sarah (Downing), Prometheus (Turner), Sir Robert Peel (Finlayson), Prince Alfred (Turner), Minstrel (Turner), Eclipse (Martin), Superb (Headly), Calypso (Turner), Apollo (Hudson), Metropolitan (Parker), and the following gold-edged alpines, they all been raised at Slough:—Mrs. Llewellyn, Percival, Mrs. Thomson, Mrs. Carter, Sensation, Dolly Varden, Wildfire, Meta, Topaz, and Lavinia. In Mr. Douglas' group we noted as not figuring in the other classes Lady Sophia Dumaresque, Miss Arkley (McDonald), True Briton (Heap), Unique (McLean), Perfection (Smith), Marie (Chapman), St. Augustine (Cunningham), Vulcan (Sims), Meteor Flag (Lightbody); and of alpines, Brilliant, Miss Reid, Elcho, Edgar, and Mercury.

For a dozen dissimilar alpines Mr. Turner was 1st, with Nat Norman, John Ball, Dolly Varden, Fascination, Queen Victoria, Rover, Mrs. Dodwell, Thetis, Selina, Prima Donna, Queen Eleanor, and Vesuvius. Mr. Douglas was 2d with Spangle, Beatrice, Sydney, Masterpiece, Elcho, Edgar, Bronze Queen, King of Crimsons, Mercury, Brilliant, and Miss Reid.

In the following class, which was for six alpines, Mr. Turner again came to the front with Bronze Queen, Queen Victoria, Mrs. Llewellyn, Topaz, Dolly Varden, and John Ball; Mr. S. Cooper was 2d with Neatness, Ovid, Brilliant, Dazzle, Beatrice, and Diadem; and Mr. Douglas 3d, with Bronze Dragon, Brilliant, Beatrice, Miss Reid, and two seedlings.

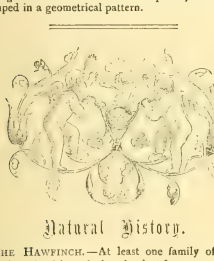
Mr. Douglas came 1st in the single specimen class with a remarkably large, almost black velvety self-seedling, subsequently named Silvia; Mr. Turner being 2d with King of the Belgians, 3d with Distinction, 4th with Bessie Rey, and 5th with Nat Norman, and Mr. S. Cooper, 6th with Diadem.

The premier Auricula in the show was a beautiful plant, with a truss of eight perfect pips, of George Lightbody, shown by the Rev. F. D. Horner.

First-class Certificates were awarded by the judges

to the Rev. F. D. Horner for the splendid white-edged Auricula John Simonite (Walker), an t which Mr. Horner considers an even better flower than Heaps' Smiling Beauty. To Mr. Ben Simonite for Auriculas Frank Simonite, a splendid white-edged variety, with a rich violet body colour; Talisman, a green-edged flower of beautiful form, the black body colour being well defined; William Bradshaw, grey-edged, with rather narrow dark maroon ground, but fine paste, and good yellow eye; and Fanny Crossland, a striking flower belonging to the white-edged class; the body colour is violet, and the paste good, but the eye is not quite bright enough. To Mr. Turner, for Clipper, a fine dark self, and Peacemaker, a grey-edged variety; also to the same exhibitor for alpines John Ball, a strikingly beautiful self, of a dark glossy black colour, and rich gold tube; Mrs. Thomson, also a beautiful self; and Distinction, which belongs to the same type. To Mr. R. Dean, for three novelties in alpine Auriculas, named Charmer, Mrs. Cooper, and Captivation, all of which have well-defined lace edgings. Charmer has a dark purple body, laced with pale lilac; Mrs. Cooper is larger than the last-named, of a deep maroon shade, laced with pale rose; and Captivation has a maroon ground with pale ochre lacing. These are no doubt the forerunners of a beautiful race, which we hope Mr. Dean will do his best to increase.

The Polyanthuses shown were generally of so poor a quality that they need not specially be alluded to. We must, however, mention that Mr. Dean received Certificates for Polyanthuses Avalanche and Purity, both very fine whites; and Mr. G. Smith for gold-laced Polyanthus Duke of Wellington. The general effect of the exhibition was considerably heightened by a fine group of forced Roses, Azaleas, &c., contributed by Mr. Turner, and which were most effectively backed up by an excellent assortment of handsome foliaged plants belonging to the Crystal Palace Company, whose garden superintendent, Mr. Thomson, also filled one of the long tables with an interesting assortment of succulent plants, admirably grouped in a geometrical pattern.



Natural History.

THE HAWFINCH.—At least one family of these birds have bred here during the last few years. Two years ago they made sad work with the Peas, and either two or three were caught in the net. Last summer I had the young ones in my hand, after they had flown from the nest, and I put one in a cage, in the hope that the old birds would feed it, as the bullfinch does. The cage was hung up on a tree, and left undisturbed, but at the end of the second day I found the bird dead. The old birds are very shy, and perhaps they had not fed it. The other members of the family I saw several times afterwards. Their nest was on a Scotch Fir in the pleasure-grounds, and about 40 feet from the ground. The birds have been seen here again this spring, about 100 yards from the same tree. About four years ago I found a fine adult specimen caught by the head in a wire netting not far from the same place. It was nothing the worse for its mishap, and rewarded its deliverer by a peck on the hand with its powerful bill that turned the skin blue. I suppose the hawfinch has been found as far north as this before, but not often. I have lately topped the tree where the old nest is, but it does not appear to be tenanted as yet. It is a twiggy looking structure, but it is too high up to be examined, and is placed in an inaccessible part of the tree. *T. Simpson, Wortley Hall Gardens, Sheffield.*

, —— A short account of this bird may be interesting to some of your readers. As a resident in Middlesex, I have had opportunities of observing the habits of this bird. It breeds here every year, and orchards seem to be the favourite nesting-place. I have known as many as three nests within a few yards of each other, and all built in Apple trees, which they seem to prefer to any other. The nest is made of twigs and lichen, lined with fibrous roots, in which are deposited from four to six eggs, of a pale olive-green ground, streaked with grey and spotted with black. Sometimes the eggs are without any spots, but they are always streaked with grey. The young ones and parents continue in company long after they leave the nest. They are destructive birds in the garden, eating green Peas, Cherries, &c., and about the time the Yew berries are approaching maturity they may be seen in numbers, and the small branches they nip off with their powerful beak when searching for the berries completely strew the ground, making one think that squirrels had been at work. They are certainly very shy birds, and on the first approach of danger make for the highest trees in the neighbourhood. *W. E. T.*

HATCHING OF ROOKS.—I want to ascertain the earliest and latest periods at which rooks are hatched. Can your obliging correspondents help me? Gilbert White has but little to say of the natural history of the rook. *George H. Haydon, Bethlem Hospital, S.E., April* 21.

Notices of Books.

L'Afrique Centrale; *Etude sur les Produits Commerciaux.* Par M. Bernardin. Avec une carte. Gand: C. Annoot-Braeckman.

Professor Bernardin of Melle has just issued another of those little brochures which form, when brought together, useful records of the history of economic plants. The present pamphlet does not, as hitherto, deal with any special class of plants or special products, but is an enumeration of the resources of Central Africa under the above title. The products of the three kingdoms of Nature are all enumerated, those of the vegetable kingdom being placed first, as they are by far the largest and most important; the arrangement of these is on a commercial system, that is, textile fibres are brought together, then oils and fats; dye-stuffs, spices and narcotics; drugs, food-grains and starches; caoutchoucs, woods, and flowers. Under the first heading, that of fibres, we find a notice of the Baobab (Adansonia digitata), and the application of its bark for paper-making. The Bamboo is next treated of, and its recent introduction for a similar purpose to the last, that of a paper material, is discussed. As an illustration of the careful collation of recent facts, M. Bernardin not only quotes from Mr. T. Routledge's pamphlet on Bamboo considered as a paper material, but refers also to the writings of Stanley and Cameron; indeed, more than once through the forty-six pages of which the pamphlet is composed the author shows himself alive to modern facts and discoveries. The oil of Trichilia emetica, Vahl, a meliaceous plant, is used by the natives in the preparation of their food, and is described as being of excellent quality. M. Bernardin tells us that the seeds are imported to Rotterdam by the Commercial Society of Mozambique, and the oil is extracted in Europe for the manufacture of soap. On the subject of Cola or Kola nuts we have nothing that is really new. Cola acuminata is of course credited, and rightly so, with furnishing one kind; but the bitter Kola is still referred to a species of Garcinia. With regard to caoutchouc, the author thinks that Landolphia owarienisis and another species of Landolphia, together with a species of Ficus, furnish the bulk of African caoutchouc. Other plants, however, help to swell the African produce.

These notes will serve to show that the pamphlet is made up of interesting matter.

Obituary.

WE regret to record the death, on the 17th inst., at the age of 57 years, of MR. DAVID WAUGH CUNNINGHAM, for many years gardener to Lord Ebury, Moor Park, Rickmansworth, by whom he was highly esteemed; and formerly gardener to the Bishop of London at Fulham.

—— We have also to record the death, on the 24th inst., at Hastings, in her sixtieth year, of MRS. MARY ANN CUTBUSH, widow of MR. WILLIAM CUTBUSH, late of the Barnet Nursery, Herts.

—— An intimation has also reached us of the death, on the 20th inst., at 18, Melville Terrace, Edinburgh, of MR. JOHN GAVIN, who for upwards of forty-three years was head gardener to the Earls of Moray, at Donibristle, Fifeshire. Mr. Gavin was in the eighty-fifth year of his age.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, APRIL 25, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to Sea Level.	BAROMETER. Departure from 30 inches.	TEMPERATURE OF THE AIR. Highest.	TEMPERATURE OF THE AIR. Lowest.	TEMPERATURE OF THE AIR. Range.	TEMPERATURE OF THE AIR. Mean for Week.	TEMPERATURE OF THE AIR. Departure of Mean from Average of Seven Years.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Degree of Humidity. Saturation = 1000.	WIND. Average Direction.	RAINFALL.
April	In.	In.	°	°	°	°	°	°			In.
19	29 80	+ 0 05	51	37	14	42	7 —	6·5	33·5	71	ENE., NE.	0 00
20	30 02	+ 0 27	57	33	24	42	— 4	7	38·6	86	ENE., ESE., SE.	0 03
21	29 71	— 0 05	49	34	15	41	1 —	3	5	42·8	95	SSE., S.	0·22
22	29 45	— 0 32	60	29	45	42	1 +	7	5	39·1	43·6	75	WSW	0·05
23	29 38	— 0 38	58	30	28	45	1 —	2	9	34	1	65	W., WSW	0 04
24	29 55	— 0 22	57	34	23	44	7 —	3	5	36·1	72	NW., NE.	0 03
25	29 72	— 0 04	54	35	19	43	9 —	5	1	36·6	78	E., ENE.	0 02
Mean	29 65	— 0 10	55	33	7	42	9 —	2	9	37	9	77	variable	sum 0·03

April 19.—A fine bright day, partially cloudy. Windy Cloudless at night. Cool.
— 20. A fine bright day; generally cloudy. Cool.
— 21.—Overcast, dull, and wet till 6 P.M. Fine after. Cloudless night.
— 22. A fine day, but cloudy, with occasional rain. Distant thunder heard about 6 P.M.
— 23.—Fine, generally cloudy. Thunder and lightning at 4 P.M., accompanied with rain.
— 24.—A fine bright day. Heavy clouds, distant thunder; rain and hail at 7 P.M. Cloudless at night.
— 25. A fine day, but generally cloudy. Cool.

LONDON: *Barometer.*—During the week ending Saturday, April 21, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30·18 inches at the beginning of the week to 29.67 inches by the afternoon of the 16th, increased to 29.69 inches by the night of the same day, decreased to 29 58 inches by the night of the 17th, increased to 30 25 inches by the morning of the 20th, and decreased to 29.78 inches by the end of the week. The mean reading for the week at sea level was 29.86 inches, being 0 05 inch higher than that of the preceding week, and 0.09 inch below the average.

Temperature.—The highest temperatures of the air varied from 58° on the 20th to 43½° on the 18th; the mean value for the week was 49½°. The lowest temperatures of the air ranged from 32½° on the 20th to 40° on the 15th; the general mean for the week was 37°. The mean daily range of temperature in the week was 12½°, the greatest range in the day being 25½° on the 20th, and the least 8½° on the 21st.

The mean daily temperatures of the air for the week were as follows:—15th, 45°; 16th, 43°; 17th, 38°.8; 18th, 37°.8; 19th, 42°.7; 20th, 42°.7; 21st, 44°.1; and the departures in defect of their respective averages were 1°.5, 3°.6, 8°, 9°.2, 4°.5, 4°.7, and 3° 5. The mean temperature of the air for the week was 42°, being 5° below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 117½° on the 20th to 116° on the 20th; on the 21st the reading did not rise above 53°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 29° on the 20th and 30½° on the 18th; on the 15th the lowest reading was 37½°.

Wind.—The direction of the wind was E N.E. and E., and its strength brisk. The weather during the week was dull, cool, and the sky generally cloudy. Gales prevailed on the 16th and 17th.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 62½° at Cambridge, and 61° at Leicester; at Wolverhampton 52½° was the highest temperature; the average value from all stations was 56½°. The lowest temperatures of the air observed by day were 28½° at Bristol, and 29° at Cambridge and Eccles; at Sunderland 32° was the lowest temperature; the mean value from all stations was 33½°. The range of temperature in the week was the greatest at Cambridge, 33½, and the least at Brighton, Liverpool and Bradford, all 19°; the mean range of temperature from all stations was 23½°.

The mean of the seven high day temperatures was

the highest at Truro and Cambridge, both 53°, and the lowest at Wolverhampton, 46½°; the general mean from all stations was 49½°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 35½, and the highest at Truro, 42°; the mean from all stations was 38½°. The mean daily range of temperature was the greatest at Cambridge, 16°, and the least at Hull, 8°. The mean daily range from all stations was 11½°.

The mean temperature of the air for the week from all stations was 42½°, being 3° lower than the value for the corresponding week in 1876. The highest was 46°, at Truro, and the lowest 39½°, at Wolverhampton.

Rain was measured at Plymouth to the amount of 2¼ inches nearly, and at Truro 1¼ inch fell, but at Norwich and Sunderland one-hundredth of an inch only was measured; the average fall over the country was half an inch. The weather during the week was generally dull and stormy, and the sky cloudy. Gales occurred generally over the country on the 16th and 17th. Solar halo was seen at Bristol on the 20th inst.

SCOTLAND: *Temperature.*—The highest temperatures of the air ranged from 59½° at Edinburgh to 51° at Aberdeen; the mean from all stations was 56°. The lowest temperatures of the air varied from 28° at Perth and Dundee to 34° at Greenock; the mean from all stations was 30°. The range of temperature in the week was the greatest at Edinburgh, 28½°, and the lowest at Aberdeen, 21°; the mean range from all stations was 26°.

The mean temperature of the air for the week from all stations was 42½°, being 1½° lower than the value for the corresponding week in 1876. The highest was 43½ at Greenock, and the lowest 41½°, at Perth.

Rain.—The fall of rain varied from 1¼ inch at Greenock, to one-tenth of an inch at Aberdeen and Leith; the average fall was half an inch.

DUBLIN.—The highest temperature of the air was 59½°, the lowest 32½°, the range 27°, the mean 45½, and the fall of rain 1.69 inch.

JAMES GLAISHER.

Variorum.

SUMMER IS COMING.

Meadow flowers, fair and sweet,
Can ye feel the summer?
Can ye hear her dainty feet
Coming softly, light and fleet—
Will ye not outrun her?

Spring up, white Anemone,
Graceful as court lady;
Ring, ye Harebells, merrily,
Hyacinths, stand cheerily,
She will greet you, may-be.

Blushing red, Rose Campion fair,
Like a rustic beauty,
Hides behind the Maidenhair,
While Veronica, the rare,
Opes blue eyes from duty.

She is coming, is our queen,
Softest breeze shall waft her;
Palmy boughs of freshest green
Wave where er her robe is seen,
Little brooks bring laughter.

Every joyous scent and sound
Rises swift to greet her;
E'en the dull insensate ground
Shares the fragrance all around:
Let us go and meet her.

S. Williams, in "Good Things."

FARMING IN THE CARSE OF GOWRIE.—This had always been considered purely corn-growing land. The produce some sixty or seventy years ago would hardly be credited—80 or 90 bushels per Scotch acre, or 60 or 70 imperial—but then it was comparatively a virgin soil, being an alluvial deposit; but no land can stand successive grain cropping unless manured. On the continent of America, after a certain number of crops have been taken, the land is allowed to run to waste, and fresh land taken into cultivation. As I have said, rents rose considerably during the war; they were paid in money, with a proportion of Barley, delivered in kind at the nearest shipping ports in the Tay. When I succeeded at the end of 1826 prices of grain had fallen considerably, and I found a large amount of arrears due. In 1828 I had the estate valued, the consequence being a reduction of rents to the extent of more than a fourth. At the same time, being aided by the advice of a very able land steward, I came to the conclusion that bare fallow, though advisable for cleaning foul land, would not restore its fertility. Nothing but pure straw was applied to the land, trodden down in open courts by Highland cattle taken in for a few shillings a head. In 1833 I was fortunate enough to procure a first-rate tenant well versed in green crop cultivation, and he was the first man in this district who tied up cattle to feed. The land was drained (too shallow) by a wedge-shaped piece of clay being taken out and inverted—gorse or branches being sometimes inserted in these drains, cut at the bottom of high ridges. This was followed by stone, wood, and concrete drains, afterwards horse-shoe tiles, made by hand, were used, then pipe-tile draining was introduced by Lord Tweeddale, made by a machine on the principle of a Neapolitan macaroni machine. Extensive tile works, and the tenants were supplied at cost price, cutting the drains themselves, but still too shallow—2 feet instead of 4 feet now acknowledged as the proper depth. The prices of grain continuing to vary considerably, I resolved to adopt a plan tried by a friend of mine, Lord Willoughby d'Eresby, of grain rents for the clay lands, and half grain and money for the black lands. Facilities were given for adopting this plan, on account of the prices of grain being struck annually, calling "Fiars' prices," for the purpose of fixing the stipends of ministers. The average number of bushels corn land was considered at the time to yield was taken—12 bushels of of Wheat, 18 of Barley, 18 of Oats—and a third was calculated as a fair rent; two-thirds being counted for expenses and farm profits. Of course it rested with the tenant to add to the profits by increasing the produce of the land. On lands of superior quality an addition of 1 or 2 bushels was considered a fair rent. That the grain rent was fairly calculated appeared on going over the books of the tenant referred to for the last thirteen years of his nineteen years' lease, when it was found there was only a difference of £30 during that time from his original money rent. His books also showed that notwithstanding a large outlay the first six years the tenant had lived comfortably with his family, and at the end had more than doubled his capital. Farming even then paid well, and has had not then to contend with unpropitious seasons, and expense of working the farm. Horses costing now about £90 could then be purchased for from £30 to £35. Farm servants' wages were £9 to £10 a year, with cottage, meal and milk, fuel and garden; now single men's wages, with lodgings as before, are £30 or £35. With great advance in saddlers' and blacksmiths' bills, I believe this increased expenditure is only to be met by improved implements and steam cultivation. *Lord Kinnaird, in a Letter to Mr. Falconer King.*



Law Notes.

ACTION BY A GARDENER FOR ILLEGAL DISTRESS.—At the Marylebone County Court, on the 12th inst., the case of *Ashwell v. Payne* was heard before Mr. Serjeant Wheeler and a jury, in which the plaintiff, described as a master gardener, carrying on his business at Victoria Road, Kilburn, sued the defendant, a former landlady of the plaintiff, to recover the sum of £50 as damages in consequence of injuries he had received in course of his business through illegal distress made upon him by the defendant under the following circumstances.

The plaintiff, being called, stated that he formerly occupied Chapel Cottage, Kilburn, of which the defendant was the landlady, and upon which property he had erected extensive greenhouses, but finding more eligible premises he gave defendant notice to quit, but before that three months' notice had expired the defendant had followed him to his present address, and put a broker into possession, who, after remaining in possession three days, and taking an inventory, was paid the sum of £10 and left, and the present action was brought to recover the sum now sued for, an excessive and illegal distress. The plaintiff put into Court a mass of documentary evidence in support of his case, and stated that since the action had been commenced the defendant had paid £3 into Court, and had brought a counter action for £30 for dilapidations.

At this stage of the case the learned Judge said that it was purely a question of amount, inasmuch as the defendant by paying £3 into Court had acknowledged the plaintiff's right to bring the action, and it was clear from the documentary evidence before the Court that the defendant had no right to levy a distress until a quarter's rent was due, which in this instance was not the case; then again, as the counter claim could not legally be maintained, he should present the plaintiff's claim to the jury, and strike out the counter claim. His Honour, after addressing the jury on the whole facts of the case, they, without retiring from the box, returned a verdict in favour of the plaintiff for £13 0s. 6d., with costs.

Enquiries.

He that questioneth much shall learn much.—BACON.

183. HARDINESS OF ARAUCARIA EXCELSA.—I have a fine Araucaria excelsa, too large for my conservatory, which I am thinking of planting out-of-doors next month in a spot as sheltered as I can find. Can any of your readers inform me if they know of any planted out-of-doors, and if it will be likely to live? Of course I should mat it up in a severe winter. If I remember rightly a few weeks ago it was stated, either in your paper or the *Field*, that it was sufficiently hardy to live. *R. Thornton, High Cross, Framfield, Sussex, April 21.*

184. TRICHOPILIA SUAVIS.—Can any of your correspondents tell me if it is usual for Trichopilia suavis to have four flowers on a spike, as I have a plant with two spikes of four each? *T. C. H.* [We think not. EDS.]

185. THE DADDY LONGLEGS.—I shall be greatly obliged if you or any of your correspondents can inform me of a method of destroying, without injury to vegetation, the larvæ of the Tipula oleracea, or Daddy Longlegs, which is so destructive to the grass in the vicinity of London? *Inquirer.* [Lime and gas-water sometimes answer the purpose, but we believe the most effective and safest plan is to frequently roll the grass with heavy rollers. EDS.]

186. CHARRED BONES.—Will you kindly inform me if you have any experience in the use of charred bones instead of charcoal for potting purposes? I have a supply of such bones, and think it is possible they might suit the purpose even better than wood charcoal. *S. M. L.* [We have no experience. Will some of our readers kindly answer this question? EDS.]

Answers to Correspondents.

ECCLESIASTICAL NURSERYMEN: *P. & S.* If the Hon. and Rev. gentleman chooses to turn nurseryman there is nothing to prevent him from so doing. He should not, however, be allowed at the same time to compete at a flower show in other than nurserymen's classes.

GARDEN LAW: *Quercus.* A tenant at the expiration of a seven years' lease, unless he be a nurseryman, or the lease contains a stipulation to the contrary, cannot legally cut down such trees as Gooseberries and Currants, or trees of any kind, though he may have purchased and planted them during his tenure. We cannot say where you can purchase the small book, relating to garden law, which was published some years ago.

GRAMMATOPHYLLUM: *Duffer.* These plants require to be potted in well-drained peat, and to receive the general treatment of terrestrial tropical Orchids, that is, to be grown in a hot moist stove, in company with such subjects as Indian Orchids.

INSECTS: *J. S.* Fulviraria vitis. *A. M.—T. Challis*, Otiorhynchus sulcatus. *A. M.*

LATHYRUS: *J. T. R.* Both the species may generally be met with in botanic gardens, but neither the seeds of the one nor the tubers of the other are cultivated for use, so far as we know.

MELON: *A. H. H.* We should think not, but have never tried it. The variety in question would no doubt grow and bear fruit out-of-doors, but then the fruit would be worthless we should think.

NAMES OF PLANTS: *G. R.* The flower faded before we could identify it, but it may be Narcissus Poeticus var. angustifolius, which is the earliest to flower of the variety ornatus, which follows very close upon it.—*J. Maund* is right in supposing his seedlings to be common Spruce.—*R. C. Appleton.* The Catleya is a variety of *C. Mossiæ.* The pseudobulbs are, we believe, those of the Dove-flower, Peristeria elata.—*J. Ilman.* 1, Begonia argyrostigma; 2, Hibbertia dentata.—*J. C. K.* The small one is decidedly Dendrobium Devonianum, Lindl., that occurs as well with white as with ochre-coloured flowers. The greater white one is D. barbatum, Lindl. Mr. Williams in his very useful book has combined it with D. Fytcheanum, as was done by several English authors, but we have the few crimson spots, and is now considered a different species, for its thinner, more bent spurs, for its much larger emarginate anterior lobe of the lip, and its greater and broader petals. There is no reason to complain of the quoted author. *H. G. Rchb. f.*—*J. B. J.* Begonia Comte Alfred de Limminghe.—*J. A. O.* 1, Fritillaria dasyphylla; 2, F. tristis probably; 3, Muscari botryoides; Euphorbia characias. —*Edward.* 2, not good enough to name; 4, Alonsoa incisæfolia, probably—a very wretched scrap. The florists' flowers we cannot undertake to name.—*C. F. C.* We cannot name such scraps and better specimens.—*Rob.* Habrothamnus fasciculatus.

NARCISSUS: *X. Y. Z.* Messrs. Barr & Sugden, King Street, Covent Garden.

PEACH LEAVES STYLE CURLED: *W. P. D.* The curling of the leaves is probably due to a chill in the early stages of their growth. With care they will grow out of it. The question about the Camellia leaves shall be answered in our next.

PEACH SETTING: *J. Munro.* The fruits could not possibly be set thicker than on the shoots you sent, and we shall be glad to have an account of your system of treatment.

POLYANTHUSES: *Caudwell.* A fine batch of varied and showy border flowers, some of large size measuring fully 1½ inch across. The presence of a few gold-laced varieties of the florist type, and seemingly of vigorous growth, is suggestive that these might be separated and bred from, so as to replenish the ranks of this pretty hardy flower, now very much thinned through neglect.

ROYAL HORTICULTURAL SOCIETY : COVENT GARDEN SHOW.—By an unfortunate transposition in our report of this show, at p. 507, Messrs. J. & W. Draper are credited with a gold medal for a collection of fruit, and a silver one for vegetables and salads, whereas it was to the latter that the gold medal was awarded Messrs. Webber & Co. being the only recipients of a gold medal for a collection of fruit.

VINES : *T. W. H.* Your leaf shows a general want of vigour, but in the absence of any details as to management we cannot enlighten you as to the cause.—*T. L.* There cannot be much doubt about the cause of the blotches on your Vine leaves. Owing to the superabundance of moisture, the foliage has been in a soft or sappy condition, and scalded by the action of a period of bright sunshine.—*C. J. L.* Probably owing to the effect of bright light after the dull weather previously prevailed, intensified by deferred or insufficient ventilation.

YEW HEDGE : *C. C. Leslie.* Cut it back at once.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.*

CATALOGUES RECEIVED.—M. Bruant (Boulevard Saint-Germain, Poitiers), Catalogue of Ornamental Trees and Shrubs, Plants Novelties, &c.—Messrs. J. Veitch & Sons (Royal Exotic Nursery, King's Road, Chelsea, S.W.), Catalogue of New and Beautiful Plants.—Mr. Crosman Bros. (Rochester, New York, U.S.A.), Illustrated Catalogue of Flower and Vegetable Seeds.—Louis de Smet (Ledeberg-lez-Gand, Belgium), Catalogue of New Plants, &c.—C. Ruppius (Paradise Nursery, High Street, Brentwood), Catalogue of Pelargoniums, Dahlias, Azaleas, Coleus, &c.

COMMUNICATIONS RECEIVED.—C. R. L.—D. A. P.—P. H. G.—N. E. B.—W. G. S.—F. Carpenter (next week).—J. H. K.—Incredulous One (we cannot say).—H. R.

BIRTH.—April 25, at Stoneydeep House, Teddington Grove, the wife of EDWARD J. BEALE, F.L.S., of a son.

DIED.—On the 24th inst., at her residence, Hastings, Mrs. MARY ANN CUTBUSH, widow of the late Mr. William Cutbush, of The Nurseries, Barnet, Herts, in her sixtieth year, having survived him only a little over eleven months.

Markets.

COVENT GARDEN, April 26.

Our market has been more active during the week, and most kinds of summer fruit are now putting in a good appearance, such as Figs and Peaches, also Cherries from the South of France. Prices remain the same, with the exception of Grapes, which are from 3*s.* to 5*s.* per lb. lower. In forced vegetables a better business is doing, prices being much firmer. *James Webber, Wholesale Apple Market.*

VEGETABLES.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Artichokes, per bush.	4 0	..	Horse Radish, p. bun.	4 0	..
— Eng. Globe, doz.	4 0	..	Leeks, per bunch	0 0	0 4
Asparagus, Fr., p. bun.	20 0	..	Lettuces, Fr., p. doz.	1 0	2 0
— English, p. bun.	8 0	10 0	— Cos, per doz.	6 0	..
— Fr., natural, bun.	0 0	0 0	Mint, green, per bunch	0 6	..
— Sprue, per bun.	1 6	..	Mushrooms, per pott.	0 6	1 6
Beans, French (new), per 100	2 6	3 0	Onions, per bunch	0 0	0 0
— French, Long-pod, p. bushel	2 6	3 0	— young, per bun.	0 0	0 0
Beet, per doz.	1 0	2 0	Parsley, per bunch	0 4	..
Cabbages, per doz.	1 0	2 0	Peas, green, per lb.	2 0	..
Carrots, per bunch	0 3	..	— shelled, per qt.	8 0	..
— New Fr., p. bun.	2 0	..	Potatos, new, per lb.	0 0	2 0
Cauliflowers, per doz.	2 0	4 0	Radishes, per bunch	0 0	0 3
Celery, per bundle	1 0	2 0	— Spanish, doz.	1 0	..
Chilis, per 100	3 0	..	— New Jersey, doz.	2 0	..
Cucumbers, each	0 0	1 0	Rhubarb, per bundle	1 0	..
Endive, per doz.	1 0	2 0	Salsafy, per bundle	1 0	..
— Batavian, p. doz.	2 0	3 0	Salads, per punnet	3 0	..
Garlic, per lb.	0 0	0 4	Shallots, per lb.	0 0	..
Herbs, per bunch	0 0	0 4	Spinach, per bushel	3 0	..
Potatos.—Kent Regents, £3 to £6 : Essex Regents, £4 10*s.* to £5 : Kidneys, £8 per ton.			Tomatos, per lb.	2 0	..
			Turnips, per bundle	0 4	0 6

FRUIT.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Apples, per ½-sieve	3 0	8 0	Peaches, per doz.	15 0	25 0
Cobs, per lb.	1 0	1 6	Pears, per doz.	15 0	30 0
Grapes, per lb.	1 2	0 3 0	Pine-apples, per lb.	4 0	8 0
Lemons, per 100	4 0	10 0	Strawberries, p. oz.	0 6	1 0
Oranges, per 100	4 0	8 0	Figs, green, each	1 0	2 0

CUT FLOWERS.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Azaleas, 12 sprays	0 6	2 0	Lily of Valley, 12 spr.	0 9	3 0
Blue Bells, 12 bunch.	2 0	0 0	Mignonette, 12 bun.	4 0	9 0
Bouvardias, per bun.	1 0	4 0	Myosotis, 12 bunch	2 0	4 0
Camellias, 12 blooms	2 0	9 0	Narcissus, 12 sprays	1 0	2 0
Carnations, per dozen	1 6	4 0	Pelargoniums, 12 spr.	1 0	2 0
Cow-lips, 12 bunch.	1 0	6 0	— zonal, 12 sprays	0 6	1 0
Cyclamen, per doz.	0 3	0 9	Primroses, per dozen	0 6	2 0
Daffodil, double, 12 bunches	3 0	9 0	Primula, dbl., p. bun.	0 6	2 0
— single, 12 bun.	1 0	6 0	Roses, indoor, p. doz.	3 0	12 0
Eucharis, per doz.	6 0	12 0	Sprays, 12 sprays	1 6	4 0
Euphorbia, 12 sprays	2 0	9 0	Stephanotis, 12 spr.	9 0	15 0
Gardenia, per doz.	4 0	12 0	Tropæolum, 12 bun.	1 0	6 0
Heliotrope, 12 spr.	0 6	1 0	Tulips, per dozen	0 6	2 0
Hyacinths, 12 bunch.	6 0	18 0	Violets, 12 bun.	1 0	4 0
			Wallflowers, p. doz.	3 0	9 0

PLANTS IN POTS.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Azaleas, per dozen	24 0	60 0	Heliotrope, per doz.	6 0	18 0
Begonias, per doz.	6 0	12 0	Hydrangea, per doz.	12 0	30 0
Bouvardias, do.	12 0	24 0	Lily of Valley, each	1 6	3 6
Calceolaria	12 0	24 0	Mignonette, per doz.	5 0	9 0
Cineraria, per doz.	6 0	18 0	Myrtles, do.	3 0	9 0
Clematis	24 0	60 0	Palms in variety, each	3 6	21 0
Coleus, per dozen	3 0	9 0	Pelargoniums, scarlet, per doz.	4 0	12 0
Cyclamen, per doz.	9 0	24 0	Rhodanthe, per doz.	12 0	18 0
Cyperus, do.	6 0	12 0	Richardia æthiopica, per doz.	9 0	18 0
Dracæna terminalis	30 0	60 0	— viridis, per doz.	9 0	18 0
— viridis, per doz.	18 0	30 0	Ferns, in var., p. doz.	6 0	30 0
Ficus elastica, each	2 6	15 0	Roses, per dozen	24 0	60 0
Fuchsias, per dozen	12 0	18 0	— fairy, per dozen	9 0	18 0
Genista	9 0	18 0	Spiræa, per doz.	12 0	30 0
Heaths, variety, doz.	12 0	60 0	Tulips, per dozen	8 0	12 0
			Valotta purpur., doz.	12 0	18 0

SEEDS.

LONDON : *April* 25.—Scarcely any improvement can be noted in the demand for agricultural seeds. The unusual quietness which has now so long prevailed in the seed trade is explained by the unfavourable weather we have been getting, and also by the fact that in many counties, where generally no Clover seed is saved, the home supply this year fully meets the local requirements. The sodden state of the land will cause the present season to be one of the most backward on record. For red Clover seed the sale on Mark Lane is still on a more restricted scale ; although bidders, in order to move off stocks, offer liberal concessions. Trefoil just now is in increased favour, and values are hardening. Alsikes and white Clovers are dull and neglected. For grass seeds there is a good request at late rates. Hemp and Canary show no alteration. Feeding Linseed and blue Peas are firm at the late advance. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E. C.*

CORN.

At Mark Lane on Monday the trade for Wheat was very firm, and rather better prices realized for certain descriptions of produce. English Wheat was held for 1*s.* per quarter advance upon the rates of Monday se'nnight. Barley was steady at the prices of last week, as also was Malt. Beans and Peas ruled cheaper, an easier tone prevailed for Maize, and Beans and Peas were unchanged. The top price of town made flour, war being regarded as inevitable, was raised 4*s.* per sack, or to 54*s.*—On Wednesday English Wheat was held for 1*s.* to 2*s.* per quarter more, while the advance asked upon foreign produce varied from 2*s.* to 4*s.* per quarter. Barley was the turn dearer, as also was malt, and in Oats and Maize an improvement of 6*d.* per quarter was quoted. Beans and Peas were fully as dear ; and as regards flour, sacks made from 2*s.* to 3*s.*, and American barrels a similar improvement.—Average prices of corn for the week ending April 21 :—Wheat, 53*s.* 5*d.* ; Barley, 34*s.* 2*d.* ; Oats, 24*s.* 10*d.* For the corresponding week last year :—Wheat, 45*s.* 3*d.* ; Barley, 34*s.* 2*d.* ; Oats, 25*s.* 5*d.*

CATTLE.

At Copenhagen Fields on Monday there was a slow trade in beasts, and prices on the average were lower. For sheep the demand was steady, for prime Downs' lambs, also, were keen. Few calves were on offer, and they made about as of late. Quotations :—Beasts, 4*s.* 4*d.* to 5*s.* 2*d.*, and 5*s.* 6*d.* to 5*s.* 10*d.* ; calves, 5*s.* 8*d.* to 6*s.* 8*d.* ; sheep, 4*s.* 8*d.* to 5*s.* 8*d.* and 6*s.* to 6*s.* 6*d.* ; lambs, 7*s.* 8*d.* to 8*s.* 8*d.* ; pigs, 4*s.* to 5*s.* — In the beast market on Thursday sales progressed slowly, and at rates in favour of buyers. Sheep also sold slowly, and there was no recovery from Monday's depression. The few calves at market brought fair value for the prime ones, but inferior sold badly. No demand for pigs. Lambs met only a dull sale.

HAY.

At Whitechapel market on Tuesday trade was active, and prices higher for certain descriptions of fodder. Prime Clover, to 132*s.* ; inferior do. was 100*s.* to 120*s.* prime meadow hay, 90*s.* to 126*s.* ; inferior, 70*s.* to 85*s.* ; and straw, 40*s.* to 57*s.* per load. — Only light supplies were on the stands on Thursday, and, with a steady demand, medium grades realized rather higher rates, primest qualities continuing firm at the previous advance. Straw also firm. Quotations : — Clover, best, 100*s.* to 132*s.* ; inferior, do., to 95*s.* ; hay, best, 100*s.* to 126*s.* ; inferior, 70*s.* to 85*s.* ; and straw, 40*s.* to 55*s.* per load. Cumberland Market quotations : — Superior meadow hay, 132*s.* to 140*s.* ; inferior, 108*s.* to 120*s.* ; superior Clover, 132*s.* to 140*s.* ; inferior, 112*s.* to 123*s.* ; and straw, 55*s.* to 60*s.* per load.

POTATOS.

At the Borough and Spitalfields markets medium to ood qualities of Potatoes are in full supply, both English nd foreign ; but of choice, and also of very common qualities, the supply is small. The trade is rather slow, but prices are firm for the finer kinds, are former. Quotations :— Victorias, 120*s.* to 150*s.* ; York Regents, 110*s.* to 140*s.* ; Scotch do., 110*s.* to 140*s.* ; rocks, 90*s.* to 110*s.* ; French rounds, 80*s.* to 100*s.* ; German reds, 80*s.* to 110*s.* ; Belgian kidneys, 90*s.* to 110*s.* per ton.—The imports into London last week consisted of 45,283 bags from Hamburg, 16,049 from Antwerp, 7223 from Bremen, 4729 bags, 290 tons from Colburg, 890 bags from Havre, 1000 bags from Rotterdam, 1000 from Dunkirk, 139 bags from Ghent, 120 from Boulogne, 100 from Stettin, 100 tons from Rouen, and 44 cases from Malta.

COALS.

Previous quotations were the rule at Monday's market. —Wednesday's market was steady, at the following prices :—Bebside West Hartley, 16*s.* 9*d.* ; Walls End—Hetton, 21*s.* ; Hetton Lyons, 18*s.* 9*d.* ; Lambton, 20*s.* 6*d.* ; Newbottle, 17*s.* ; Tunstall, 18*s.* 9*d.* ; Hartlepool, 20*s.* 3*d.* ; Tees, 20*s.* 9*d.*

Sole Medallists for the Best Hot-Water Apparatus at the United States Centennial International Exhibition, Philadelphia.

By Royal Her Majesty's Letters Patent

WRIGHT'S

ENDLESS-FLAME-IMPACT

HOT-WATER BOILERS.

GUARANTEED

The most Powerful, the most rapid, the most Economical, the Simplest, and the Cheapest in the World.

"The 'Boiler of the Future.' I have no doubt about this."—WM. THOMSON, *Tweed Vineyards.*

From the "Gardener," March, 1877.

WRIGHT'S PATENT

ENDLESS FLAME-IMPACT BOILER.

"This boiler is attracting a good deal of attention in the horticultural world at the present time ; and as I have just had one of their largest-sized ones fitted up here, and have now got it well tested, perhaps a few lines from me upon its capabilities may not be without some advantage to some of your numerous readers. I have had some experience as to the annoyance and extra labour caused by badly-constructed boilers, and any improvement effected in these to save labour and fuel demands the attention of all interested parties.

"To give your readers a better idea of the work this boiler has to do, I may begin by stating that our hothouses consist of a range having a total length of 192 feet, a ridge-and-furrow-roofed greenhouse being in the centre, two lean-to Vineries on each side, with Camellia-house and general plant-house at each end ; on opposite side of wall we have a Fern-house, partly lean-to and partly span, 29 feet in length, varying in width from 10 to 30 feet. Attached to end of boiler-house is our laundry, with a drying chamber fitted up with about 250 feet of 4-inch piping.

"The whole of the above houses are heated with hot water, and have a total of about 1500 feet 4-inch piping. We had formerly two oval flue boilers, one being 4 feet 6 inches long, the other 4 feet long. With these two boilers kept hard fired we always found great difficulty in keeping a fair temperature during frosty weather, and had frequently to lose a night's sleep attending to the fires. On the last day of last year the larger boiler came to grief, from it getting so drowned out the fire ; and in taking down some of the brickwork it was found to have cracked beyond repair. To be like-left in the middle of winter with only the one boiler was no joke. I had to look out for another without delay. I have given a good deal of attention to the construction of hot-water boilers, and I think I had never seen one that came up to my idea of what a boiler should be until some time ago my attention was called to a drawing of Wright & Co.'s Boiler, which appeared in the *Gardener*.

"After talking the matter over with my employer, W. S. Mitchell Innes, Esq., he at once granted permission to get the boiler I had formed such an opinion of. I at once put the order into the hands of Messrs. Meikle & Philp, hothouse builders and hot-water engineers, Torphichen Street, and they have fitted it up and attached the piping in the most complete manner. I also got some additional tight valves attached, so that if anything should at any time go wrong it can be attended to without disturbing the piping.

"And now as to the capabilities of the boiler for the work. As formerly stated, the considerable difficulty I found to get up the heat with the two oval flue boilers kept hard at work. I now find that with the remaining oval flue boiler left, I can heat up the whole of the houses and the laundry to a degree they never were before, and that with much less coal than it took to fire *one* of the oval flue boilers.

"Our chimney consists of a flue 65 feet long, led horizontally through centre of back wall, with 18 feet of a perpendicular stalk. Some doubt was expressed that, as we required a chimney pipe attached to boiler about 6 feet long, there would be deficiency of draught : but we have found the opposite to be the case. I attached a 6-feet length of 8-inch stove pipe, with elbow at boiler, and cleaning door on the angle, and as I found the draught very strong I got a throttle-valve damper fitted into the head of the stove pipe, and am able to regulate the fire to a nicety, and by banking-up the fire at 10 P.M., and turning the damper fully half open, I can leave it in safety. One of the greatest confidence till the usual time of commencing labour the following morning ; and instead of, as formerly, having to sit up firing the half of the night at least, and sometimes whole ones, we can retire to rest at a reasonable hour, confident of sleep being undisturbed by unpleasant dreams of plants and fruits going to ruin. From the experience I have had I may say that not the least of the good qualities of this boiler is its portability. We had not the slightest difficulty in putting it through a door in our contracted stoke-hole, and I can leave it as long by 4 feet broad, and fitting it up in a recess 4 feet square, and I am confident that with the assistance of two men I could take the whole to pieces and have it again in full working order in two hours. I have no hesitation in saying that for rapidity of circulation, small consumption of fuel, portability, and cleanliness, it has no rival, and have no doubt this boiler will win its way ; and where coals are high in price it will effect a considerable saving, and as there is good fire-brick use in it will be found a capital boiler for burning wood and other fuel."—J. CLARK, *The Gardens, Pierson's Green, Edenbridge.*

[We have a very high opinion of the boiler, and predict that it will take a foremost place in heating hothouses and all other buildings, and shall have some further remarks to make about the principles of it next month.—ED. *Gardener.*]

"I think yours the most perfect 'Heat Trap' yet invented.—DAVID THOMSON, *Drumlanrig Gardens.*"

For details and particulars as to the various sizes made, and prices, please see our pamphlet, entitled, "OUR BOILERS AND HEATING," which will be handed to all applicants, post-free.

We are prepared to supply **Thirty Different Boilers** of all powers, sizes, and heights, and can vary these to suit any particular situation or requirement.

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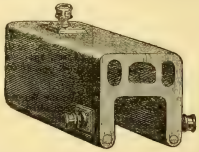
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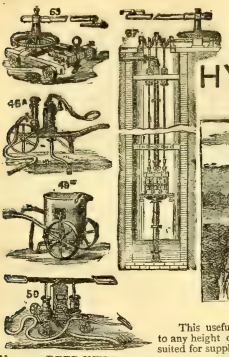


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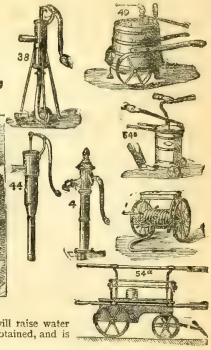


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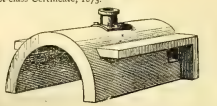
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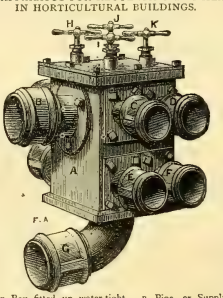
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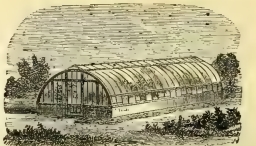


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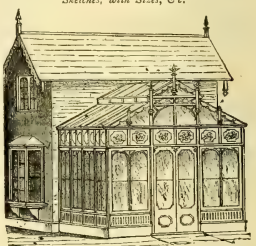
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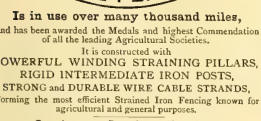
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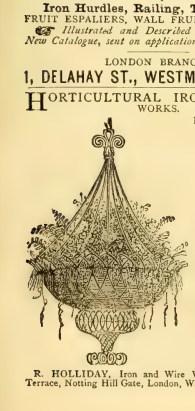
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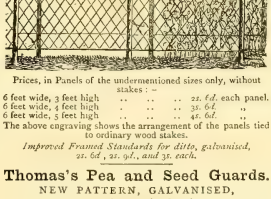
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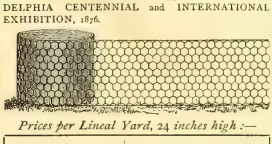
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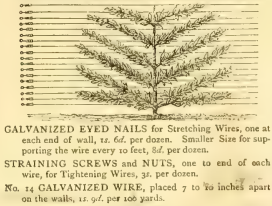
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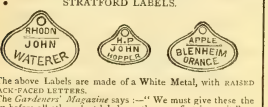
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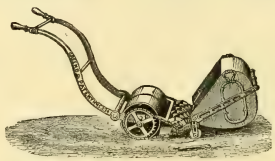
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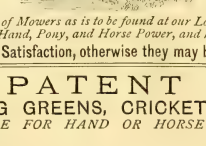
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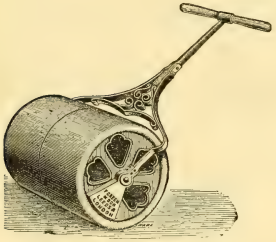
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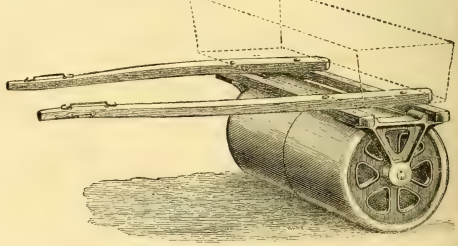
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THE

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Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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JOHN PARSONS and CO., Ranelagh Gardens, Leamington.

Verbenas, Verbenas, Verbenas.

WILLIAM BADMAN offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, at 12s. per 100 ; or turned out of pots, 10s. per 100. Good rooted Cuttings, 6d. per 100, 50s. per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S.E.

VERBENAS, VERBENAS, VERBENAS.—Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6s. per 100, 50s. per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, for 8s. Terms cash.

H. BLANDFORD, The Dorset Nurseries, Blandford.

FIFTY THOUSAND BEDDING PLANTS in variety for Sale, at Wholesale and Retail prices ; all grown in separate pots, and in excellent condition. CATALOGUES on application.

F. W. COOPER, Florist, Huntingdon.

PYRUS MAULEI is now being sent out, in strong plants, in full bud, at 10s. 6d. each, at once showing its distinct character and high claim to the attention of Hardy Fruit Growers.

W. MAULE and SONS, The Nurseries, Bristol.

SPIRÆA PALMATA.—Fine Crowns for Forcing, 75s. ; smaller, 25s. to 50s. per 100.

CHARLES NOBLE, Bagshot.

CENTAUREA CANDIDISSIMA.—Nice plants, in single pots, 20s. per 100, package included. Terms Cash.

JOHN HOUSE, Eastgate Nurseries, Peterborough.

Centaurea candidissima, or ragusina,

PACKAGE FREE.

WOOD and INGRAM offer fine plants of the above, thoroughly established in single pots, at 20s. per 100, or 15s. per 1000. Not less than 50 will be sold at the 100 price, or 500 at the 1000 price.

The Nurseries, Huntingdon.

Splendid Novelty.

HARRISON'S New MUSK.—For full description and particulars, see p. 460 of *Gardeners' Chronicle*, or apply to

HARRISON and SONS, Leicester.

Transit Agency for Plants, Seeds, &c.

C. J. BLACKITH and CO. (established 1827), Cox's and Hammond's Quays, Lower Thames Street, London, S.E.—Forwarders to all parts of the World.

Gentlemen's Gardeners, Amateurs, and Others

GARDEN POTS of best quality, are requested to send their orders to

J. MATTHEWS, Royal Pottery, Weston-super-Mere.

Price List on application.

To Amateurs, Gentlemen' Gardeners, and Others.

WANTED, choice CUT FLOWERS for the Trade.

FLOWERS, Mr. Gilbey, Post-office, Stoke Newington, N.

MRS. POLLOCK, or OTHER TRICOLOR GERANIUMS.—Parties having such to Dispose of will oblige by communicating. State quantity, size, and price.

R. and F. ALLUM, The Nurseries, Tamworth.

Enfield Market and Other Cabbage Plants.

WANTED, a quantity of good strong Plants. State lowest price to

H. and F. SHARPE, Seed Growing Establishment, Wisbech.

Wanted, Prickly Comfrey.

C. R. FREEMAN, Norwich, is a Buyer of large PLANTS and ROOTS. State price per ton, free from leaves and loose earth, at Railway Station.

For Description of

COLOURED PLATE, issued with this day's *Gardeners' Chronicle*,

ROSE QUEEN of BEDDERS (Noble), see advt. p. 575.

CHARLES NOBLE, Bagshot.

JERUSALEM ARTICHOKES.—A quantity of the above to offer, price 4s. per bushel.

STUART and MEIN, Seedsmen, Kelso.

Clematis Roots for Grafting, 30s. per 1000.

CLEMATIS.—Finest named kinds, spring and autumn flowering, any number at very reduced prices.

CHARLES NOBLE, Bagshot.

English Scarlet Runner Beans.

H. AND F. SHARPE have a few Bushels of the above more than they require, and offer them to the Trade at a very reasonable price.

Seed Growing Establishment, Wisbech.

Scarlet Runners, English-saved.

To MARKET GARDENERS and LARGE GROWERS.

JAMES FARRAR AND CO. offer a very fine lot of the above, on moderate terms.

Seed Warehouse, 86, Golden Lane, Barbican, London, E.C.

Lobelia, Emperor William.

H. B. MAY offers strong autumn-struck Plants (warranted the true variety), 6s. per 100, 50s. per 1000, package free.

Dyson's Lane Nursery, Edmonton ; and 135, New Flower Market, Covent Garden, W.C.

Lobelia, "Ebor."

F. AND A. SMITH offer the above, in strong plants, at 5s. per dozen.

Their new Descriptive CATALOGUE for 1877 is now ready

The Nurseries, West Dulwich, S.E.

To the Trade.

MANDEVILLA SUAVEOLENS.—Strong and thoroughly healthy plants, 8s. per dozen, or 45s. per 100.

FRANCIS R. KINGHORN, Sheen Nurseries, Richmond, Surrey.

ORCHARD-HOUSE TREES, Fruiting in Pots :—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Vines, Vines, Vines.—The Planting Season.

THE COWAN PATENTS' COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Canes of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

All the Best Selected

NEW CONSERVATORY CANNAS for 1877. Fine plants of the above now ready.

Descriptive CATALOGUES on application.

WILLIAM WOOD and SON, The Nurseries, Maresfield, Uckfield, Sussex.

NEW 1877 ROSES.—Our Plants are now fine and strong. Early orders are respectfully solicited. LISTS on application.

The New CLEMATIS LIST will be ready in May.

EWING and COMPANY, Royal Norfolk Nurseries, Eaton, Norwich.

HOLLYHOCKS.—Lists of Varieties, with their colours and price, on application ; also TEA ROSES, in pots.

L. WOODTHORPE, Glazenwood Nursery, Braintree, Essex.

Special List of Choice Orchids (No. 13).

THE NEW PLANT and BULB COMPANY beg to announce that the above is now ready, and will be sent post-free on application. It also contains a List of New Ferns, Beautiful Foliage Plants, Eurycles australasica, &c., all at low prices. Lion Walk, Colchester.

FERNS, Exotic and Half-hardy.—For Sale, an Amateur's Collection, containing 130 choice and excellent varieties. For particulars apply, between the hours of 10 and 12 A.M., or by letter to view, to

A. WILLIAMS, 64, Brunswick, S.E.

POTATOS for Sale.—Bresee's Peerless, Excelsior, Climax, Brownell's Beauty, Compton's Surprise, Fluke Kidney, Sutten's Early Flourball. Offers requested.

FREEMAN, Norwich

Special Offer.

SEED POTATOS.—A few tons of Early Rose, at 4s. 10s. per ton. Sample sack, 168 lb., for 15s.

D. BRINKWORTH and SON, Potato Growers, Reading, Berks.

ASPARAGUS, Giant, 3-yr. and 4-yr., fine, price 3s. per 100.

R. BATH, Crayford, Kent.

To the Trade.

ASPARAGUS, Giant, 1-yr. and 2-yr., fine.

JAMES BIRD, Nurseryman, Downham.

SEAKALE SETS.—For Sale, about 50,000, ready for Planting-Out. Apply to

H. THORNTON, 12, Maxwell Road, Fulham, S.W.

SALES BY AUCTION.

Moor House Nursery, Ilford, Essex,
Close to the Station.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Howitt to SELL by AUCTION, on the Premises as above, on WEDNESDAY, May 9, at 12 o'Clock precisely, the whole of the well grown BEDDING PLANTS, consisting of the usual assortment, also 700 Tea and other Roses, 100 Camellias in 24-pots; 5 fine specimen ditto, 5 to 8 feet; 65 fruiting Vines, Cyclamens, Azaleas, &c.

On view the day prior to Sale. Catalogues had on the Premises, and of the Auctioneers, 56, Gracechurch Street, E.C., and Leytonstone, Essex.

N.B.—No NURSERY TO BE DISPOSED OF. For particulars apply to the Auctioneers as above.

Upper Clapton, E.

Within five minutes' walk of the Clapton Station.

MESSRS. PROTHEROE AND MORRIS are instructed by J. Leischesc, Esq., who is leaving the neighbourhood, to SELL by AUCTION, on the Premises, The Cazenoves, opposite Cazenove Road, Upper Clapton, E., on THURSDAY, May 17, at 12 o'Clock, the whole of the choice STOVE, GREENHOUSE, and BEDDING PLANTS, together with the GARDEN IMPLEMENTS.

Further particulars will appear next week. Catalogues may be had of Mr. BURNHAM, the Gardener on the Premises, and of the Auctioneers.

Preliminary Notice of Forthcoming Sales by

MESSRS. PROTHEROE AND MORRIS, Auctioneers, 56, Gracechurch Street, London, E.C.; and Leytonstone, E.

MAY 29.—At the EXOTIC NURSERY, Tooting, S.W. A choice assortment of Greenhouse and Stove Plants, Orchids, &c.

MAY (latter end of).—At the BURY NURSERY, Bury Street, Edmonton. The whole of the Stove, Greenhouse, and Bedding Plants, together with the Utensils in Trade The Nursery to Let, with Possession.

Exhibition Plants, Gloxhenias, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 9, at half-past 12 o'Clock precisely, a selection of STOVE and GREENHOUSE PLANTS, from the Collection of John Tattersall, Esq., of Quarry Bank, Blackburn, being sold for want of room for Orchids; several of them are very fine and rare specimens, including Phormium tenax Veitchi, with 19 breaks and 200 leaves, 6 feet high by 6 feet; Zamia Lehmani, 40 fronds, 5 feet high by 6 feet; Crotons intermixed and Veitchii, 5 feet high by 4 feet; Crotons Youngii, 6 feet through; volutum, 3 feet high by 4 feet; Geonoma Seemanni, rare, 3 feet high by 4 feet; Nepenthes Hookerii, 6 breaks, 5 feet high by 4 feet; young Gleichenias, 4 feet through, of Mendeiii, rupestris, glaucescens, &c.; fine young flowering plants, from 3 to 4 feet through, of Azaleas, Aphelexes, Genetyllis, Ixoras, &c. Particulars may be had of

Mr. R. Tait, the Gardener at Quarry Bank, Blackburn; and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

May be viewed the morning of Sale, and Catalogues had.

Stove and Greenhouse Plants.

MR. J. C. STEVENS has been favoured with instructions from Leigh Pemberton, Esq., M.P., of Terry Hill, near Sittingbourne, to offer for SALE by AUCTION, on the Premises, on FRIDAY, May 11, at 1 o'Clock precisely, the fine Collection of STOVE and GREENHOUSE PLANTS formed by the late Lord Kingsdown, and which have been exhibited most successfully for the last ten years. The Collection comprises Camellias, Azaleas, Palms, Crotons, Cycas, Stephanotis, Franciscaeas, Orchids, &c., of the finest sorts, and will be sold without the least reserve.

On view the day prior and morning of Sale, and Catalogues had of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

N.B.—A conveyance will be provided at Sittingbourne to meet the 10.22 train from Victoria.

A Choice Collection of Established Orchids, Ferns, PALMS, &c.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, on WEDNESDAY, May 16, at half-past 12 o'Clock precisely, a collection of ESTABLISHED ORCHIDS, the property of a Gentleman giving up their culture, including amongst other fine plants of Aerides Fieldingii, 3 fine flowerspikes; Angraecum sesquipedale, A. eburneum, Cattleya exoniensis, C. labiata crispa superba, C. Mendelii, Lælia purpurata, thirteen leads; Cattleya labiata pallida, Lælia elegans Warnerii, Cypripedium Stonei, Phalænopsis Schilleriana, Phalænopsis Luddemanniana, Sobralioglossum xantholeucum majus, Dendrobium Schroderii, Dendrobium densiflorum and D. Wardianum, Lælia Turnerii, Oncidium ampliatum majus, Calanthe veratrifolia, Calanthe Masuca. FERNS, consisting of Gleichenia flabellata, Gleichenia speluncæ, Gleichenia dichotoma. PALMS, Cocos Weddelliana, Thrinax elegans, Livistona altissima, &c.

On view the morning of Sale, and Catalogues had.

Important Notice of a Great Clearance Sale of NURSERY STOCK.

MR. J. C. STEVENS has received instructions from Messrs. Lee to offer for SALE by AUCTION, on the Premises, Royal Vineyard Nursery, Hammersmith, on WEDNESDAY, June 6, and following days, at half-past 12 o'Clock precisely each day, the entire stock of STOVE and GREENHOUSE PLANTS, consisting of Tree Ferns on tall stems, including Dicksonia antarctica, Cyathea and Cibotiums; choice Ferns, amongst which are some nice pieces of Gleichenias, Dicksonia squarrosa and fibrosa; some beautiful specimen Adiantum superba, Onychium crecta, and others; some useful ORCHIDS, such as Arpophyllum, Dendrobes, Coelogynes, Cypripediums, Cattleyas, Lycastes, Lælias, Phalænopsis, Vandas, and others; Pandanus utilissimus, fine examples; Pandanus, Epiphyllums, Cleredendrons, Anthuriums, and others; some choice PALMS, including the best kinds of Phœnix, Chamærops, Caryota, Arajia, and some nice examples of the beautiful Cocos Weddeliana; fine specimen Cycas revoluta, and other choice STOVE PLANTS. In GREENHOUSE PLANTS are some nice pieces of Acrophyllum, Genetyllis, Eriostemon, Dracophyllum, Aphelexis, and others; also some healthy home-grown Camellias and specimen Azalea indica, with the usual collections of the best kinds of Ericas in fine health, and every variety of Stove and Greenhouse Plant. Also the GREENHOUSES and PITS with Boilers and Hot-Water Pipes, &c.

On view the day prior and morning of Sale, and Catalogues had.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from J. G. Hepburn, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., about the Middle of JUNE, the choice Collection of ESTABLISHED ORCHIDS formed by him at Sidcup Place, and Sold in consequence of Change of Residence.

More detailed particulars in future advertisements.

Battle, Sussex.

About 13½ mile from the Railway Station, and 5 miles from Rexhill Station on the London, Brighton, and South Coast Railway.

TO AMATEUR GARDENERS, NURSERYMEN, and OTHERS.

MESSRS. WOODHAMS AND SON have been favoured by Mr. B. W. Knight, who is relinquishing the growth of Specimen and Exhibition Plants, with instructions to positively SELL by AUCTION, at his North Trade Nursery, Battle, on THURSDAY, May 10, at 12 o'Clock, the whole of his extensive and valuable collection of SPECIMEN STOVE and GREENHOUSE PLANTS, Specimen Palms, Tree Ferns, Yuccas, Pandanads, Dracænas, Crotons, Phormiums, and other select plants, the whole of which are clean, healthy, well-grown specimens. Also a quantity of BEDDING PLANTS, comprising Geraniums, Fuchsias, Verbenas, &c.

Catalogues may be had at the place of sale, and of Messrs. WOODHAMS AND SON, Appraisers and Estate Agents, Havelock Road, Hastings, and Coghurst Farm, near Hastings.

The Vine Nursery, Rendlesham Road, Hackney Downs, E., near the Rectory Road Station, Great Eastern Railway.

PLANTS—BEDDING-OUT PLANTS—GREAT ANNUAL SALE.

MR. FREDERICK BELLGROVE has been favoured with instructions to SELL by AUCTION, on the Premises as above, on SATURDAY, May 12, and SATURDAY, May 19, at 11 o'Clock precisely each day, about 50,000 choice BEDDING-OUT PLANTS, of almost every description.

On view the day previous and mornings of Sale. Catalogues on the Premises, or at the Auctioneer's Office, 15, Somerford Grove, Stoke Newington, N.

FOR SALE (or PARTNER), the GLASS, STOCK, and LEASE of a Small NURSERY, near London, and an ACRE of GROUND—all at a Valuation.

X. Y. Z., *Gardeners' Chronicle* Office, W.C.

To Nurserymen or Florists.

TO BE DISPOSED OF, on account of husband's death, BUSINESS PREMISES, in main road. Been in occupier's hands for 26 years. Greenhouses and Vinery Sash-Work. Hamburghs in full bearing. Coal Sheds and Back Entrance.

A. B., 396, Old Kent Road, S.E.

To Landscape Gardeners.

BOROUGH of WIGAN: MESNES PARK.—The Corporation of the Borough of Wigan invite Landscape Gardeners to submit DESIGNS in Competition for the LAYING-OUT of the proposed MESNES PARK in this Borough. Premiums of £50, £40, and £30, respectively, will be given for the First, Second, and Third-best Designs. Block Plan of the proposed Park, and further particulars, may be obtained on application to the undersigned. Designs to be sent in by June 1 next.

MASKELL WM. PEACE, Town Clerk.

Town Clerk's Office, Wigan, April 19.

AURICULAS.—2000 Alpines and Selfs, in great variety, in bloom, to be Sold, at 6*d.*, 9*d.* and 12*.* each. Now on view at the Florists' Nursery, Mansfield Road, N.W., adjoining Gospel Oak Station.

Proprietor, EDWARD B. SHERRATT.

Verbenas. Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other mixed sorts, good strong spring-struck cuttings, well rooted, at 6*s.* per 100, 50*s.* per 1000, packed and sent. Cash to accompany all orders.

Islington Nursery, Park Street, Islington, N.

Bedding Plants! Bedding Plants!

FAND A. SMITH have an immense stock of strong, well-grown Hardy Plants, in great variety, which they offer at very low prices.

Their new Descriptive CATALOGUE is now ready.

The Nurseries, West Dulwich, S.E.

PEACHES and NECTARINES in Pots, Forcing, Orchard-House, and Wall Trees. Strong healthy trees of the best varieties, *7s. 6d.* and *10s. 6d.* each, carriage paid to London.

THOMAS RIVERS and SON, The Nurseries, Sawbridgeworth, Herts.

CALCEOLARIAS for Bedding, in six distinct and correctly-named varieties, including several very fine new varieties, 8*s.* per 100, 70*s.* per 1000. Sample dozen, post-free, 2*s.*

SAMUEL SHEPPERSON, Florist and Seedsman, Prospect House, Belper.

To the Trade.—Pelargoniums, Show and Fancy

JAMES GARAWAY AND CO. offer leading sorts, their selection, good plants in 48-pots, to flower in May, at 50*s.* and 60*s.* per 100.

JAMES GARAWAY and CO., Durdham Down Nurseries, Clifton, Bristol.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIPS. LISTS also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.

Mr. WEBB, Calcot, Reading.

Herbaceous and Alpine Plants (Illustrated).

THOMAS S. WARE'S CATALOGUE of the above for the present year is Now Ready, and includes New, Rare, and Choice Perennials, Bamboos, and Ornamental Grasses, Bog Plants, and Aquatics; also, a few Bulbs. Post-free on application.

Hale Farm Nurseries, Tottenham, London.

Specimen Azaleas.

FAND A. SMITH'S Collection of the above is now in full beauty; also a large quantity of smaller plants, in 48-sized pots.

Their new Descriptive CATALOGUE for 1877 is now ready

The Nurseries, West Dulwich, S.E.

Fine Telegraph Cucumber Plants.

T. WRIGHT, NURSERYMAN and FLORAL DECORATOR, has many thousand choice BEDDING PLANTS now ready. Bouquets for Weddings, Balls, Parties, Button-holes, &c., at the shortest notice.

Dockyard Station Nursery, Woolwich (late in the occupation of Mr. Canuell).

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The soil most suited is a rich soil, to keep up free growth. Extra strong plants, 18*s.* per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.

RICHARD SMITH, Nurseryman, Worcester.

Tea-scented China Roses, &c.

WILLIAM FLETCHER begs to announce that the above are unusually fine this season, now in bloom; also all the New varieties, 1875-6-7.

W. F. can also supply ADIANTUM CUNEATUM in large 60's, very fine stuff, cheap.

Ottershaw Nurseries, Chertsey.

NEW CHRYSANTHEMUMS. — Fulton, Fulgore, La Nymphe, Laciniatum; strong young plants of the above choice kinds, 2*s.* 6*d.* each.

Mrs. Dixon, Lucretia Conrad, Mr. Bleaux, Dictator, Sho-Gakko, Belle Castellane, Beauté Parfait, 1*s.* each.

Also a large collection, including all the principal older varieties, from 4*s.* per dozen.

A descriptive Priced LIST on application to

T. JACKSON and SON, The Nurseries, Kingston-on-Thames.

CENTAUREA GYMNOCARPA PLUMOSA, of dwarfer growth and more silvery leafage than the type, in 3-inch pots, 4*s.* per dozen. C. RAGUSINA, in 3-inch pots, 3*s.* per dozen, 20*s.* per 100. Out of pots, package free.

J. J. MARRIOTT, Mellish Road, Walsall.

To the Trade and Others.

SEED POTATOS.—Imported Snowflake, Myatt's Prolific, Beauty of Hebron from blue to other soils, Red-skinned Flourball, Paterson's Victoria. Sample first-class.

CHRISTMAS QUINCEY, Potato Grower and Merchant, Peterborough.

For Sale, Tree Ferns, Exhibition Plants, TO EXHIBITORS.

WILLIAM E. DIXON, having gained nearly One Thousand Prizes, is relinquishing exhibiting, and now offers the whole of his SPECIMEN PLANTS for Sale by Private Contract, from May 1 to 17, after which time he will offer the remainder by Public Auction. Further particulars in future advertisements.

Beverley, Yorkshire.

BROCCOLI, Hammond's Imperial White, sort grown by Mr. Hammond, 2*s.* per packet, post free. CUCUMBER, Armitage's Satisfaction, five seeds, 1*s.* per packet, post free.

WILLIAM ARMITAGE AND SON, Seed Merchants, Huddersfield.

To the Trade—Turnip Seeds.

H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.

Market Growing Establishment, Wisbech.

Gentlemen about Planting Beds of Lily of the Valley.

W. BOFF has to offer a quantity of imported Clumps, that have been used for cut flowers during the spring. They are the best Dutch variety. Price 25*s.* per 100, free of packing.

203, Upper Street, Islington, N.

EARL BEACONSFIELD FUCHSIA is the greatest novelty of the year. Two First-class Certificates. *Gardeners' Chronicle*, April 7, p. 436 ; and 21*st* inst., post-free. Special Trade offers.

JOHN LAING AND CO., Stanstead Park, Forest Hill, S.E.

RICHARD WALKER has upwards of 100,000 RED BEET, PICKLING PLANTS, best stock, 5*s.* per 1000 ; and about 400 of the best forcing SEAKALE in the country, 2*s.* 10*d.* per 100 ; LEMON THYME, 8*s.* per 100 ; PEREGOVAL THYME, 5*s.* per 100 ; COMMON THYME, 5*s.* per 100 ; Scarlet King and pink DAISIES, good roots, 5*s.* per 1000 : double white ROCKETS, 2*s.* per dozen ; PYRETHRUM in four colours, 2*s.* per dozen ; fine dozen in new DELPHINIUMS, mixed colours, 1*s.* per dozen. Terms cash.

Market Gardens, Biggleswade, Beds.

RODGER, McCLELLAND AND CO. have still a few extra strong plants of HYDRANGEA OTAKSA GRANDIFLORA, 1¾ to 3 feet high, 12*s.* to 18*s.* per dozen.

CLEMATIS JACKMANII, 2*s.* per dozen.

PRINCE OF WALES, 9*s.* per dozen.

TROPÆOLUM SPECIOSUM, beautiful hardy climber, 6*s.* per dozen.

MUHLENBECKIA COMPLEXA, one of the most elegant of hardy climbing plants (like Maidenhair Fern), 6*s.* to 9*s.* per dozen.

64, Hill Street, Newry.

Australian Plants and Seeds.

EUCALYPTUS GLOBULUS, PALMS, CYCADS, FERNS, and all kinds of PLANTS and SEEDS indigenous to Australia, Fiji, &c., supplied on the most reasonable terms. Priced CATALOGUES and Special Quotations on application.

SHEPHERD AND CO., Nurserymen and Seedsmen, Darling Nursery, Sydney, New South Wales. (Established 1827.)

Agents: Messrs. C. J. BLACKMAN AND CO., Cox's Quay, Lower Thames Street, London, E.C.

New Double White Lobelia.
(COMPACTA.)

MR. CANNELL begs to inform the Public generally that he has purchased part of the Raiser's Stock for the distribution in England, and will send nice rooted plants, 12. each, 9s. per dozen.

LOBELIA CŒRULEA ALBO MARMORATA, FL.-PL. —A most lovely mottled blue and white; both are said to be highly valuable for all purposes; 8d. each, 4s. per dozen. The old Double Blue, 2s. per dozen; the set of three for 2s. All post free. Special price for large quantities.

Swanley, Kent.

Immediate Effect, &c.—Plant Now.

MESSRS. JAMES DICKSON AND SONS beg to draw attention to their very extensive and superior hardily grown stock of thoroughly well transplanted EVERGREENS, of all sorts and sizes, embracing very numerous specimens of unusually good form for HOLLIES, &c., in the best condition for safe removal, for giving immediate effect, hiding objectionable objects, &c. Prices, and all particulars, post-free, on application. "Newton" Nurseries, Chester.

FIFTY THOUSAND MAGNIFICENT DWARF ROSES, in POTS.

ROSES for BEDDING, at 12s. to 18s. per dozen, 100s. per 100.
TEA-SCENTED ROSES, superb, established in 6-in. pots, adapted for greenhouse or conservatory, 30s. per dozen, 200s. per 100. Descriptive CATALOGUES on application.
WILLIAM PAUL WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

LYE'S FAVOURITE.—The handsomest and best Potato ever offered. Indispensable for Exhibition. This variety will be the greatest Prize Winner of the season. We have purchased the entire Stock of Mr. James Lye, Clyffe Hall, Market Lavington, and parties wishing to grow this remarkable handsome and beautiful variety should order at once, as the stock is getting very limited. It can only be obtained direct from us. Price 5s. per lb. Orders of 20z. and upwards carriage free.
DANIELS BROS., The Royal Seedsmen, Norwich.

Cheap Bedding Geraniums.

ALFRED FRYER offers the following good plants, at per dozen for cash:—Golden Circulors: Peter Grieve, 12s.; Prince of Wales, 6s.; Lady Cullum, 3s. 6d.; Sir Robert Napier, 3s. 6d.; Mrs. Pollock, 3s.; Sophia Dumaresque, 3s.; Mrs. Gibson, 3s.; Lass o' Gowrie, 4s. 6d.; Queen of Hearts, 4s. 6d.; Miss Burdett Coutts, 3s. 6d.; Mrs. John Clutton, 3s. 6d.; Prince Silverwings, 3s. Double flowered: 6 Mare d'Avignon; 6 one of each for 5s. No charge for packing, if empties are returned at once; also post-free for 6d. per dozen extra. Fe Priced LIST supply to
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

Cheap Bedding Plants.

H. J. HARDY has much pleasure in offering fine and healthy autumn-struck plants of the following:—
GERANIUMS, Vesuvius, Master Christine, Jean Sisley, Triumphant, Madame Vaucher, and other best Bedding sorts, at 8s. per 100 from store, or 10s. from single pots.
CALCEOLARIA FLORIBUNDA AUREA, 5s. per 100 from stores.
Package free and carriage paid for 20s. worth. Terms Cash.
H. J. HARDY, Scour Valley Seed Grounds, Bures, Suffolk.
Please note alteration of Address.

New Bedding Tropæolum, "Hunteri."

DOWNIE AND LAIRD have much pleasure in offering for Spring delivery the above, an excellent Bedding variety, surpassing its parent Cooperi, being of a dwarfer habit: we can with perfect confidence recommend it. Price, per dozen plants, 1s.; each, 1s. 6d. Usual discount to the Trade. West Coates Nursery, Edinburgh.

Dahlias.

CHARLES TURNER can now supply strong Plants of all the classes, also the following New Varieties offered for the first time, 1872:—Artiste, Burgundy, Black Knight, Canary, Chris Ridley, Drake, Lewis, Elsa, Figaro, Mrs. Urquhart, The Rover and Vivian Grey.
The New Spring CATALOGUE, containing full descriptions of above and all the most popular plants, may be had free on application.
The Royal Nurseries, Slough.

TO THE TRADE and Large Buyers.

FUCHSIAS, CHRYSANTHEMUMS, COLEUS, HELIOTROPES, SALVIAS, HELICHRYSUMS, in all the best sorts, 15s. per 100.
PINKS, PENTSTEMONS, PHLOXES, PANSIES, 20s. per 100.
PYRETHRUMS, PÆONIES, CARNATIONS, PICOTEES, 25s. per 100.
IRESINE, AGERATUMS, LOBELIAS (from cuttings), CALCEOLARIAS, MESEMBRYANTHEMUMS, 5s. per 100.
GERANIUMS, Zonal and Nosegay, in great variety, 25s. to 20s. per 100; Bicolor, 20s. per 100.
WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

CHARLES NOBLE, Bagshot, offers the following:—
RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1½ to 2 feet, 21s. per dozen, 150s. per 100.
" " " " for immediate effect, 2½ to 3 feet, and same through, 42s. per dozen, 300s. per 100.
" Seedling, 2½ to 3½ feet, 24s. per dozen, 200s. per 100.
" PONTICUM, 2½ to 2 feet, bushy, 6s. per dozen, 35s. per 100.
KALMIA LATIFOLIA, 1 to 1½ foot, buds, for potting, 75s. per 100.
ANDROMEDA FLORIBUNDA, buds, for potting, 75s. and 100s. per 100.
ERICA CARNEA, very fine, 21s. per 100.

Verbenas, Verbenas, Verbenas.

FRANCIS C. BOFF offers White, Purple, Scarlet, Pink, Rose, Crimson, Maroon, Mulberry, true to name and colour. Also FUCHSIAS, HELIOTROPES, light and dark, all at 6s. per 100, or 50s. per 1000.
LOBELIA PUMILA and MAGNIFICA, 5s. per 100, or 40s. per 1000, all good rooted cuttings, strong, clean and healthy.
Terms—Cash with all Orders.
MAGDALA NURSERY, UPPER HOLLOWAY, N.
(Late of Northampton Park Nursery, Canonbury.)
N.B.—Address, 17, Magdala Road, Upper Holloway, N.

SUTTON'S CHOICE FLOWER SEEDS,

FREE BY POST OR RAIL.



Sutton's Improved Miniature Aster.

A profuse flowering variety, of dwarf compact habit, remaining in bloom for a considerable period, hence it is invaluable for growing in pots for conservatory or drawing-room decoration. We have this season succeeded in saving six distinct colours, which greatly increases the value of this beautiful Aster for bedding purposes.

Price per Packet, mixed, 2s. 6d.
Six varieties, separate, 5s.

SUTTON'S COLLECTIONS of CHOICE FLOWER SEEDS,

To produce a beautiful and continuous display during Summer and Autumn.

	Free by Post or Rail.	£	s.	d.
No. 1 Collection of Flower Seeds	.. ..	2	2	0
No. 2 Collection Ditto	.. ..	1	11	6
No. 3 Collection Ditto	.. ..	1	1	0
No. 4 Collection Ditto	.. ..	0	15	0
No. 5 Collection Ditto	.. ..	0	10	6

Small and useful Collections can also be had, from 2s. 6d. to 7s. 6d., free by post.

Full particulars may be had, gratis and post-free, on application.

TO OBTAIN THE
Best Garden Lawns and Croquet Grounds
SOW
SUTTON'S LAWN GRASS MIXTURE,

Which forms a close velvety turf in a very short time.

For making New Lawns or Croquet Grounds 3 bushels, or 60 lb., is required per acre, or 1 gallon to every six rods (or perches) of ground.

For improving those already in turf, 20 lb. should be sown per acre.

March, April, and May are the best months for sowing.

Price, 1s. 3d. per lb., 22s. 6d. per bushel, carriage free.

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds Gratis and post-free.

Sutton & Sons

THE QUEEN'S SEEDSMEN,
READING, BERKS.

Cheap Plants.—Special Offer.

WILLIAM BADMAN offers, as under, all healthy strong stuff:—
VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 10s. per 100; well-rooted cuttings, 6s. per 100, 50s. per 1000; 12 choice named sorts, 2s. per 100.
CALCEOLARIA, Golden Gem, 5s. per 100, 40s. per 1000.
LOBELIA, speciosa (true), 3s. per 100, 20s. per 1000: Blue-stone and pumila grandiflora, all from cuttings, 5s. per 100, 40s. per 1000.
PELARGONIUMS, Vesuvius, from stores, 8s. per 100, 75s. per 1000; Jean Sisley, 10s. per 100; Madame Vaucher, 10s. per 100; Master Christine, 12s. per 100: all from single pots.
" Tricolor, Mrs. Pollock, 20z. per 100; Crystal Palace Gem, 12s. per 100; Flower of Spring, 12s. per 100.
HELIOTROPE, finest dark, good bushy plants, 12s. per 100 rooted cuttings, 6z. per 100.
AGERATUM, Imperial Dwarf, blue, fine bedding plant, 5s. per 100; 40s. per 1000.
IRESINE LINDENI and COLEUS VERSCHAFFELTI, crimson leaf, 6z. per 100; 50s. per 1000.
CENTAUREA CANDIDISSIMA, fine silver leaf, 3z. per dozen; 20s. per 100.
Packing included. Terms, cash.
Cemetery Nursery, Gravesend, S.E.

To Parties Furnishing New Houses.

H. WALTON begs to intimate to the above that he has for sale an unrivalled collection of FLOWERING and FOLIAGE PLANTS of extra size suitable for immediate effect, which must be cleared out to make room. Also an immense stock of STOVE and GREENHOUSE PLANTS of all the newest and most approved varieties.
H. W.'s CATALOGUE is now ready, and will be forwarded post-free on application to
H. WALTON, Ecce Rod Nurseries, Brierfield, near Burnley, Lancashire. Edge End is distant from Burnley, 3 miles; Accrington, 9 miles; Skipton, 14 miles; Bradford, 30 miles; Manchester, 30 miles; Huddersfield, 30 miles; Leeds, 35 miles; Wakefield, 40 miles.

Presented (by post) on application,
NEW CATALOGUE for 1877.

MESSRS. CLIBRAN AND SON will have great pleasure in sending their PRICED DESCRIPTIVE LIST for this Spring, free by post on application. Their stock of Florist Flowers, Bedding and Soft-wooded Plants is unusually large and fine, all of either its extent or quality, all the newest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the names true to name. Another great advantage to Purchasers is that none of the plants offered are taken directly from a warm propagating house and sent off, but are all carefully hardened and most of them potted off singly, and are thereby fitted to travel either by rail or post without the slightest injury. A great proportion are autumn-struck plants, and many of the undermentioned can be sent by post:—

Abutilons, in variety, 3z. 6d. per dozen.
Achimenes, in variety, 3z. per dozen.
Ageratums, in variety, 8s. per 100, 2s. per dozen.
Begonias, tuberous, 6z. and 9z. per dozen.
" non-tuberous, 4z. per doz.
Caladiums, 12z. per dozen.
Calceolarias, Golden Gem, &c., 6z. per dozen.
Camellias, 30z. and 42z. per dozen.
Carnations and Picotees, 12 plants, 6s.; 12 pairs, 10s. 6d.
Carnations, tree, in variety, 9z. per dozen.
Centaurea ragusina, 3z. per dozen.
Chrysanthemums, near 10,000 now ready, 20z. per 100, 3z. per dozen.
Cinerarias, 40z. per 100, 6z. per dozen.
" to name, 9z. per dozen.
Clematis, in variety, 60z. per 100, 9s. per dozen.
Coleus, in variety, 20z. per 100, 3z. per dozen.
Cyclamens, in variety, 6z. and 9z. per dozen.
Dactylis elegantissima, 5z. per 100, 1z. per dozen.
Dahlias, 25z. per 100, 4z. per dozen.
Delphiniums, splendid sorts, 9z. to 12z. per dozen.
Epiphyllum, 9z. to 18s. per dozen.
Ferns, stove and greenhouse, 9z. to 18z. per dozen.
Fuchsias, 20z. per 100, 3z. per dozen.
Gardenia florida, 6z. to 12z. per dozen.
Greenhouse Plants, 9z. to 18z. per dozen.
Geranium, Tricolor, 3z. 6d. per dozen.
" Bicolor, 20z. per 100, 3z. per dozen.
" Silver-edged, 3s. 6d. per dozen.
" Double, 20z. per 100, 3z. per dozen.
" Zonals, for bedding, 15s. per 100, 3z. per dozen.
" Zonals, for pot culture, 3z. to 6z. per dozen.
Gladiolus, to name, 6z. to 9z. per dozen.
" splendid seedlings, 20z. per 100, 3z. per dozen.
" Brenchleyensis, 6z. per 100, 1z. per dozen.
Helianthemums, 2z. 6d. per dozen.
Herbaceous Plants, 20z. per 100, 3z. per dozen.
Heliotropes, in variety, 2z. 6d. per dozen.
Hepaticas, 4z. per dozen.

Iresine Lindeni, 10z. per 100, 2z. per dozen.
Iris, German, 3z. per dozen.
Ivies, in variety, 6z. per dozen.
" Irish, 3z. per dozen.
Lantanas, 3z. per dozen.
Lobelias, 8s. per 100, 2s. per dozen.
Mesembryanthemum cordifolium fol. var., 10z. per 100, 2z. per dozen.
Mimulus, in variety, 3s. per dozen.
Myosotis, 6z. per 100, 1s. per dozen
Pentstemons, 25s. per 100, 3z. 6d. per dozen.
Phloxes, 25s. per 100, 3z. 6d. per dozen.
Pelargoniums, Show, Fancy, or French, 6z. to 9z. per dozen.
Pinks, 25s. per 100, 4z. per doz.
Potentillas, double, 9z. per doz.
Polyanthus seedlings, 5s. per 100, 1z. per dozen.
" to name, 1s. 6d. each.
Primroses, single, 4z. to 9z. per dozen.
" old double velvet, 1s. 6d. each.
" single, assorted colours, 2z. per dozen.
Pyrethrums, double, 6z. to 9z. per dozen.
Roses, H.P., from ground, 6z. to 9z. per dozen.
" in pots, established, 12s. per dozen.
Rock plants, 15s. per 100, 3s. per dozen.
Salvias, in variety, 3z. per doz.
Saxifragas, in variety, 3z. per dozen.
Sedums, in variety, 3z. per doz.
" acre aurea, elegans, glaucus, &c., 6z. per 100, 1z. 6d. per dozen.
Stove Plants, 9z. to 18s. per dozen.
Succulents, 4z. to 6z. per dozen
Tropæolums, 3z. per dozen.
Veronicas, 3z. per dozen.
Vines, all the leading kinds for planting and fruiting, 30z. to 60z. per dozen.
Strawberry runners: our collection contains sixty-five sorts; 2z. 6d. per 100.
Apples, Pears, Plums, and Cherries, pyramids, 12s. to 18s. per dozen; dwarf trained, 4z. to 30z. per doz.

The Oldfield Nurseries, Altrincham.



E. G. HENDERSON & SON

Offer the following in Seed, of quality the best that can be had, at per packet :—

CALCEOLARIA—the variety of colours, size, and shape of the flowers is the result of many years' continual improvement ; 2s. 6d. and 5s.
CINERARIA—the shape and brilliancy of colour in these flowers is of great importance ; 2s. 6d. and 5s.
" double-flowered, 2s. 6d. and 5s.
PRIMULA SINENSIS, crimson, scarlet, and white (better cannot be had), separate or mixed, 2s. 6d. and 5s.
" " double-flowered, true from seed, 2s. 6d. and 5s.
CYCLAMEN PERSICUM GRANDIFLORUM—brilliant colours, with large-size petals and perfumed flowers, is the quality here offered ; 1s. and 2s. 6d.
BEGONIA, tuberous-rooted (our collection is unequalled), 1s. and 2s. 6d.
" tuberous-rooted, double-flowered, mixed colours, 2s. 6d.
BALSAM—we trust to none but our own saving—mixed, 1s. ; nine colours, 2s. 6d
PINK, from named collection, 1s. and 2s. 6d.
CARNATION, mixed, 2s. 6d. See Catalogue for separate sections.
MIMULUS, superb strain, same as exhibited every year at the Royal Horticultural Society, 1s. 6d.
LOBELIA, Brilliant Improved, White Brilliant, Mazarine Gem, speciosa—from pot plants, pumila grandiflora, Lustre Improved, Defiance—the best red, Bluestone, and Magnifica, 1s. each.
PANSY, English, show flowers, 1s. 6d.
" French, blotched, 1s. 6d.
PETUNIAS, very beautiful, saved in pots, in separate sections at their Wellington Road Nursery, 1s.
" double flowered, 1s. and 2s. 6d.
SWEET WILLIAM, extra fine, 1s.
" " from named flowers, 1s. and 2s. 6d. [each.
STOCK, East Lothian, scarlet, white, and purple, 6d. and 1s. Intermediate, Brilliantissima, and others. See Catalogue.
AURICULA, extra choice alpine varieties, 2s. 6d.
SOLANUM, Improved Hybrid, as grown for the London Market, 1s.
" HENDERSONI, conical-shaped berries, 1s.
GLOXINIA, drooping and erect, 1s. 6d. each ; mixed, 2s. 6d.
HOLLYHOCK, from named collection, 1s. and 2s. 6d.
PRIMROSE, POLYANTHUS, and OXLIP, best quality, mixed colours of each, 1s.
WALLFLOWER, double German, mixed colours, 6d. and 1s.

PINE-APPLE NURSERY, MAIDA VALE, LONDON, W.

ZONAL GERANIUM.

On May 1, with the New Dahlias,

JOHN KEYNES

will be prepared to offer one of the finest ZONAL GERANIUMS ever yet before the Public.

J. K. trusts his long experience and care will be sufficient guarantee for the quality and character of this splendid variety. It was raised by Mr. Wm. Dodds. A great truss of flower, splendid bedder, lively majenta colour, quite a new shade from any other. Has been the admiration of all in the beds at Salisbury.

"JENNIE DODDS,"

Price 18s. per dozen. One-third off where twelve or more are ordered.

SALISBURY.—April 22, 1877.

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18s. to 30s. per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or £5 per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded, £5 to £7 10s. per 100, or 18s. per dozen.

ANTHONY WATERER,
KNAP HILL NURSERY, WOKING, SURREY.

CRANSTON'S NURSERIES.

ESTABLISHED 1785.

SPECIALITIES.

ROSES, FRUIT TREES, CONIFERS.

Address — CRANSTON & CO.,
KING'S ACRE, near HEREFORD.

TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.

WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above ; also of his

MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

NEW WHITE LOBELIA, "THE BRIDE."

JOHN PERKINS & SON

Have much pleasure in offering the above Novelty as the best pure White Lobelia ever sent out.

It is free flowering, very dwarf habit, and we can with perfect confidence recommend it.

PRICE PER DOZEN, 9s. USUAL DISCOUNT TO THE TRADE.

52, MARKET SQUARE, NORTHAMPTON.

HOLLIES—HOLLIES—HOLLIES.

THIS BEING UNDOUBTEDLY THE BEST SEASON OF THE YEAR FOR

TRANSPLANTING HOLLIES,

We would call the attention of the Public to our Collection of the same.

We possess over 5000 Plants of the COMMON GREEN HOLLY, fit for immediate removal, from 2 feet to 10 feet.

Also a very large and choice selection of GREEN and VARIEGATED VARIETIES.

Prices of any of the above will be given on stating the height required.

OSBORN & SONS,

FULHAM NURSERIES, LONDON, S.W.

NEW ENGLISH-RAISED SEEDLING ROSES.

MESSRS. PAUL & SON,

THE OLD NURSERIES, CHESHUNT, N.

(THESE NURSERIES ESTABLISHED IN 1806),

Have great pleasure in announcing as a continuation of the series of English Roses raised or sent out by them since 1860, inclusive of LORD CLYDE (Paul & Son), DUKE OF EDINBURGH (Paul & Son), CHESHUNT HYBRID (Paul & Son), ANNIE LAXTON (Laxton), DUKE OF CONNAUGHT (Paul & Son), &c., &c., and containing never a bad one in the lot,

TWO NEW ENGLISH SEEDLING ROSES.

H.P. EMILY LAXTON (Laxton), a large full flower with globular, pointed bud, opening into large globular flower. In the way of Monsieur Noman, but of a rich cherry-rose, deeper and fuller than that kind, and with strong vigorous habit, making a grand pillar Rose.

First-class Certificate Royal Horticultural Society ; First-class Certificate at the Leeds and Crystal Palace Rose Shows, and 1st Prize at Exeter for twenty-four of any one kind.

H.P. MARCHIONESS OF EXETER (Laxton), clear, rose-flushed, light cherry-rose, large, finely built-up flower, very sweet, and of strong vigorous growth ; a larger more double Annie Laxton, yet perfectly distinct from that kind.

Plants in pots of the above, ready early in June, 7s. 6d. each, 14s. the two varieties; Blooming Plants, in 24-pots, 10s. 6d. each, 20s. the two varieties.

The two kinds described above have been proved two seasons at Cheshunt, and can be recommended as continuing the race begun by this raiser with H.P. Annie Laxton.

PAUL & SON,

THE OLD NURSERIES, CHESHUNT, N.

(These Nurseries Established 1806.)

WM. PAUL & SON

(Successors to the late A. Paul & Son—Established 1806),

PAUL'S NURSERIES, WALTHAM CROSS, HERTS,

Respectfully invite Inspection of their large Collection of Specimen and Half-specimen

ROSES IN POTS, now finely in bloom.

☞ *Visitors by Railway can enter the Nurseries from the Platform, Waltham Station, Great Eastern Railway, half an hour's ride from London.*

WM. PAUL & SON can supply fine plants, in pots, of the NEW ROSES, Magna Charta, 5*s.* each; Queen Eleanor, 3*s.* 6*d.* each; Queen of Waltham, 2*s.* 6*d.* each; Star of Waltham 2*s.* 6*d.* each. The New French Roses of 1877, in strong plants, 24*s.* per dozen. Older Roses, in pots, hardened plants for present planting, all the leading kinds, 10*s.* 6*d.* to 18*s.* per dozen, £3 15*s.* to £6 per 100.

Priced Descriptive CATALOGUE free by post on application.

PAUL'S NURSERIES, WALTHAM CROSS, HERTS.

NEW DOUBLE WHITE VIOLET, "BELLE DE CHATENAY."

Awarded a First-class Certificate by the Horticultural Society of France.

We offer this magnificent Viola for the first time. The flowers are pure white, most delicately perfumed, of immense size, and very double; in fact, almost equalling in size the well-known white Aquilegia.

It is pronounced by French horticulturists to be the very best double white Violet in cultivation.

Trade price on application.



The raiser says: "This new Violet will be appreciated as a Market Gardener's and Florist's plant, as it blooms most freely and continuously."

The illustration is from some specimen flowers, which are of natural size. We can strongly recommend this Viola as a charming addition to the popular group of flowers.

Trade price on application.

Retail Price—Strong Plants, 4s. 6d. (Post-free 5s.)

THE QUEEN'S SEEDSMEN, *Carters* HIGH HOLBORN, LONDON, W.C.

NEW PELARGONIUM,

DUCHESS OF BEDFORD.

MESSRS. BECKWITH & SON,

TOTTENHAM, N.,

Have much pleasure in offering the above Pelargonium as the best White ever sent out, and having a large Stock can offer it at once.

It has received a First-class Certificate from the Royal Horticultural Society.

Price for Strong Plants, in 5-inch pots, coming into flower, 7s. 6d. and 10s. 6d. each; a few Large Specimens, in 24-size pots, 2 guineas each.

TOTTENHAM NURSERY, TOTTENHAM, N.

CHOICE FLOWER SEEDS

For Present Sowing.

Our own superb strains, guaranteed of unsurpassable quality. Post-free on receipt of P.O.O. or Stamps.

	Per packet.—*s. d.*
AURICULA, choicest mixed, alpine .. .. 6*d.* and	1 0
CALCEOLARIA HYBRIDA, very choice, mixed 1*s.* ,,	2 6
CINERARIA HYBRIDA, from named flowers.. 1*s.* ,,	2 6
CARNATION and PICOTEE, from stage flowers 1*s.* ,,	2 6
HOLLYHOCK, Prize English .. .. 6*d.* ,,	2 0
INDIAN PINK, splendid double, mixed	0 4
MIMULUS, Clapham's superb, very fine..	1 6
MYOSOTIS DISSITIFLORA—Forget-me-not	0 6
PANSY, choicest mixed English .. .. .. 6*d.* and	1 0
PRIMULA SINENSIS, choicest mixed .. .. 1*s.* ,,	2 6
POLYANTHUS, finest gold-laced, choice	1 0
STOCK, Brompton, scarlet Giant	0 6
,, East Lothian, splendid	0 6
SWEET WILLIAM, very choice, mixed..	0 6
WALLFLOWERS, splendid double, mixed .. 6*d.* and	1 0
GREENHOUSE PERENNIALS, 12 fine varieties	6 0
HARDY PERENNIALS, 12 choice sorts, Pansy, Hollyhock, &c.	4 6

DANIELS BROS.,

ROYAL NORFOLK SEED ESTABLISHMENT, Norwich.



CHOICE

FLOWER AND VEGETABLE SEEDS FOR 1877.

	Per packet.—*s. d.*
BALSAM, Williams' Superb Strain .. 2*s. 6d.* and	1 6
BEGONIA FŒBELII	2 6
BEGONIA SEDENI SEMIPLENA	2 6
BEGONIA, Hybrid, finest mixed.. .. .. 2*s. 6d.* and	2 6
CYCLAMEN PERSICUM GIGANTEUM.—This is a great improvement on the old type, the flowers being thrown well above the foliage, each flower measuring from 2 to 2½ inches in length; pure white, with a fine bold violet-purple eye .. .. 5*s.* and	2 6
CYCLAMEN PERSICUM, Williams' Superb Strain, 5*s.*, 3*s. 6d.*, 2*s. 6d.*, and	1 6
CALCEOLARIA, Williams' Superb Strain, 5*s.*, 3*s. 6d.*, 2*s. 6d.*, and	1 6
CINERARIA, Weatherill's Extra Choice Strain, 5*s.*, 3*s. 6d.*, 2*s. 6d.*, and	1 6
GLOXINIA, Finest Drooping Varieties	1 6
,, Finest Erect Varieties	1 6



PRIMULA, Williams Superb Strain, Red, White, or Mixed .. 5*s.*, 3*s. 6d.*, 2*s. 6d.*, and	1 6
PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance	5 0
SOLANUM, Williams' Improved Hybrids	1 6
STOCK, Williams' Improved Giant Scarlet Brompton	1 6
WALLFLOWER, Harbinger, Autumn and Winter flowering	1 0

Packets of Flower Seeds, excepting heavy kinds, Free by Post.



Verbenas for the Million.

SBIDE can now supply, for cash, strong, healthy, spring-struck Verbenas, free from disease of any kind, at 6s. per 100; well-hardened, extra good plants, 8s. per 100, including Purple, Scarlet, White, Pink, and many other shades of colour. All true to name, and package free.

CALCEOLARIAS, aurea floribunda, and other varieties, good strong plants, 8s. per 100, 60s. per 1000.

HELIOTROPE, light and dark, 6s. per 100.

COLEUS VERSCHAFFELTII, 10s. per 100.

IRESINE LINDENI, 8s. per 100.

GERANIUMS, Crystal Palace Gem, good plants, established in single pots, 15s. per 100. Cash with order to S. BIDE, Alma Nursery, Farnham, Surrey.

NEW BEDDING GERANIUM "RED KING."

JAMES COCKER & SONS

Have pleasure in offering the above as the best Scarlet Bedding Geranium yet sent out. It was grown at the Royal Horticultural Society's trial grounds last season, and was awarded a First-class Certificate for its general good qualities. A List with testimonials may be had on application.

Strong Plants now ready, 2s. each, 18s. per doz.

The Trade supplied on the usual terms.

JAMES COCKER & SONS,
SUNNYPARK NURSERIES, ABERDEEN.

COCOA-NUT FIBRE REFUSE, 2s supplied to Carter, Veitch, Wills, Bull, Daniels, Laing, Henderson, Dickson, &c., 3d. per bushel, 100 bushels for 20s.; truck, 35s.; free to rail or wharf. PEAT, LOAM, SAND, LEAF MOULD, &c., per bushel, bag, or truck. Fresh SPHAGNUM, 8s. 6d. per bag.
M. H. BENTOTE, Nunhead, S.E.

COCOA-NUT FIBRE REFUSE may be had, at 3s. per one-horse load, of
M. GAREY, Manufacturer, 57, Old Montague Street, Whitechapel, E.

COCOA-NUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand testimonials. Four-bushel bag, 1s., bag included; truck-load, loose, free to any Rail, 25s.
POTTER OYLER, Spitalfields Market, N.E.

COCOA-NUT FIBRE REFUSE, newly made.—Reduced price, 20 bushels, 6s. 8d.; 100, 20s.; or Truck-load, 40s. Delivered free to any rail in London.
J. STEVENS AND CO., Fibre Works, Greyhound Yard, 134, High Street, Battersea, S.W.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17s. per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5s. 6d. each.
Fresh SPHAGNUM, 10s. 6d. per sack.
WALKER AND CO., Farnborough Station, Hants.

LOAM.—Exceedingly fine Yellow, delivered into truck on the South-Eastern, London, Chatham and Dover, and London, Brighton and South Coast Railways. Samples and price on application to
J. BERKLY, Hope Nursery, Deptford, S.E.

MILLER AND JOHNSON
(ESTABLISHED 1855)
Manufacture the highest quality of
ARTIFICIAL MANURES
For ROOT, CORN, and GRASS CROPS.
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ODAMS' MANURES,
FOR ALL CROPS.
Manufactured by the NITRO-PHOSPHATE and ODAMS' CHEMICAL MANURE COMPANY (LIMITED), consisting of Tenant-Farmers occupying upwards of 150,000 acres of Land.
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Managing Director—JAMES ODAMS.
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EWING'S MILDEW COMPOSITION, in Bottles, 1s. 6d. and 3s. each. One Gallon Cans (to make 104 gallons of mixture for syringing), 12s. each; Two Gallon Cans, 20s. each.
Mildew or Red Spider are effectually prevented or destroyed by merely painting the hot pipes with the composition mixed with white-wash. No direct application to the foliage is then necessary.
Royal Norfolk Nurseries, Eaton, Norwich.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solution of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in Boxes, 1s., 2s., and 20s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6s.; per pint, 3s. 6d. Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardener*, and by many first-class Gardeners.
Prepared by JOHN KILNER, Wortley, near Sheffield.

SATISFACTION ABROAD.



INDIA.

D. MCGREGOR, *Superintendent Anandale Garden, Simla, March* 8, 1877.

"Dear Sir,—Having seen the Plants sent out from your Firm to Mr. Freeman at Simla, I will feel obliged if you will send me your Catalogue, as I intend sending you an order for both Plants and Seeds at once."

CAPE OF GOOD HOPE.

"Leenwenhof Garden, Cape Town, November 28, 1876.

"Dear Sir,—I hasten to inform you that since I wrote to you on the 21st inst. the plants have come to hand and are doing well. I am very glad they arrived before my departure from home, so that I could attend to them, and may now safely leave them during my absence to the care of my gardener. Allow me to thank you for the care you have taken in the proper transmission of the plants, which I have no doubt will do well.

"Believe me to be, dear Sir, yours truly, "P. J. KOTZE."

SWANLEY, KENT.

STRAWBERRY, THE DUKE OF EDINBURGH
(MOFFAT).

THE LAWSON SEED AND NURSERY COMPANY (LIMITED),
EDINBURGH and LONDON,

Have made arrangements with Mr. Moffat, Coldwells, to send out, for the first time, the above-named splendid Strawberry. Fruit very large, firm, and of excellent flavour, bright scarlet colour. A most prolific bearer, and as a main crop for market purposes it is unsurpassed.

Strong Plants, 42s. per 100; 25s. per 50; 15s. per 25; 9s. per dozen.

Trade Price on application.

1, GEORGE IV. BRIDGE, EDINBURGH; 54, BISHOPSGATE ST. WITHIN, LONDON.
April, 1877.

THE THAMES BANK IRON COMPANY,



Old Barge Wharf, Upper Ground Street, London,
SURREY SIDE, BLACKFRIARS BRIDGE.



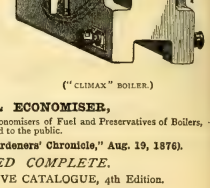
HOT-WATER BOILERS,
PIPES, CONNECTIONS.

NEW PATENT "CLIMAX" BOILER (1874). See p. 666, 1874, *Gardeners' Chronicle.*
"GOLD MEDAL" BOILER (Birmingham, 1872).
PATENT "EXCELSIOR" BOILER (1871).
☞ *The largest and most complete Stock in the Trade; upwards of Twenty Thousand Pounds' worth to choose from.*

"WITLEY COURT" BOILER (Silver Medal 1872).
"TRENTHAM IMPROVED" BOILER, with Waterway End and Smoke Consumer.
"TUBULAR," and every other Boiler of known merit or excellence.
☞ *Prize Medal Awarded at the National Contest, Birmingham,* 1874.



("TRENTHAM IMPROVED" BOILER.)



("CLIMAX" BOILER.)

MILL'S PATENT AUXILIARY FUEL ECONOMISER,
Which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boilers, Fire-Bars, and Furnace Fronts ever yet introduced to the public.

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HOT-WATER APPARATUS ERECTED COMPLETE.

PRICE LIST on application; or, Six Stamps for DESCRIPTIVE CATALOGUE, 4th Edition.

BEST & CHEAPEST INSECTICIDES

Duty Free, under permission of the Hon. Board of Customs.

THE "LONDON" TOBACCO POWDER, "Horticultural" Tobacco Juice, also TOBACCO PAPER, CLOTH and CORD.

Particulars on application,

CORRY & SOPER,

BONDED TOBACCO STORES, SHAD THAMES, LONDON, S.E.

All Proprietary Insecticides and Manures kept in stock.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60z. to 100z. per 100; superior close-wove, 40z., 50z. and 55z. per 100; Packing Mats at 20z., 30z., and 35z. per 100; and all other descriptions of Mats at equally low rates, at

J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

Wholesale Russia Mat Merchants.

MARENDAZ AND FISHER, James Street, Covent Garden, W.C., Importers of RUSSIA MATS, RAFFIA FIBRE, &c. Large stock of TANNED GARDEN NETTING, RABBIT NETTING, TIFFANY, &c., at wholesale prices for a quantity.

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Peat, Loam, Sand, Birch Brooms.

HARRIET SCOTT, Dealer in all kinds of GARDEN MATERIALS, such as STAKES, RODS, HURDLES, WATTLES, BAVINS, PEA STICKS, PIMPS, MOSS, &c., delivered free. Price List on application.

H. S. begs to notify that Mr. Uwins is no longer in her employ. Broom Maker to the Crystal Palace Company.

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Glass, Glass, Glass.

HENRY WAINWRIGHT, GLASS MERCHANT, Alfred Street, Boar Lane, Leeds, has in stock all sizes of Glass at prices not to be surpassed by any house in the trade. 300 panes, 21 oz., 8 by 6, for 12s. 6d. Also dealers in VULCANISED INDIARUBBER HOSE PIPES, for gardening purposes.

Rosher's Garden Edging Tiles.



THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incure no further labour or expense, as do "grown" Edgings, consequently being much cheaper.





GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

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ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheets, of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability. Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety. Slates, Cement, &c.

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SILVER SAND, fine or coarse grain as desired. Prices by Post per Ton or Truck-load, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries.

KENT PEATS or LOAM supplied at lowest rates in any quantities.

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WOOD TRAINING STICKS and TALLIES, commended by Royal Horticultural Society. BAMBOO CANES, RAFFIA for tying, VIRGIN CORK, ARCHANGEL and other MATS, PACKING MATS, &c. Wholesale prices on application to

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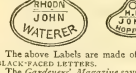
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Under the Patronage of the Queen.

J. SMITH'S IMPERISHABLE STRATFORD LABELS.



The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.

The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

J. SMITH, The Royal Label Factory, Stratford-on-Avon.

Gather Honey from Your Flowers.

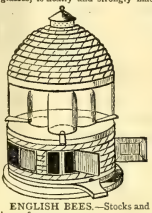
NEIGHBOUR'S Celebrated BEEHIVES.

PHILADELPHIA EXHIBITION, 1876.

PARIS EXHIBITION, 1867.

Three Silver Prize Medals awarded George Neighbour & Sons. The only English exhibitors who obtained Silver Medals for Beehives.

The IMPROVED COTTAGE BEEHIVE, as originally introduced by G. Neighbour & Sons, working three bell-glasses, is neatly and strongly made of straw; it has three windows in the lower Hive. This Hive will be found to possess many practical advantages, and is more easy of management than any other Beehive that has been introduced.



Price, complete £1 15 0
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The LIGURIAN or ITALIAN ALP BEE being much in repute, G. N. & SONS supply a Swarm of Bees with genuine Italian Queen, in the Improved Cottage Hive, at £4, Hive included.

An Italian Alp Queen, with full directions for uniting to Black Stocks, 15s. each.

ENGLISH BEES.—Stocks and Swarms may be obtained as heretofore.

THE APIARY. By A. NEIGHBOUR. 5s., postage 4d.

A newly arranged Catalogue of other improved Hives, with Drawings and Prices, sent on receipt of two stamps.

GEO. NEIGHBOUR AND SONS, 127, High Holborn, W.C., or 149, Regent Street, London, W.

JOHN WARNER & SONS,

HYDRAULIC and SANITARY ENGINEERS, BELL and BRASS FOUNDERS to HER MAJESTY

(ESTABLISHED 1763),

THE CRESCENT FOUNDRY, CRIPPLEGATE, LONDON, E.C.,

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THE FOUNDRY WORKS, WALTON-ON-THE-NAZE, ESSEX.



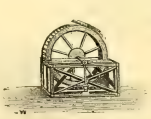
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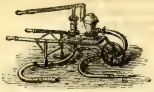
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Portable Pumps for Irrigation.



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FULL LIST OF HORTICULTURAL WATERING IMPLEMENTS UPON APPLICATION.

Estimates supplied for Pumping Machinery of every description, for Steam, Water, Wind, Horse, or Manual Power, upon receipt of Description of Requirements.

PRIZES FOR NEW PLANTS.

WILLIAM BULL, F.L.S.,

HAVING OFFERED THROUGH THE ROYAL HORTICULTURAL SOCIETY

ONE THOUSAND POUNDS FOR NEW PLANTS

Of his own introduction, begs to announce that Twelve Silver Cups and Money Prizes as follows (the Fifth Annual Series) will be awarded at the Royal Horticultural Society's Great Summer Show, to be held at Kensington, on Tuesday, June 19, 1877. Particulars of these Prizes are given at pages 167 to 171 of Mr. William Bull's Catalogue of New Plants for 1877. The Prizes to be awarded on Tuesday, June 19, will be as follows:—

FOR PRIVATE GROWERS.

1st Prize, a Silver Cup, value .. 15 Guineas
2d Prize, a Silver Cup, value .. 10 Guineas
3d Prize, a Silver Cup, value .. 6 Guineas

FOR NURSERYMEN.

1st Prize, a Silver Cup, value .. 15 Guineas
2d Prize, a Silver Cup, value .. 10 Guineas
3d Prize, a Silver Cup, value .. 6 Guineas

In each and all cases the above Prizes are offered for Twelve New Plants of Mr. W. Bull's introduction, and sent out since the commencement of 1874. The Plants available for these Prizes to comprise only those announced in Mr. W. Bull's Catalogues, as sent out by him for the first time. The Catalogues can be easily referred to, or a List of the Plants had on application.

In each and every entry the names of the Twelve Plants to be exhibited must be sent with the entry. Exhibitors can only compete for one Prize at a time in each class.

The Twelve Plants must be twelve distinct species or varieties, but each may be composed of one or more individual plants, if grouped in one pot, pan, or vase.

Any Exhibitor winning either of these Prizes, and having previously won two of Mr. William Bull's Silver Cups, can have Money instead of the Cup, if preferred.



PRIZE CUP.
Specially Designed by Messrs. Elkington & Co., to be awarded for Mr. William Bull's New Introductions.

A SERIES OF SILVER CUPS,

and MONEY PRIZES,

as follows, will be given to those not having previously won any of

MR. WM. BULL'S SILVER CUPS:

FOR PRIVATE GROWERS.

1st Prize, a Silver Cup, value 15 Gs. and £10
2d Prize, a Silver Cup, value 10 Gs. and £7
3d Prize, a Silver Cup, value 6 Gs. and £5

FOR NURSERYMEN.

1st Prize, a Silver Cup, value 15 Gs. and £10
2d Prize, a Silver Cup, value 10 Gs. and £7
3d Prize, a Silver Cup, value 6 Gs. and £5

In each and all cases the above Prizes are offered for Twelve New Plants of Mr. W. Bull's introduction, and sent out since the commencement of 1874. The Plants available for these Prizes to comprise only those announced in Mr. W. Bull's Catalogues, as sent out by him for the first time. The Catalogues can be easily referred to, or a List of the Plants had on application.

In each and every entry the names of the Twelve Plants to be exhibited must be sent with the entry. Exhibitors can only compete for one Prize at a time in each class.

The Twelve Plants must be twelve distinct species or varieties, but each may be composed of one or more individual plants, if grouped in one pot, pan, or vase.

Mr. William Bull will also give the following PRIZES this year, for 12 NEW PLANTS of his introduction, sent out since the commencement of 1874:—

FOUR SILVER CUPS,

As follows, will be given at the Grand Summer Exhibition of the Glasgow and West of Scotland Horticultural Society to be held in the Crystal Palace Conservatory, Royal Botanic Gardens,

GLASGOW, on May 23, 1877:—

FOR PRIVATE GROWERS.

1st Prize, a Silver Cup, value.. .. .. 10 Guineas
2d Prize, a Silver Cup, value.. .. .. 6 Guineas

FOR NURSERYMEN.

1st Prize, a Silver Cup, value.. .. .. 10 Guineas
2d Prize, a Silver Cup, value.. .. .. 6 Guineas

The above Prizes are confined to Growers in Scotland.

In each and all cases the above Prizes to be offered for Twelve New Plants of Mr. W. Bull's introduction, and sent out since the commencement of 1874. The Plants available for these Prizes to comprise only those announced in Mr. W. Bull's Catalogues as sent out by him for the first time. The Catalogues can easily be referred to, or a List of the Plants had on application. In each and every entry the names of the Twelve Plants to be exhibited must be sent with the entry. Exhibitors can only compete for one Prize at a time. The Twelve Plants must be twelve distinct species or varieties, but each may be composed of one or more individual plants, if grouped in one pot, pan, or vase.

THREE SILVER CUPS,

As follows, will be given at the Great International Horticultural Exhibition, to be held at

CARLISLE, on Sept. 6, 7, and 8, 1877:—

FOR PRIVATE GROWERS.

1st Prize, a Silver Cup, value.. .. .. 15 Guineas
2d Prize, a Silver Cup, value.. .. .. 10 Guineas
3d Prize, a Silver Cup, value.. .. .. 6 Guineas

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

By Her Majesty's *Royal Letters Patent*

RENDLE'S

PATENT

SYSTEM OF GLAZING

CONSERVATORIES, PLANT-HOUSES,

Orchard-houses, Greenhouses, Rose Temples,

And other Horticultural Structures.

Under the Patronage of

His Royal Highness the Prince of Wales
His Royal Highness Prince Christian
His Highness the Maharajah Duleep Singh
Her Majesty's Commissioners for Parks and Gardens
Her Majesty's Government, Royal Arsenal, Woolwich, War Department
Royal Engineers, Woolwich
Metropolitan Board of Works
Commissioners of Sewers
Corporation of Birmingham
His Grace the Duke of Rutland
His Grace the Duke of Portland
His Grace the Duke of Sutherland
His Grace the Duke of Devonshire
The Most Noble the Marquis of Exeter
Most Noble the Marchioness of Anglesey
The Right Hon. the Earl of Stamford and Warrington
Great Western Railway Company
London and North-Western Railway Company
Great Northern Railway Company
South Devon Railway Company
The Royal Aquarium and Winter Garden Society, Westminster
The Royal Horticultural Society, South Kensington
The Royal Gardens, Kew
The Botanic Gardens, Chelsea
Wolverhampton Skating Rink
Leicester Floral Hall
Royal Hotel, Blackfriars
Chelsea Swimming Bath Company
Blackpool Winter Gardens
Rhyl Winter Gardens
Birmingham Winter Gardens, Aston Park
And One Thousand of the Leading County Families in the United Kingdom.

SPECIAL ADVANTAGES

OF

Rendle's Patent System of Glazing.

This system is now being universally adopted by *Her Majesty's Government*, several of the *leading Railway Companies*, some of the *principal Corporations*, including the *Metropolitan Board of Works*, *Commissioners of Sewers*, and the *New Winter Garden Companies* throughout the country.

There will be an *enormous saving in the Maintenance and Repairs of Roofs on this System—say from 80 to 90 per Cent.—and there is no reason why a roof should not be as perfect in 20 years* as the first week, because all the *perishable materials, such as wood, iron, or paint, are completely covered by the glass from the destructible influences of the weather.*

Another grand recommendation is, that there is no breakage from *contraction or expansion either from heat or cold*, as the glass has full play in every direction. Tens of thousands of squares are broken from this cause every year. Nor is there any breakage from *vibration of large Railway Roofs* in heavy gales of wind, or from the *passing of express or fast trains*. Indeed, it is well known that a puttied roof is never perfect in a station where express trains run through.

In adopting this System, all the *everlasting expenses of re-painting, re-puttying and re-glazing are completely done away with*; and if it were now in use throughout several of the Great Railway Companies, such an enormous saving would be effected *that it would have a considerable influence in supplying an addition to the yearly dividends.*

Summary of Special Advantages.

1.—Saving of from 80 *to 90 per Cent.* in maintenance and repairs.
2.—No breakage from contraction or expansion, from heat or frost.
3.—No breakage from vibration caused by heavy winds or passing trains.
4.—Squares of glass can be instantly replaced.
5.—The construction is very strong and durable.
6.—The glass can be put on in *one-fourth* the time of the old plan.

For all the other advantages see Illustrated CATALOGUES and BOOKS of DESIGN, which can be obtained from the Inventor and Patentee—

WILLIAM EDGECUMBE RENDLE,
WESTMINSTER CHAMBERS, VICTORIA ST., LONDON, S.W.

NEW PLANTS FOR 1877.

MR. WM. BULL'S

ILLUSTRATED

CATALOGUE

for 1877

Is now ready, and can be had on application, price 1*s.*

It contains Names, Descriptions and Prices of the following New Plants, which are now being sent out for the first time :—

ARALIA FILICIFOLIA,
ARTANTHE RUBRONODOSA,
CHAMÆDOREA EBURNEA,
COLEUS PICTUS,
CROTON HENDERSONI,
,, REX,
CURMERIA WALLISII,
CYCAS PLUMA,
CYPRIPEDIUM DRURYI,
DIEFFENBACHIA CHELSONI,
,, VELUTINA,
DIPLADENIA ORNATA,
,, REGINA,
DIPLAZIUM ARNOTTII,
DRACÆNA AMPLIATA,
,, CRUENTA,
,, MINIATA,
,, MIRABILIS,
,, NIVALIS,
,, ROBINSONIANA,
,, ROSEO-PERFECTA,
,, RUBESCENS,
,, TRIUMPHANS,
,, VESTALIS,
,, VIVICANS,
DRACONTIUM ALBOSTIPES,
,, ANNULATUM,
,, CARDERI,
ENCEPHALARTOS HILDEBRANDII,
EUCALYPTUS CITRIODORA,
GYMNOGRAMMA MERTENSII DOBROYDENSIS,
HIBISCUS (ROSA-SINENSIS) COLLERII,
IRIS ROBINSONIANA,
LOMARIA DALGAIRNSLÆ,
MACROZAMIA MACKENZII,
NEPHRODIUM TRUNCATUM,
PANAX LACINIATUM,
PHŒNIX RUPICOLA,
PLECTRANTHUS FŒTIDUS,
SADLERIA CYATHEOIDES,
SMILAX SHUTTLEWORTHII,
STANHOPEA SHUTTLEWORTHII.

NEW REGAL PELARGONIUM

"PRINCE of WALES."

This is an exceedingly handsome variety of this new and popular class of Pelargoniums. It is of excellent habit, very free blooming, and produces good trusses of large effective flowers; they are not really double, but from their fulness of form and extra number of petals, which are prettily undulated, they have the appearance of being so. The colour is a bright vermilion, with light centre and light edge to the petals, the superior ones being marked with light crimson and darkly blotched.

One Guinea.

MR. WILLIAM BULL'S

ILLUSTRATED CATALOGUE FOR 1877

Contains Names, Descriptions and Prices of the above, and can be had on application, Price 1*s.*

Establishment for New and Rare Plants,
KING'S ROAD, CHELSEA, LONDON, S.W.



SATURDAY, MAY 5, 1877.

MAY DAY.

MAY-DAY as a popular festival appears to have fallen out of fashion; like all else dependent upon the capricious tastes of humanity, May-day revels have had their rise and fall, their seasons of greatness and neglect, being doubtless at the height of their popularity during the reign of Elizabeth—those piping times of peace, when—

> Every man eat in safety,
> Under his own Vine, what he planted;
> And sang the merry songs of peace
> To all his neighbours.

May games were at this period held in every village which boasted a convenient green whereon to erect the May-pole—this latter being the gift of the lord of the manor, who never regarded such festivities with churlishness, but would bestow the tallest and straightest tree from his plantations for the occasion, and gave countenance to the proceedings, not only by his own presence, but by that of his family also.

The rustics rose betimes in every hamlet to fetch home green boughs from the woods with which to decorate the fronts of their cottages, and to intertwine with flowers to form garlands; the village maidens also were stirring at dawn, for the dew which sparkled on the grass on the first morn of May was supposed to have potent charms, and she who bathed her face with its cool crystal drops would become as fair as a Lily and red as a Rose; this pretty conceit indeed abides in the North to the present time, and many a Scotch lassie would not miss the beautifying spell, though it cost her a night's repose. For some time before the "natal morn of joyous May" what hopes and fears must have agitated the breast of every village maiden who had the slightest claim, either by reason of her beauty or amiability, to be made the queen of a day!

The custom of choosing a May-queen, the gathering of garlands and the dancing on the green, have all become things of the past, but the memory of them lives in undying verse Tennyson has immortalised the flower-crowned queen of past times, and the "Queen of the May" has become as familiar in our mouths as household words.

When the May-pole was erected and the garlands were hung, when her majesty was chosen and attended to her flower-decked chair of state, when her subjects had paid their allegiance, then the sports and games began. Foremost among these was dancing, which was led by the sovereign of the mimic court, as it was in her palace at Richmond by Elizabeth, whose "ordinary exercise was six or seven galliards in a morning, besides music and singing." At the same time as the courtiers danced their "grave measures and corantoes" in stately halls and hospitable manor-houses, the peasant youths and maidens tripped the comely country round, and the recreations which became the courtly gentleman to adopt were no less becoming in the squire, the yeoman, ploughman, the trader, the artisan, and the apprentice; the accomplishments enumerated by Roger Ascham as worthy of attainment being "to ride comely, to run fair at the tilt or ring, to play at all weapons, to shoot fair in bow or surely in gun, to vault lustily, to run, to leap, to wrestle, to

swim, to dance comely, to sing and play of instruments cunningly, to hawk, to hunt, to play at tennis, and all pastimes generally which be joined with labour, used in open place and in the daylight, containing either some fit exercise for war or some pleasant pastime for peace."

All alike joined in these diversions and met on common ground to display their strength and skill: he was best man who could hold his own against all comers. The frequent and neighbourly commingling of all degrees of people caused the bonds of kindness between all classes to be closer knit, and judging from the chroniclers of the time there was much less jealousy between rich and poor than at the present day—every one knew his station, and felt a just and worthy pride in fulfilling its duties.

As the reformed religion spread and Protestants became more puritanical in their ideas, the most passionate invectives were hurled from the pulpit against May-day games and similar seasons of merry-making, which were not few and far between during the supremacy of the Catholics. At first the Puritans directed their remonstrances solely against such sports as were played on the Sabbath-day; so long as a popular festival fell on one of the six days devoted to labour the people were left to enjoy it, although bitter denunciations were levelled against the dancing schools (then greatly patronised), which were called academies for teaching "the noble science of heathen devitry," and the musicians, who were admonished thus —"Give over your occupations, you pipers, you fiddlers, you minstrels and you drummers, you tabretters and you fluters, and all other of that wicked brood." Sweet music, they held, "at first delighteth the ears, but afterwards corrupteth and depraveth the mind." Fortunately, such severe views were not held by the whole of the reformed clergy, who were willing to abolish whatever might be supposed to have had a papistical or idolatrous meaning in the processions, but who considered that it was unchristian, even on a Sunday, after evening service, "to shoot at the butts, to play football, or even to see an interlude;" thus, for many years, public opinion had been divided.

The celebration of May-day, with all its pastoral simplicity, never appears to have been revived with the spirit it was at one time kept. It became almost obsolete with the pranks of the "Lord of Misrule" and his noisy court of lusty mummers. Of all this bravery, but little beyond the tradition has descended to us. In remote districts "St. George and the Dragon" is sometimes played in the farmhouse kitchen, but it is but a sorry representation of the fun and frolic chronicled as being common some two or three centuries ago; and even "Jack-in-the-Green," that once popular burlesque of May-day celebrations, is rapidly dying out. It is true that in certain villages there is still a farcical semblance of distinguishing the day, but the sorry exhibition is one to arouse pity rather than mirth. A few poor, wretchedly-clad girls, having made a collection of tawdry finery and dingy artificial flowers, deck themselves out, and, carrying ill-made garlands of the same shabby materials, pass from door to door begging remembrance for "the May." The doles given to them may represent the collections made for the poor at all ancient festivals, but the representatives of the queen do not carry with them even a shadow of the freshness and beauty which surrounded their predecessors, and which made them always welcome, doubtless, as a picturesque embodiment of the charms of the season.

Hawthorn buds may be gathered on the first of May—in exceptional seasons—but even calculating by the old style we should seldom find employment for many lads and lasses to "go fetch in May," and we fear the pole would be sparsely clothed that depended on present outdoor vegetation for its floral beauty.
T. S. Y.

New Garden Plants.

STAPELIA GRANDIFLORA, *Mass.*, VAR. LINEATA. *N. E. Br.* (fig. 85).

Stems erect, branching at base, 6—12 inches high, 1—1½ inch thick, visibly pubescent, 4-angled, angles compressed but becoming thicker and more rounded with age, toothed, teeth erect; flowers produced at the base of the young branches. Peduncle 3—5 lines long, very stout, generally 3-flowered (one central and one on each side), or rather with three buds, the two lateral ones often dropping off without expanding, or by abortion 2 or 1-flowered, pubescent; pedicels stout, 1½ inch long, 2 lines thick, pubescent. Bud ovoid, apex obtuse, slightly depressed. Calyx lobes 5 lines long, lanceolate acute, pubescent. Corolla ¾—6 inches in diameter, the back pale green, pubescent, the face everywhere transversely rugose, the disk dull purple-red covered with erect purple hairs (not matted together); the apical half to two-thirds of the lobes is glabrous; the margin distichously ciliated with long hairs, the outer rows being white, the inner pale purple; from the base to half way towards the apex dull purple with numerous transverse pale yellow undulated lines: the apical half is filled up with dark purple-brown, which projects towards the base of the lobe in the form of a cone, giving the figured in the *Botanical Magazine*, t. 585, to which Haworth later on gave the name S. spectabilis, and which differs from S. grandiflora in its more densely villose corolla and dark purple-brown inner corona, the yellow markings in the figure being intended for reflections. Second, the figure figured in Jacquin's *Stapeliæ*, t. 59, which appears to me to differ in the more compressed angles of the stem, the more numerous-flowered peduncle, and the dark purple-brown inner corona.

Masson's figure, though characteristic, is a poor one, without dissections, and his description is still worse, yet the following peculiarities appear—viz., The parts of the inner corona (rostra) are represented by five yellow lines radiating from the centre. The flower is figured as seen from the front, and the rostra, whatever outline they may present in profile, would appear as five radiating linear or subulate processes. 2. The description says "pedunculo sæpe trifori." These two characters, whilst absent from the *Bot. Mag.* and Jacquin's plants, are both present in the plant here described. The three-flowered peduncle is very peculiar, the short peduncle is branched like a trident or the Greek letter Ψ, but generally only the central flower develops—the two side ones often failing to some size, becoming abortive, sometimes by the suppression of one or both of the lateral buds: the peduncle is one or two flowered; many of the genus are three or more flowered, but in those that are so the peduncle branches in an irregular manner and is pedicels are aggregated. In no other species that I am acquainted with does the peduncle branch in the peculiar Ψ like manner of the present plant, which well fits the description "pedunculi sæpe trifori."

For a long time I considered this as a new and distinct species, intending to publish it under the name of S. flavostriata, but last October I received from Mr. Justus Corderoy a flower exactly like that of my plant, except that the corolla was entirely of a dark purple-brown, the transverse yellow lines being absent: this nicely bridged over the difference in colour between my plant and Masson's, and after a long and careful consideration of the subject I can only come to the conclusion that Mr. Corderoy's plant is the true S. grandiflora, Mass., and the one here described a variety of it, differing in nothing but the transverse yellow lines on the corolla lobes. For my knowledge of the plant I am indebted to Sir Henry Barkly, who sent specimens and living plants to the Royal Gardens, Kew; from one of the latter my drawing was made. It appears to be a widely spread form in South Africa. Sir H. Barkly, in a note sent with his specimens, states that he has received it from Somerset East, Colesberg, Griqualand West, and Victoria West. The woodcut represents only young stems, when fully developed they are 9—12 inches high, and the angles are thicker and more rounded; the pubescence is distinctly visible to the eye when held against the light, and the odour of the flowers is very fœtid. The following specimens of it are preserved in the Kew Herbarium—Sir H. Barkly 21! and 21 bis! MacOwan 1197 partly!

For the plant described by Jacquin (*Stapeliæ*, t. 59) as S. grandiflora, I propose the name Scapel a obscura. A specimen of MacOwan's in the Kew Herbarium, bearing the same number (1197) as on the variety above, but sent some years later, agrees exactly with Jacquin's figure. *N. E. Brown, Kew.*

GREENHOUSE PLANTS.

THEIR CULTURE AND MANAGEMENT.

CROWEAS.—These belong to a limited family of plants, introduced from New South Wales, that are of comparatively small habit of growth, dense and bushy, producing their lively dark pink star-shaped flowers, for two or three months in succession through the autumn, at a time when greenhouse-flowering subjects are few. Croweas have many things to recommend them to the general cultivator, not the least of which is their easy growth and adaptability for decorative purposes, especially for the conservatory, where by regulating the time that they commence growing a succession of the plants may be had so as to furnish some in flower from the commencement of August, to be succeeded by others that will keep on until after the close of the year. They will also bear, whilst in bloom, placing in a confined situation in conservatories or similar places much better than most hard-wooded subjects; they likewise have the property of flowering freely in a very small state. Plants the first year grown from the usual nursery sized stock will just bloom as plentifully in proportion to their size as when older. When they get large and are well managed, they are very useful for exhibition, if required for this purpose, the nature of the flowers being such that they will bear a deal of knocking about without being bruised or disfigured. They make moderately strong roots, that are not at all delicate or liable to injury from causes that would result in the death of more tender things; yet they do not form them in such large quantities as to need so much pot room as many plants. All the kinds will grow in loam, and in it, when of a good description, the colour of the flowers is often a little higher; but in peat they generally make quicker progress, and where the latter can be had of a fair character I should recommend it in preference to loam, using about one-sixth or seventh of clean sharp sand intermixed.

Although the Croweas do not require anything above a cool greenhouse temperature to grow them, they are amongst a certain number of plants that will bear and make much more progress by having their growing season lengthened through being started in a little warmth in the winter. Their time of flowering can also be regulated by this. Plants that are thus started into growth in slight heat in February will bloom early in August if required to be succeeded by others, the growth of which commenced with the advance of the season. Where there is the means of submitting them to a temperature of 50° in the night, with a rise of 8° or 10° by day, about February, I should advise the young stock to be started at that time. Healthy plants in 6-inch pots, obtained any time through the autumn, will be suitable to commence with. In selecting these, choose such that have been properly attended to in stopping the shoots, so as to have enough branches to start with, for if they have not been kept cut back they will have assumed a too spare habit, and lack the first essentials to form close bushy specimens.

At the commencement of the year cut in the whole of the preceding summer's growth, leaving the shoots about 6 inches long from the point where they were shortened to the previous season; tie them out in a horizontal position, and about the time and in the temperature above advised place them where they will receive a fair amount of light, slightly damping them overhead with the syringe once a day; here they will soon commence growth, and be in a condition for potting. They will require a 2-inch shift, with a fair quantity of drainage, using the soil in a moderately lumpy state, and pressing it solid in the pots. Replace the plants in a similar temperature to that they have been in, and here let them remain until the beginning of May, when there will be enough solar heat to keep them on growing without the assistance of fire; after this, they will do along with other ordinary hard-wooded stock, requiring

like treatment through the summer as to air, syringing overhead, and closing the house or pit they occupy with the sun upon it in the afternoon. They will not need any stopping of the shoots, except such as happen to grow considerably stronger than the rest. The reason that it is not advisable to stop these plants in the summer, as prescribed in the cultivation of most hard-wooded subjects, is that if pinched back nothing is gained, as it rarely has the effect of causing shoots to break out, several from each, as in the case of most things, but simply stops growth altogether for the season, and hastens their flowering. Where there is not the convenience of a house in which they can receive a little heat early, as above described, all the difference in their treatment required is to pot them later, about April, with the other hard-wooded greenhouse plants, and treat through the summer as before advised, but by the latter method they cannot be expected to make so much growth, nor flower so early. When they come into bloom they will make nice little plants for standing on front shelves, or in any prominent position.

When their blooming is over, remove the plants to where they will receive ordinary greenhouse treatment as to temperature, air, and water, cutting them back as in the preceding season so as to reduce the shoots to 6 or 8 inches in length from the point they were shortened to the year before, and again starting them in a little heat as previously, or if a succession of bloom be required, a portion of the stock may be allowed to commence their growth later on in the greenhouse. This year they will bear a 3-inch shift, using the soil in a little more lumpy state, and keeping the strongest shoots well tied out, so as to clothe the base of the plants, treating them through the season as heretotore. The treatment required during subsequent years will be similar in every way, always cutting the shoots well back before growth begins, or a sufficiently dense, bushy condition will not be maintained. It is not necessary to increase the size of pot beyond 15 inches in diameter, as this will be big enough for full-sized specimens. After the plants have been in pots of this size for a year or two they should be regularly supplied with manure-water through the growing season. In this way Croweas may be kept for years in a thriving, healthy state.

The following varieties are all worth growing :—

C. saligna major : A large-flowered form of the Willow-leaved C. saligna, and much superior to the old variety.

C. s. latifolia : As its name implies, a broad-leaved kind, with large flowers of great substance.

C. s. elliptica : A free-growing variety, and equally free in flowering ; has elliptic-shaped leaves.

C. s. stricta : An equally desirable sort, the habit of the plant more upright than the others.

Insects. — Croweas are not much subject to the attacks of insects ; green-fly will sometimes affect them, but can be easily killed, the nature of the plants being such as to bear without injury a strong application of tobacco-smoke. The use of the syringe to promote growth during the early part of the season prevents their suffering through red-spider. Brown-scale is troublesome if it gets upon them, but can be destroyed by strong applications of insecticide when the plants are at rest in the winter. Should white-scale get upon them there is not much chance of eradicating it thoroughly, as it requires a stronger dressing of insecticide than the leaves will bear.
T. Baines.



FIG. 85.—STAPELIA GRANDIFLORA VAR. LINEATA.

HAARLEM AND ITS BULB GARDENS.

HAVING had the satisfaction of inspecting some of the Dutch bulb gardens, I purpose briefly to record a few facts and ideas resulting therefrom. As you very justly remark in your article on the same subject in the *Gardeners' Chronicle* of Saturday last, the only way to answer the often-asked question, "Where do all the bulbs come from?" is to visit Haarlem when the Hyacinths and Tulips are in flower. The occasion of the International Exhibition in Amsterdam gave myself and others the opportunity of witnessing such a sight as every one should see at least once before he dies, for if there is such a place as a paradise of flowers, it must be in and around Haarlem. I naturally expected to see the Hyacinths in great quantities, but this, as well as the gorgeous splendour of the colours, far exceeded my expectations. The general tidiness of the bulb gardens, too, is a noticeable fact, to the credit of the proprietors.

It has been acknowledged over and over again that England is the best place to see Hyacinths in pots, and therefore it may be assumed that our cultivators know the requirements of the plant. It struck me, however, on looking at the soil in the Haarlem gardens that, as a rule, the soil used in England is much too retentive. Sand and water appear to predominate in the Hyacinth home. No doubt the sand is very much enriched by large applications of cow-manure, but I believe if a more sandy soil were used for pot-plants, and the necessary nourishment given in the shape of liquid manure prepared from cow-dung, an improvement would be seen in the ordinary displays of Hyacinths in pots. I cannot help thinking that much of the success seen in the bulb gardens is attributable to the dampness of the soil, for there is water everywhere in and around the different gardens or farms. It cannot be otherwise than wet, and yet the bulbs are not in the water, the gardens being all above the water level, and, to make it doubly safe, the beds are all divided by sunken alleys to a depth extending below the bulb.

The question is often asked why we cannot grow Hyacinths year after year in this country in the same way as they do in Holland, and it requires but little consideration to arrive at a correct solution of the reason why. I believe it is well understood that nothing weakens plants so much as to ripen their seed, having then, as it were, performed their purpose—reproduction. This fact appears to be thoroughly understood by the Dutch cultivators, as they seldom allow the Hyacinth to expand all its flowers before they remove them. This being done, the whole of the energies of the plant are devoted to the storing up of nourishment to enable it to carry out Nature's purpose another time. That bulbs can be grown out-of-doors from year to year with tolerable success, and that they cannot be grown in pots the second year, proves the soundness of the Haarlem system. In an ordinary way the flowers in the borders do not last so long as those in pots, consequently the bulb is not so much exhausted in the border. The stormy weather experienced a few weeks ago unfortunately proved this matter more fully than

pleasant, having broken off very many flowers that were just opening. Where this occurred the foliage has assumed a stiff, robust habit, while others, still retaining their flowers, have a lank, attenuated appearance.

To return to the Haarlem bulb fields, we find that although the soil is naturally very sandy, it is made more so by constant dressings of the sand brought from the dunes or sand-hills, and this, with the heavy dressings of cow manure, enables the cultivator to grow the same crop on the same piece of ground every second year, yet it may be considered as a three years' rotation. When the ground is well manured Potatos are planted, then Hyacinths after the Potatos are taken up, and the next autumn Tulips take the Hyacinths' place, at least this is the system I understood one celebrated cultivator (Mr. F. Van Velsen, jun.) pursued, and his bulb garden may be considered second to none, as no finer flowers were to be seen anywhere. In many cases the robust character of the plants was very apparent. In this establishment was raised that splendid Hyacinth, the King of the Blues; it bears a splendid spike, and for late pot-work is invaluable. Mr. F. Van Velsen has a large stock of this fine variety, as well as of many others. Some of the more effective varieties seen were, of doubles, Eclipse, carmine, extra fine; Noble par Merite, blush, purple eye; Anna Maria, blush, pink eye; and Madame de Stael, pale rose. Amongst single varieties the following were the most conspicuous:—Amy, bright red, fine for massing; Masterpiece, very fine rose; Robert Steiger, Von Schiller, Vuurbaak, bright red, very effective; General Havelock, a fine black; King of the Blues, before mentioned; Mimosa, fine large dark variety; Regulus; William the First; Bird of Paradise, a very fine yellow; Grande Vedette; La Grandesse, a very fine white; La Vestale, Mammoth, Theba, Themistocles, Charles Dickens, Havelock, and Tollens. My visit was rather early to see the Tulips in perfection, still enough was seen to give an idea of the magnificence of the whole; the Duc Van Tholl varieties were very charming, and Canary Bird, single yellow, is very fine and highly recommended; the varieties of Claremonde, rose striped and gold, are very good; Proserpine and Van der Neer should be in every collection. *George Thompson, Crystal Palace.*

FERTILISATION OF PLANTS.*

(*Continued from p.* 535.)

5. ALTHOUGH in many cases it would appear that intercrossed plants are absolutely more fertile than the self-fertilised, yet Mr. Darwin raised during his experiments some highly self-fertile varieties, which "yielded more seed and produced offspring growing taller than their self-fertilised parents, or than the intercrossed plants of the corresponding generation." Such were "Hero" and the white variety of Mimulus, and a pale variety of Dianthus, while equal-styled Primulas proved more fertile than ordinary plants of the same species legitimately fertilised by pollen from a distinct individual. The ratio of the intercrossed opponent to "Hero" was only 100 : 100.6, but in the eighth generation two other "Heroes" appeared, whose ratios were as 100 : 111 and 100 : 150. Their offspring, however, were not preserved.

6. Mutual adjustments of the essential organs, as we'l as special constructions, are often to be met with, which thus secure self-fertilisation. Mr. Meehan thus describes Melampryum americanum:—"The curved apex of the pistil is clasped by the stamens and held in contact with the pollen, just as in a cleistogamous Violet." The same occurs with small-flowered Epilobiums, while the styles of Malva rotundifolia curl backwards, as H. Müller has described, and it is the same in other small-flowered species, in order to intertwine amongst the anthers. In Salvia clandestina the elongated stigmas curl back in a similar manner, and lie between the anther-cells, which burst, not downwards, as in other species, but sideways, facing the stigma. The position of the filaments in a position arching over the pistil is very common, as in small-flowered Ranunculi, Potentillæ, &c. Such positions appear to be often the normal ones while in the bud, and have thus been retained after the flower has expanded. In flowers with a large number of stamens, Buttercups, &c., the outer stamens burst first, but if the pistil be not crossed, then the inner which dehisce later, perform the function.

7. Inconspicuous flowers are very numerous, and, as H. Müller observes, "must be self-fertilising, or they would become extinct;" and it is observable that they form the majority of our weeds, are excessively vigorous and amongst the commonest of plants. Their origin appears to be by degradation from conspicuous conditions, as many of them have irregular flowers, such as Fumaria officinalis and small-flowered Clovers, which could only have arisen originally by insect agency. I do not agree, therefore, with Prof. Dyer, who regards cleistogamous flowers as "probably survivals of the original type" (*Nature*, Feb. 15, p. 331), for in all cases I consider them as degraded forms of their more conspicuous congeners, but reverting to self-fertilisation. I cannot, therefore, accept Mr. Darwin's conclusion that some plants "have actually had their flowers purposely rendered inconspicuous;" I take it to be simply and purely a result consequent on the absence of insects.

9. With regard to the facts of intercrossing and of self-fertilisation we must be careful not to confound the means with the end. Crossing does *per se* no good unless it bring new constitutional elements. This Mr. Darwin clearly proves. But I do not think he seems to see that self-fertilisation is not injurious except in the sense that a plant cannot introduce into itself fresh vigour. But when self-fertilising plants are introduced into other countries, then they may become excessively vigorous, as the British weeds have done in New Zealand.

And it is a significant fact that while, with scarcely an exception, such plants are self-fertilising weeds, their conspicuous allies are wanting. Thus Malva rotundifolia has established itself in New Zealand, Society Islands, Sandwich Islands, Abyssinia and Japan, but M. sylvestris and moschata are conspicuous by their absence, excepting the former, which is in Japan, proving that there is no *à priori* reason why it should not have gone elsewhere. Euphorbia Peplus and helioscopia are present in New Zealand, both of which Mr. Bennett showed were self-fertilising, but no other species is known. Rosa rubiginosa is the most conspicuous flower, but oddly enough this is the only British Rose which has established itself in America.* Once more, five of the small self-fertilising British Stellaria are scattered about the world, one of which, the highly self-fertile S. media or Chickweed, is found in New Zealand, Tasmania, Kerguelen Island, Auckland and Campbell Islands, South Africa, South America, South Australia, Tropical Asia, Hong-kong, Japan, Madeira; but the larger flowered proterandrous S. Holostea is conspicuous by its total absence from any of these far-distant localities. The inference would appear to be that the necessary insects required to cross conspicuous proterandrous species not being there, such plants have died out, if formerly introduced; and the self-fertilising weeds have thus proved themselves "the best fitted to survive in the struggle for life," in accordance with Mr. Darwin's remark on p. 407. "If any entomophilous species ceased to be visited by insects it would probably perish, unless it were rendered anemophilous" [or self-fertilising].

The next four headings (10 to 13) refer to the relative vigour displayed by self-fertilised plants, and as each has been already alluded to in previous papers little need be now added; I would, however, allude to the case of Lobelia fulgens. Of this plant three pots containing twelve self-fertilised individuals beat their intercrossed opponents in the mean ratio of 116 : 100, while in five pots all the intercrossed beat their opponents in the mean ratio of 100 : 73.5—the total mean ratio for intercrossed compared with the self-fertilised being as 100 : 91, that is, very nearly equality. Now this case, together with that of Hero and the white Mimulus, would seem to show that when a large number of plants are cultivated or grown for many years, self-fertilised plants may arise quite equal, or even superior to the intercrossed; and as many of Mr. Darwin's experiments were made on single or very few generations, and with even less than ten plants, the above lessens very considerably the relative value of such cases.

14. There is a section in chapter viii., p. 303, headed, "On the Transmission of the Good Effects from a Cross, and of the Evil Effects from Self-fertilisation." The test was in the heights of the plants raised by the intercrossing both the previously intercrossed and also self-fertilised plants. Of the fifty-four species cultivated Mr. Darwin selects three only: the first, Nemophila, which unduly favoured self-fertilisation, must be struck out, as Mr. Darwin says of it, "This experiment was quite worthless." The second is Viola tricolor: the previous generation gave the ratio of the heights of the intercrossed to the self-fertilised as 100 : 42, but of the descendants from both derived by crossing and producing "an abundance of very fine capsules," it was as 100 : 82. That is to say, the self-fertilised had improved by the cross, but that the intercrossed had inherited its advantage. The third and last example given is Lathyrus odoratus. The first two generations gave the usual ratios as 100 : 80 and 100 : 88 respectively, and the ratio of the heights of their offspring (now derived in both cases from an intercross) as 100 : 90. Hence, the same remark applies to this as to Viola. Mr. Darwin adds:—"These two lots of seeds were likewise tried by being sown under very unfavourable conditions in poor exhausted soil, and the plants whose grandparents and great-grandparents had been crossed showed in an *unmistakeable manner* [my italics] their superior constitutional vigour." Turning back to page 159, it appears that some seeds were sown in the same pot with a Brugmansia, others in poor soil in a shady place in the shubbery. The ratio of the heights of the first lot was 100 : 88, of the others 100 : 98—that is, practically the same; for Mr. Darwin elsewhere considers 96 to 104 as equivalent to 100. I do not see, therefore, that the results quite justify the above description. The points which are clearly proved are, first, that constitutional superiority gained by intercrossing is transmitted to the offspring; and, secondly, that nothing here tends to prove the descendants of the self-fertilised to be worse off than their progenitors. Indeed, when we read that Mr. Knight's varieties of Peas, originating from a cross, were subsequently propagated in abundance as a marketable product for sixty years, and that solely by self-fertilisation, it is difficult to see what is meant by "the evil effects;" we may rather ask, was not the "cross" somewhat beholden to the power of self-fertilisation to be able to be kept up so long? Then the question suggests itself, Was the dying out of these varieties or of Mr. Laxton's due to degeneracy, or mainly to fresh varieties competing with them in the market and superseding them?

If we regard the undoubted benefits derived by crossing as a positive good, then it would seem fairer to say that self-fertilisation gives purely negative results.

If two people marry who are consumptive, we might in justice speak of the evil effects or injuriousness of the union, as revealed in their consumptive children. But of the great number of habitually self-fertilising plants, which by their vigour and abundance get called troublesome weeds, as Senecio vulgaris, Cardamine hirsuta, and Stellaria media, &c., nothing can possibly be said which justifies those terms. Hence the heading above quoted should have been "On the Transmission of the Good Effects from a Cross" alone, or with the addition, "and of the correlative negative results of self-fertilisation."

The general inference appears to be this, that self-fertilisation is *per se* not injurious in the ordinary sense of the term, as implying, for example, weakness of constitution, but only in that a plant cannot introduce by that agency fresh constitutional elements; such being the case, the average vigour of such plants remains stationary. If, however, it can acquire such, in nature by migration to a different locality, artificially by made soil, then the self-fertilised may completely outstrip the intercrossed and beat them in every way. The sole, but doubtless a great, advantage of crossing, lies in such being an important means of introducing fresh constitutional peculiarities. On p. 438 Mr. Darwin observes, "That certain plants, for instance Viola tricolor, Digitalis purpurea, Sarothamnus scoparius, Cyclamen persicum, &c., which have been naturally cross-fertilised for many or all previous generations, should suffer to an extreme degree from a single act of self-fertilisation is most surprising fact." The inference, however, I would draw is, that these plants probably represent a condition approximating absolute self-sterility, and one generation is not enough for them to recover their full self-fertility; absolute self-sterility having been reached by some species, the number of which "is not at present large" (p. 341). Hence I would group both kinds under the one common cause of sexual differentiation, due to insect agency. Viola seems to show—if I may express it metaphorically—that Nature found

* *Cross and Self-Fertilisation of Plants.* By C. Darwin. Murray.

* From a list of British plants in New Zealand, by Kirk, in *Transactions of New Zealand Institute*, 1868, vol. i., p. 157.

she had gone a little too far, and ran the risk of having no offspring at all, and so adopted cleistogamous flowers as well.

This leads me to contest another of Mr. Darwin's conclusions. On p. 455, in the passage beginning "It is an extraordinary fact" [to end of paragraph], he regards the more or less self-sterility of many species as due "to the sexual elements not having been sufficiently differentiated;" but in *Animals and Plants under Domestication*, vol. ii., p. 140, he gives, what seems to me, the correct explanation, that "the sexual elements of the same flower have become differentiated in relation to each other, almost like those of two distinct species," and he further adds, in direct opposition to his present work:—"We may conclude that it has been naturally acquired for the sake of effectually preventing self-fertilisation." This he now rejects (see p. 345).

When we consider what the plants are which are thus absolutely or more or less self-sterile, we find them scattered about and in no way of—in other respects—low type, as correlation would, *à priori*, lead us to expect; *e.g.*, Eschscholtzia, Corydalis, Reseda, Lobelia, Verbascum, Passiflora and Orchids, as Oncidium, &c. Now these have either allied species partially or quite self-fertile, or may often become so on changed conditions, that instead of their sexes being not sufficiently, I should prefer Mr. Darwin's former explanation that they were too highly differentiated, and that when they become self-fertile, as Eschscholtzia in England, it is a recovery of, or reversion to, self-fertilisation. Such is my impression: readers can now form their own conclusions as to which they may think is the more probable. *George Henslow.*



FIG. 86.—DIAGRAM SHOWING THE HABIT OF THE BAHMEIH COTTON.



FIG. 87.—NEW ORLEANS COTTON.



FIG. 88.—ROOT OF ORDINARY COTTON PLANT.

A NEW VARIETY OF COTTON.

M. DELCHEVALERIE, the Inspector of Agriculture of Cairo, laid before the recent Congress of Amsterdam some specimens of a new Cotton plant found growing in Egypt. In a field of Cotton, among which were found some Bahmiehs (Hibiscus esculentus), a certain Cheik-el-Celed of the environs of Chibait-el-Kom, in Lower Egypt, noticed some specimens of fastigiate Cotton plants, quite different to the others, and similar in habit to the Bahmieh, or Bamia plant. The stems are about 8—10 feet high, straight, and with relatively few branches, and those ascending not spreading as in ordinary Cotton plants. Hence the planters of that region did not hesitate to call them "Koton-Bahmieh." They collected the seeds carefully, in order to plant them separately. The following year they obtained nearly half a *feddan* (about half an acre) of them, of which the seeds were collected in the same way, and Egypt this year already possesses important plantations of this new variety of Cotton. The first samples which arrived in the market of Alexandria were distributed among several merchants, who sent them to Liverpool, where they were classed above "fair Cotton," and nearly fetched the price of "good fair."

M. Delchevalerie, in a note addressed to the Congress, suggested the idea that this Cotton is a hybrid production between Hibiscus esculentus and the Egyptian Cotton itself, and he proposes this summer to make some experiments at Cairo, in order to ascertain if this be so. If this hybridisation has really taken place between the Hibiscus (Abelmoschus) esculentus and the Cotton, the fact will be of great importance from a scientific point of view, for it may give rise to other experiments in artificial fertilisation between other genera of the same family. Similar facts are not unprecedented in the records of horticulture. However this may be, the new Cotton plant is taller than the ordinary Cotton. It is erect, and scarcely branched, with the exception of two or three small branches at the base, which allow of the plants being planted closer. It has not the shrubby form of the ordinary Cotton plant, which has numerous branches, themselves branched and producing here and there at the joints a capsule of cotton on a long peduncle, as seen at fig. 87. On the contrary, in the new Cotton plant, the principal branch is straight and not branched: see fig. 86. The capsules grow on the principal stem in clusters in the axils of the leaves, and are likewise borne on long axillary stalks. The roots are more tap-shaped than those of the ordinary Cotton, whose root fibres moreover spread more horizontally (fig. 88). And what is more important is, that the new variety produces much more Cotton. The cultivators of this new Cotton plant have assured M. Delchelaverie that they have obtained fifteen quintals of it per *feddan*, in the rich soil of the Delta, while the ordinary Cotton does not produce half that quantity. M. Delchevalerie informs us that he has instituted a series of experiments at Cairo on the cultivation of this new Cotton plant, and he has kindly promised to let us know in due season the results of his researches concerning this important question.

We have already alluded to this Cotton, specimens of which may be seen in the Kew museum, though by no means equal to those exhibited at Amsterdam. Young plants are also growing at Kew and with Col. Trevor Clarke.

Foreign Correspondence.

ABIES MENZIESII.—In the number of the *Illustration Horticole* for December, 1876, I alluded to a variety of Abies Menziesii which I had admired the preceding autumn in Professor Ch. Sargent's garden at Brooklin, near Boston. I named this plant Abies Menziesii var. Parryana, in honour of Dr. C. C. Parry, who brought the seeds of it from the mountains of Colorado.

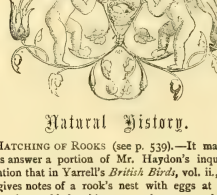
On January 13 of this year this beautiful tree was mentioned for the first time in the *Gardeners' Chronicle* (p. 48), when speaking of the young cuttings brought by Mr. A. Waterer from Mr. Sargent's garden.

Some weeks after, on February 17, M. Ortgies, of Zurich, wrote in the same journal (p. 214), saying that A. Menziesii of Colorado was the same as the A. commutata of Professor Parlatore (or A. Engelmanni, Parry), the seeds of which were collected in 1874, in Colorado, by M. Roezl. M. Ortgies adds that those nurserymen who received these seeds from him will be glad to learn that their young plants are the same as those which adorn Professor Sargent's garden at Boston. It is impossible for me to place confidence in M. Ortgies' assertion concerning a plant which he has never seen, and consequently cannot know. Since the publication of M. Ortgies' note, I have satisfied myself that the tree in Mr. Sargent's garden is really a form of A. Menziesii. After my visit to Boston, Dr. Engelmann, of St. Louis (Missouri), saw the specimens to which I refer, and after a critical examination confirmed my opinion. A year ago Dr. Parry himself, seeing again the plant of which he had brought home the seeds, was of a similar opinion; and one must not think that he judged this from a single specimen, but from a collection of several hundreds, taken under the utmost variety of conditions. The fine specimen with decided blue tint may be considered as the extreme form of the deviations from the type, to which others gradually revert.

Even in its youngest state, A. Menziesii may be distinguished from A. Engelmanni with the greatest ease. The young plants of A. Menziesii are characterised by a thick grey bark, and strong broad leaves, with such sharp points that a sprig of this tree cannot be pressed between the hands without sharp pain being felt. This species may also be recognised by the reflexed tips of the scales of the buds.

In A. Engelmanni the bark is very thin, scaly, and of a light brownish-red or greyish-purple colour. The appearance of the tree when young is almost identical with that of A. nigra, with which, at first sight, it might easily be confounded. The leaves are much more slender than those of A. Menziesii. They are 6 to 9 lines in length, and scarcely 1 line in breadth; they terminate in a short but not very sharp point, and a branch may be taken in the hand without any pain being inflicted. By this simple test Dr. Parry, who is more acquainted with these trees in Colorado than any other botanist, was able to distinguish between the two, even with his eyes shut.

On seeing the two species side by side, it is seen that Abies Engelmanni begins to grow in spring, a full month before A. Menziesii. The reason of this is, that plants growing wild at a great height or in northern countries, on being transplanted to a warmer climate begin to open their buds at the approach of the first spring-like day. This is fatal to them, for the late frosts invariably destroy their young shoots. In this manner Abies pichta (A. sibirica) bears perfectly well the severe winters of North Russia and the United States, where the spring is late but continuous, but in France and England it only forms miserable shoots which are cut off every year by the spring frosts. Under this category comes, unfortunately, Abies Engelmanni, for in America it is developed before any other species of Conifer, and the culture of it cannot be recommended anywhere but in the North of Europe. Thus it thrives perfectly at St. Petersburg, where fine specimens may already be seen. It is not so with A. Menziesii, and its divers varieties, which have nothing to fear from the climate of Central Europe. In the case of A. M. Parryana (which may also be called A. M. coloradensis, if it is wished to characterise this variety according to its geographical habitat), its hardiness is certain; the altitude at which it grows is a sure guarantee, and I have no hesitation in saying that when the gardens of Europe possess it (which will not take place just yet, as Mr. Waterer's young plants have not yet left his nursery), it will be universally acknowledged to be the most beautiful of all the species of Abies. I will conclude by adding that the greater part of the above information was obtained from Professor Sargent himself. *Ed. André, 67, Rue Blanche, Paris.*



Natural History.

HATCHING OF ROOKS (see p. 539).—It may perhaps answer a portion of Mr. Haydon's inquiry to mention that in Yarrell's *British Birds*, vol. ii., p. 99, he gives notes of a rook's nest with eggs at Gainsborough; rook's hatching young in a warm sheltered valley in Cornwall, and also of rooks building and hatching in Oxfordshire; and another instance (without locality recorded) of rook's nest with young in it: all these during the month of November—the respective dates of the three first mentioned being 1817, 1836 and 1844. With regard to the early hatching I cannot find in such books as I have at hand any information beyond reference to the "general hatch in April" and the young being able to fly about the end of May.

Here (in the vicinity of Isleworth) the note altered about the 20th inst. this year, and last year a thrown-out egg-shell was found under the trees on April 26. The sitting was then under exceptional difficulties from the late snow, and the birds were much disturbed by it on their backs, and (reasoning by analogy) very fretful.

Many of the nests were new last year, so that the whole operation of twisting off live twigs, building and plastering, could be watched throughout; this year the repairs have been limited to sticks put in—no new plastering appears yet requisite. *O.*

—— In reply to your correspondent relative to the earliest and latest periods when rooks are hatched, I may state that, as near as I can judge, the first rooks were hatched with me about April 9. Many of the young rooks are now quite strong. The number of nests in my trees is thirty-two: the hatching still continues. This rookery has only been in existence about five years; it commenced with one nest. The rooks are fed every morning, and are now so tame as to come within 3 feet of my breakfast-room window. Their nests are close to my house—some in a tree which covers a portion of the roof. I have, therefore, ample opportunity of observing their curious and most intelligent ways—a pleasure to myself much greater than the ignorant and useless and barbarous custom of shooting these most useful birds. *K. K., Tadsyforde, Exeter.*

—— The earliest period I have known rooks to hatch is the end of March, the latest about the middle of May. I think it is generally known that the male regularly supplies the female with food during the period of incubation. I suppose it is equally well known that they have their regular roosting places, only occupying the trees where they breed for a few months in early spring and summer. I may add the roosting place they frequent is a wood five miles distant from this place. *W. E. T., Stanmore, N.W.*

Florists' Flowers.

THE annual exhibition of the ROYAL NATIONAL TULIP SOCIETY is fixed to take place at the Manchester Botanical Gardens on Whit Friday, May 25, but, judging from present appearance, there is every probability of a scarcity of flowers, the season being late; and the dull weather and cold north-easterly winds are very much retarding the flowers. If mild sunny weather, with warm genial showers, were to commence at once, there would be some chance of flowers being in at the time; but another week of the prevalent unspring-like weather will seriously affect the show. So far the Tulip bloom is full of promise; it is now only a question of suitable weather to bring the flowers out. A bold, vigorous growth characterises Mr. Samuel Barlow's beds at Stakehill House, Chadderton; and there is the promise of many breeders breaking into rectified flowers. This tendency manifests itself in the foliage while the plants are forming and throwing up their flower-stalks. The leaves take on a kind of streaked yellow appearance, just such an indication as an uninitiated person would associate with ill-health; but all these plants are not only in good health, but will certainly produce rectified flowers. There will be a greater number of "breaks" than usual in the Stakehill beds. The physiology of the Tulip is indeed a wonderful feature in plant life; and it is only those that are constantly engaged in cultivating it that come to fully understand these remarkable characteristics. Let us hope the face of Nature will yet smile on the efforts of the cultivators, and reward them with fine bloom at the time it is required for exhibition purposes.

—— The condition of the DWARF ROSES in the grounds of Stakehill House, Chadderton, the residence of Samuel Barlow, Esq., forcibly illustrates the difficulty of cultivating the queen of flowers in the open air in the environs of Manchester. In the beds on the lawn the Roses have died down nearly to the ground—in remarkable contrast to the South, where the plants have scarcely ceased to grow vigorously all the winter. The atmosphere appears to be charged with conditions destructive to the well-being of many plants, and the Rose suffers keenly. In the Tulip garden, which is at a higher elevation, and in a sheltered position, the plants look a little better, but sadly at the best. Hollies and Rhododendrons, among evergreens, succeed the best, but their leaves become quite overlaid with a sooty deposit, that clings to them with such tenacity as to need an alkali to effectually cleanse them. Primroses and Pansies, in the open border, have a bad time of it during the winter months; the most durable plant is the Daisy, and the beds of those of the crimson, pink, and white varieties are becoming very effective on the lawn. Gardening in certain localities has its disadvantages, as well as its pleasures, and in the neighbourhood of large manufacturing centres all that forethought can conceive and skill apply is necessary to ward off, or at least mitigate, the effects which, if unchecked, lead to direful results.

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—Gloxinias intended to come into flower later in the season, and which are wanted for use in conservatories kept a little closer than an ordinary greenhouse, must not through the early stages of their growth be treated to so much warmth as those that are to remain altogether in the stove; with these, as with most other plants, if pushed on quickly by too much heat previous to flowering, they are necessarily much more tender and less calculated to bear a cooler atmosphere when in bloom than if they had been grown slowly all along. These remarks apply also to Achimenes and Tydæas, the whole of which should be kept near the glass, with a moderate amount of air and very little shade. The temperature of an intermediate house will suit them better than the ordinary stove, which is too close and moist. They will do very well on the front shelf of a vinery where there is upright glass, so as to give them the requisite light, or, still better, in a low pit, where they can stand near the roof. It is essential at this season to look well ahead and see that there is a sufficient number of such plants as these prepared for conservatory decoration during the latter part of summer. Plants of Clerodendron Balfourianum started late and kept moving slowly are fine and long-enduring objects for the same purpose; for them a night temperature of 55° is sufficient, and so treated it is surprising the length of time the flowers will last. The stately growing C. fallax can be employed in the same way, as also the exquisitely scented C. fragrans, a plant now seldom seen, but which possesses the advantage of occupying little room, being headed right down to the surface in the winter, and from its unsurpassed perfume it deserves a place wherever sweet-scented flowers are held in estimation. It is

now a good time to put in cuttings of these Clerodendrons, to be grown slowly and kept in small pots through the summer, in which case they will occupy very little space during the winter and with a liberal shift next spring will make decorative stock of more general use than larger specimens. If a little Balsam, Globe Amaranthus, and Cockscomb seed is now put in they will also come in useful for conservatory work late in the season. The advantage in the use of such plants as these is, that they can be stood about without hesitation when in flower under other things, and in dark corners, where their colour gives effect, and where it would not be advisable to put subjects of more permanent character and greater value. The stock of Bouvardias should now be looked over, to see that there is sufficient for next winter and spring use. One-year-old plants that have flowered through the winter should be cut close in, placed in a close, warm temperature, and syringed daily overhead, but too much water must not be given to the roots. As soon as they have broken into growth turn them out of the pots, reduce the ball fully one-half, replacing them in the same pots, and adding to the soil a good portion of leaf-mould and a moderate quantity of sand. When they have well rooted into this, give them a size larger pot; or, still better, if there is convenience at hand, turn them out of their pots, and plant in fresh, rich soil, repotting them in the autumn. The latter system of management is much to be preferred with young stock that has been struck during the winter, as so treated they acquire a strong dwarf bushy habit, and grow much larger than when confined in small pots with a proportionately increased ability to produce flowers in quantity. Large old plants may be cut back and treated similarly. The young shoots that break after cutting back when a couple of inches in length will make good cuttings if taken off with a heel; some of these should be put in, as it is always well to keep up a sufficiency of young plants. For the like purpose, when the stools are shook out, some root cuttings may be taken off. Allamandas that were potted early and are strong and in good condition at the roots will now be finished with a plentiful supply of flowering shoots, which in the case of those that have been pushed on with strong heat will be showing flower. With many it is the practice to train the shoots over the trellises as soon as the flower-heads are discernible, yet whatever purpose the plants are grown for, whether for home decoration or for exhibition, it is not advisable to do this, as immediately they are thus bent down it causes the buds near the base to break into growth, which has the effect of starving the advancing bunches of bloom. It is much better not to train the shoots down until the flowers have begun to open. The best plan is to insert half-a-dozen tall sticks inside the rims of the pots, with a strand of bast tied round the top, so as to enclose the shoots, and keep them in an erect position until the time comes for bending them down. Where this is not done their weight, especially when wet with the syringe, causes them to break out from the bottom. Pot specimens of Bougainvillea glabra should have their shoots similarly supported, for they, like the Allamandas, unless kept in an erect position, do not set their flowers freely at all, as the shoots, when bent down by their weight in a horizontal position, cease to grow longer, and commence breaking out from below. The omission to note the habits and requirements of these and other things in little matters of this sort is frequently the cause of strong, well-grown, and in other respects well-managed plants not flowering in anything like the profusion they otherwise would. *T. Baines.*

FLOWER GARDEN, ETC.

In sheltered places that are not subject to late spring frosts, and where early flower gardening is desired, some of the hardier kinds of plants, which have been previously well prepared, may be planted out in the beds they are to occupy for the summer, as the ground in many gardens has had a thorough soaking of rain last winter and spring. The plants now turned out will require less water than usual—merely enough to settle the soil about their roots as the work proceeds, and after each bed is finished let them be shaded with a few branches, which will protect them from cold winds, and keep the plants from taking any harm from slight frosts. I am not an advocate for too early planting as a general rule, especially in situations where it is attended with risks, but in certain places where such work can be done with safety and an early display is expected, under those conditions I would say, make the best use of the time when the weather is favourable, and much may be done with careful management and attention. Perhaps it is scarcely necessary to say that at this time, and a season like the present, all watering should be done in the early part of the day. Any plants that are turned out after mid-day will not suffer if left without water until the following morning. Keep the hoe going wherever weeds make their appearance, and I find that this season they are a very plentiful crop, the weather having been so favourable for their growth. Let the grass be well kept down at this time; when the attention and labour is so much occupied with other matters the proper keeping of the place is apt to fall into arrears. The edgings of walks may be cut before the ground gets too hard and dry for the operation, and let every part of the ground be left in the best order possible. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

STRAWBERRIES IN POTS.—In general these plants are in some degree infested with that terrible pest, the red-spider, which at this season is most active, and increases in numbers so rapidly that it is scarcely possible to have them in the houses where high degrees of heat are kept up without it being communicated to the permanent occupants. Under such hazardous circumstances caution should be exercised in the distribution of them about the houses, or most probably the common crop of fruit may thereby be much deteriorated, if not spoiled altogether. In the case of vineries, Peach-houses, or Melon-houses, where the crops are considerably advanced, they should now be excluded. In some places, however, it is indispensable to use the late vineries for these plants; if so, keep the plants free from contact with them. Plants which are placed on shelves and fully exposed into a warm temperature will be syringed twice every day, and have especial care bestowed on the watering, particularly if means, in the way of saucers or turves, are not employed, by which a certain degree of moisture is constantly secured at the roots. An occasional sprinkling should also be given the plants in pits where they are closed up in the afternoon. As soon as from six to twelve perfect fruits are well set remove the rest. As those plants which have fruited become sufficiently inured to be put out into the ground, it should be done without further delay. Care should be given to imbed the balls of soil firmly in the ground, or they will not succeed satisfactorily, and water should be applied after they are planted. This method is a very commendable practice, as the yield of fruit from such plants in the succeeding year is sometimes enormous. *G. T. Miles, Wycombe Abbey.*

THE CHERRY HOUSE.—From the time the fruit commences colouring and henceforward until it be gathered, the trees and fruit should be free from moisture; to supply the deficiency in this respect in the house other available surfaces and subjects which may be in the house should be syringed and damped occasionally as the case may be. At this stage the borders in which the roots are placed should also be kept well supplied with water, as unless this matter be attended to properly large and finely finished fruit should not be expected. Permit all the terminal shoots and others which are left to furnish a supply of young wood for the subsequent season to develope themselves up until the limit of the walls or house debars further progress; keep these tied-in neatly as they advance, and pinch-in the rest at about the fifth leaf from the starting point. Should insects, such as the black or green fly, be present in any degree on the trees at this time, by all means resort to fumigation without delay, as this operation effects a calm evening, and have everything inside the house perfectly dry. When the house is densely filled with smoke take away the appliance at once; a neglect of this precaution is sometimes attended with injurious consequences, through the burning of the materials which will be unconsumed. If a thinning of the fruit be necessary this should be done as soon as sure indications of its progress are visible. At this time the ripening period may be accelerated considerably with safety, but with an increased degree of heat a little air should be retained on at the apex of the house constantly. Let the apertures for ventilation be covered with netting before the Cherries are ripe, or the sparrows with their usual boldness will not fail to make an attack on them immediately. *G. T. Miles, Wycombe Abbey.*

ORCHARD-HOUSE.—The dark, sunless weather which prevailed throughout April having considerably checked vegetation, at one time very forward, fruit trees in the unheated orchard-house as well as out-of-doors are now later than they have been for some years. The absence of severe frost has, however, been favourable to trees under glass, and there is now every prospect of excellent crops of fruit. Where precautionary measures have not been taken before the trees in this structure come into bloom it frequently happens that aphis becomes troublesome before the fruit is properly set, when fumigating cannot be resorted to with safety. Where this is the case the affected trees should be well dressed with Pooley's tobacco-powder, which may remain on the foliage until the trees are out of bloom, when the house should be well fumigated with tobacco-paper. Always syringe the trees after smoking, which should be repeated after an interval of three or four days. Give sufficient water at the roots to thoroughly moisten the soil when necessary, but avoid the pernicious practice of constant dribblings. Syringe freely on fine days, and apply the garden-engine occasionally on bright evenings, when all danger of severe frost has passed away. As soon as the fruit on the earliest Peaches and Nectarines have attained the size of Peas, they should be slightly thinned; rub off all small, badly placed fruit, which would rob those intended to ripen, and, if plentiful, leave only those which are placed on the upper sides of the shoots, and as far apart as possible. The disbudding of pot-trees does not always receive the attention it deserves. The process should be carried on gradually to avoid checking the flow of sap, until, by disbudding and pinching, the requisite number of shoots are left for forming a handsome tree. When the present bearing wood has been removed in the autumn it sometimes happens that two or even three shoots may be allowed to extend from the base of the bearing branch, but as a rule one will be found sufficient. Stop all the leading shoots on full-sized trees when they have made six or eight leaves. Train the succession shoots above alluded to outwards, and stop the strongest when they have attained 1 foot or more in length. *W. Coleman, Eastnor.*

HARDY FRUIT GARDEN.

The cold cutting winds that prevailed during the middle of last month passed like a blast over this part of the kingdom, and have had a most injurious effect on the tender foliage of Peaches and Nectarines, causing them to curl and blister in the most curious manner possible. The only remedy is to go carefully over them and pick off any leaves that show such malformation as to preclude the possibility of their righting themselves again, which they are rarely able to do even under the most favourable conditions. The general tendency is, when the tissues of the leaves are so injured, for the part affected to thicken and go on enlarging till the whole energy of the tree is taxed for their support, as the young growth seldom makes any headway till these monstrosities are removed. It often occurs that the blister is not confined to the leaves, but extends to the bark of the young wood likewise, which enlarges at the particular part in like manner, and in such cases that too must be cut out and the next best situated left to take its place. This can be done at the final disbudding, which should now be proceeded with without delay, and in carrying out the operation due regard should be paid to so leave the young shoots as to keep the wall well furnished throughout. Where appearances are considered, and handsome well-formed trees are desired, what young growth is left for laying-in should be on the upper side of the branches, as the wood there is sure to be the most regular and uniform description, which could not be the case were they left indiscriminately above and below, as is frequently done where the work is entrusted to inexperienced or improperly trained hands to perform. Not only is blister or curl prevalent this year, but aphis is likely to be equally troublesome owing to the same causes, and a close watch must, therefore, be kept, for if left to themselves for only a few days, they increase at such a marvellous rate as to quickly spread over the tree and cripple its growth. As with all other insects that attack plants, the best way is to assail them directly they put in an appearance, which is a great saving of both time and material, and is the only way of leading to satisfactory results. By having at hand some tobacco-water with which to wet any shoots infested, or tobacco-dust with a proper distributor with which to put it on while the disbudding is taking place, the further spread of these pests may at once be stopped, and with a good washing from a garden-engine or syringe during the afternoon or early morning, of a fine day, the trees may be thoroughly cleansed when they will be able to advance in growth without further check or hindrance. All the hardier fruits, such as Cherries, Plums, Pears, and Apples, give promise of abundant crops, and with anything like fair weather the present season will, from all appearances, be one of the best as regards these trees that we have for many years past. Any of the above that may have been grafted should now be looked over to see that there are no cracks in the clay to let air to the scions, for if this takes place and is not remedied, failure is inevitable. In cases where such occurs it would be advisable to remove it altogether and replace it with fresh, but in doing so care must be exercised not to disturb the grafts, which are now effecting a union, and are easily detached. Advantage should be taken of the moist condition of the ground to get all Strawberry beds mulched down with short stable litter, by doing which at once much time and labour will be saved later on when the foliage is more advanced, and there is greater difficulty in moving about amongst them. Not only is this early littering down advantageous in this way, but it prevents the escape of moisture by evaporation, which is a great consideration with such a plant as the Strawberry, that requires the greatest uniformity and a cool medium for the roots to feed in—a condition they would not enjoy unless shaded in this way before the sun has power to act on the soil. *T. Sheppard, Woolverstone.*

THE

Gardeners' Chronicle.

SATURDAY, MAY 5, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	May 7	Sale of Shells at Stevens' Rooms.
TUESDAY,	May 8	Sale of a Collection of Shells and Natural History Specimens at Stevens' Rooms.
WEDNESDAY,	May 9	Sale of Stove and Greenhouse Plants at Stevens' Rooms.
FRIDAY,	May 11	Sale of a Collection of Specimen Plants at Torry Hill, Sittingbourne, by Stevens.
SATURDAY,	May 12	Crystal Palace: Great Flower Show.

NO one who knows the uphill work which the Council of the ROYAL HORTICULTURAL SOCIETY have had during the last few years in their relations with the Commissioners and debenture-holders, in their efforts to diminish the debts of the Society, and to extricate themselves from the fetters of South Kensington, will grudge them their triumph of Wednesday last. True, the debenture-holders cling on like the old man of the sea in the *Arabian Nights*. True, the South Kensington fetters are as yet not one whit loosened. Wherein, then, lies the triumph which was undoubtedly legitimately won on the occasion in question? It was not in the exhibition, grand as that was, for all through last year the shows were generally excellent, and on one or two occasions particularly so. The triumph consisted in having the arcades and conservatory densely packed for hours with visitors. Last year and the year before, as we have said, splendid shows were held, but the public kept aloof. The exhibitors, however, have stuck to the Society through all its evil days, and that they were largely disinterested in so doing is proved by the fact that on some occasions the prizes were not claimed in order not to add to the Society's embarrassments, and specially by the fact that though fine displays were made the general purchasing public did not come to see them. This time, however, their patient, persevering endeavours to prop up the old Society were rewarded by the approval of Royalty, and by the presence of such a crowd of visitors as has not often been seen at Kensington, even in its best days. It was, then, the visit of the QUEEN which brought this crowd together, and which may prove the turning point in the Society's fortunes. So long as circumstances compel the Society to maintain the South Kensington garden, so long will it be essential to success that the countenance of Royalty, and the support of the general public as distinguished from horticulturists proper, be secured. While admitting the desirability of conciliating the general public, spreading a taste for horticulture among them, and inducing them to contribute to the Society's coffers, we trust that the interests of pure horticulture will always be made paramount, and the proper functions of the society duly fulfilled. Better by far to have a small society doing its own work efficiently than a large one striving, by means of floral bazaars and other more fashionable means, to cater for fashionables and sight-seers, and wasting its means and its energies on objects not horticultural. To keep the Society to its proper work the active support of the horticulturists of the country is required, and if now they do not come forward when the ball is at their feet, they must not complain if their interests are not sufficiently cared for. Horticulture, in its widest and best sense, must be the aim of the Society, and to make it so horticulturists must come in, assert their unquestioned rights, and keep the management of the Society in their own hands. In any case, the success of Wednesday last proves the soundness of judgment of those who deprecate the attempt to found a new Society, but who have sought, and are seeking, to reinstate the Society in popular favour and to increase its power of doing good horticultural work. As to the show itself, it was, as we have said, one of the largest and best ever got together at South Kensington. Being held in the arcades, there was little scope for that picturesque grouping which is so grateful when the large tents are made use of. But the groups of plants were of such unusual excellence and variety, that a right royal display was fittingly made. The QUEEN, accompanied by the Duchess of EDINBURGH and the Princess BEATRICE, broke in upon the committees when engaged in their work, so that HER MAJESTY had so far the opportunity of seeing how the work of the Society is done. Escorted by the President and the members of the Council, the QUEEN sauntered slowly through the building, examining now this, now that collection, and receiving the loyal homage of the members of the several committees.

The Scientific Committee was specially honoured—its President, Dr. HOOKER, who is also the President of the Royal Society, accompanying the Royal party and explaining the more noteworthy objects exhibited. The QUEEN on leaving expressed her pleasure at her visit, and we do not think these were mere words of courtesy, for HER MAJESTY looked pleased; and undoubtedly the horticulturists, who yield to no class of HER MAJESTY'S subjects in their loyalty were delighted to see among them once more their QUEEN, and to feel that their efforts to diffuse a knowledge of the glories and wonders of Creation and to contribute to the material and mental welfare of mankind, are still sanctioned and appreciated as they were in the days when the broad-minded PRINCE CONSORT had the sagacity to include horticulture among those arts and sciences which in the interests of the nation at large he did so much to promote.

AT the present season, when the preparation of PRIZE SCHEDULES will be brought under the consideration of the managers of flower-shows, it may be useful to invite attention to one or two points which past experience has shown to be important.

And first of all, we would indicate that Fitness —fitness to the locality and the materials which it affords for making a show—should be well studied in the framing of a prize schedule. What are the most fitting subjects to invite in each locality will be, or should be, best known to the very persons most immediately concerned. It generally happens in country districts—and it is for the framers of schedules for country societies that we chiefly write, since in the larger towns and cities which can support a good horticultural society there is generally a well-trained and experienced staff to make the arrangements—that there are certain subjects not far off, known to be cultivated with success, and the schedule should be so framed as to draw out these, and at the same time stimulate competition in these particular directions. The first object in holding a show should be to ensure a successful gathering by all fair and honourable means, and therefore every facility should be afforded for bringing in the materials existing in each locality. Once popularise a show by this means, so as to gain and retain the support of the public, and all the beneficial influences arising from its stimulating effect on competitors will follow in due course.

Then, again, Definiteness of Purpose should be made a leading principle in framing the classes of a prize schedule. Competitors cannot set up their exhibits advantageously, nor can the judges render full justice to their merits, if there is anything indefinite about them—anything left to the discretion of the judges, for example, as is too frequently the case. If a class requires each exhibitor to stage, say, eight Pelargoniums in pots below a defined size, the competition is equal; and, as a consequence, every exhibitor knows exactly what to do; the judges also can exactly compare the collections, and the best wins. But if the group is undefined as to number, and unlimited as to size of pots, and one man brings ten plants and another six, the pots, moreover, being various in size, the largest exhibitor generally wins, unless his plants are so much inferior to those competing against them that they are hopelessly beaten. Or, to take another very common case: perhaps a "group of plants" is asked for. Now if, in such a case, A. brings a score of moderately meritorious examples, well set up, and B. a group of half as many really good plants carelessly staged, the chances are that A.'s poor plants get the prize, which does not properly belong to them, simply because the setting up finds most favour with judges. A "group" should be defined somehow, both for the exhibitors' and the judges' sakes. The fairest way, if it be a group of large size, is to define the space it is to occupy; but if a smaller one, the number of plants to be admitted; but in any case it should be defined, and the wording of the schedule should define it clearly.

Another point in show management should be Promptitude. The regulations say that exhibits are to be ready for the inspection of the judges by a specified hour, yet exhibitors will hang over their arrangements, and secretaries and stewards will allow them to do so, till that hour is often long past. Then the judges have to scramble with undue haste over their work, with the risk of making mistakes in distributing the rewards. There is no need for this laxity of management. Ten o'clock, if that be the hour named, should mean ten o'clock and not one minute later. The work of arrangement can just as easily in almost all cases be completed by ten as eleven o'clock; it only requires courteous whipping-in by those in charge of this part of the arrangements.

Then again some person or persons, who may be forthcoming when wanted, to guide the judges, should know exactly what is the extent of competition in every class, and where every exhibit is to be found. Valuable time is lost when judges are turned in to an extensive exhibition without this kind of information, and have to find out the exhibits as best they can. Being strangers generally, they cannot be expected to know at sight the whereabouts of the competing subjects, which they can only ascertain by a laborious search through all the exhibitors' cards—these latter, in many cases, not too legible, nor, according to some systems of entry, always giving the required information. We call this state of things Incertitude, and it is one of the evils to be guarded against by every possible means, as also is that of failing to show distinctly by some well-defined mark the exact limits of adjacent collections.

In the interest of fair and just judgment the competing plants, or sets of plants, should, if it be possible, be staged in close contiguity. It is simply impossible to compare satisfactorily two or three collections of a dozen Pelargoniums or Orchids, let us say, if they are set out of sight of each other, and the judges have to carry them far "in the mind's eye," and yet judges are too often required to accomplish such and even greater impossibilities. Everything which can be done to do away with or avoid any or all of the evils at which we have hinted, will be found to be something accomplished towards bringing a flower show to a successful issue; and should be provided for in the schedule and its accompanying regulations.

—— THE plant, EULALIA JAPONICA VAR. ZEBRINA, of which we give an illustration (fig. 89, p. 565), has been figured previously in the *American Agriculturist*, from which publication we learn that the grass in question was introduced from Japan by Mr. HOGG. Since that time it has passed into the hands of Mr. W. BULL, Messrs. VEITCH, and perhaps



FIG. 89.—EULALIA JAPONICA VAR. ZEBRINA.

others of our nurserymen. Our plate was taken from a specimen furnished us by Mr. BULL, and in order to show the beautiful character of its inflorescence a dark background was rendered necessary. It is, however, for its foliage that the plant will principally be prized. As in the case of the Rush lately figured by us the variegation is transverse, taking the form of cream-coloured bars crossing the green ground of the leaves at tolerably regular intervals, hence our American contemporary has proposed to call it the Zebra Eulalia. The plant will probably prove hardy, and in that case it will form a very desirable addition to the garden, by reason of the novelty and peculiarity of its variegation.

—— We learn that it is proposed by the growers for COVENT GARDEN to hold an EXHIBITION of FRUIT and VEGETABLES as sent to market, in the ensuing autumn, at South Kensington. Much praise is due to these exhibitors for the spirited way in which they carried out their novel and interesting exhibition at South Kensington at the two last meetings. As illustrations of successful culture, the exhibits were remarkably instructive.

—— Probably few of the many horticulturists who visited the recent Auricula show at the Crystal Palace failed to notice the two splendid specimens of the climbing RUSCUS ANDROGYNUS that form such a superb evergreen covering to a portion of the galleries close to the fountain at the southern end of the building. A more useful plant for the purpose it is desired to serve it would be difficult to find, and it is as a greenhouse climber, enabled to display its luxuriant growth only in some such giant building as the Crystal Palace. Mr. THOMPSON, the garden superintendent, and his directors, have good reason to be proud of these fine plants, as this Ruscus is somewhat rare, and probably these specimens are the finest in the kingdom. This variety, although herbaceous in its habit of growth, is yet evergreen, as the long shoots that emanate from the roots, much like the growth of the Hop plant, retain their vigour and leafage for several years, and those that die off are annually replaced by others that run up to a height of 30 feet like bare rods before a leaf is developed. The highest growth of fully developed shoots is not less than 40 feet, and on these, right to the floor, hang the long deep green branches covered with pointed heart-shaped phyllodes. These branches are about 30 inches in length, the phyllodes being alternated on either side to the extremity of the stem. These leaf-like organs hang down one over the other in rich luxuriance, and form a screen of deep flossy green. The flowers resemble small green buds, and are borne in triplets on the edges of the leaf-like branches. The plant is singularly difficult to propagate, as layers, cuttings, and hybridisation of the blossoms have been tried in vain, and only by division of roots can stock be produced; this, however, would in the case of these noble plants be partial destruction, at least for a time, and therefore their increase appears to be indefinitely adjourned.

—— We have received a schedule of prizes amounting to upwards of £350, to be awarded at a flower show to be held at the Orleans Club House, Twickenham, the late residence of the Duc D'AUMALE, on May 25 and 26 next. The show will be under the superintendence of Mr. THOMAS R. ROLLISSON, of Tooting.

—— We are informed that Mr. C. GREEN, of Reigate, so well known in connection with the garden of Mr. WILSON SAUNDERS, has been appointed to superintend the gardens of Sir GEORGE MACLEAY, at Pendell Court, Bletchingley.

—— Mr. JACKSON, late gardener to the Right Hon. Lord KESTEVEN, Casewick Hall, Lincolnshire, has been appointed gardener to Sir CHARLES DU CANE, at Braxted Park, Essex.

—— We have received from Messrs. BACKHOUSE & SON, of York, a specimen of the very beautiful PRIMULA SPECTABILIS, a dwarf hardy perennial, of Auricula-like habit, found on the Eastern Alps. It belongs to the section of Primroses with fleshy leaves, the form of the leaf being elliptico-lanceolate or lanceolate, and the margins cartilaginous and entire. The flowers grow about six in an umbel, and are about ⅔ inch across, and of a pure dense pucy purple, very showy. According to the late Mr. WOOD, it affects mountain gravel. It will be quite an acquisition amongst alpine flowers.

—— We learn that Mr. ROGER CUTLER, the active secretary of the Gardeners' Royal Benevolent Institute, has, after thirty-five years' service at the Westminster Fire Office, retired upon a liberal pension, and carries with him the hearty goodwill and esteem of the directors. Mr. CUTLER will henceforth devote the whole of his time to the duties connected with the Gardeners' Benevolent.

—— We notice with much pleasure that the University of Edinburgh has conferred on Mr. J. B. LAWES, of Rothamsted, the honorary degree of Doctor of Laws. Professor MACKAY, in the absence of the Dean of the Faculty of Law, on presenting him to the Chancellor of the University, said:—"I now present to your lordship JOHN BENNETT LAWES, a country gentleman of Hertfordshire, who has done more than any Englishman for the application of science to agriculture. Educated at Eton and Oxford, Mr. LAWES commenced in 1834 the experiments which have rendered his estate at Rothamsted the classic ground of scientific agriculture. He has supplemented and corrected the theory of LIEBIG with reference to the fertilising agents necessary to call forth the productive properties of the soil, and by the use of the comparative method has given valuable indication of the different manures appropriate to different crops. His experiments, tested by rigorous scientific method, are recorded in the four volumes of the Rothamsted Memoirs."

—— The injury to crops by worms, maggots, flies and insects generally, having recently been engaging considerable attention, YOUNG'S PARAFFIN LIGHT AND MINERAL OIL COMPANY have issued a circular which calls the attention of agriculturists and others to the value of paraffin oil as a preventative remedy. "Experiments have shown that this oil can be applied so as to produce no injurious effects on the seeds and plants, while at the same time it is so obnoxious to animal life as greatly to lessen, if not altogether to prevent, those destructive inroads which every farmer has occasion to deplore." The following directions for the use of paraffin oil are added:—"Add a wineglassful of paraffin oil to a 30-gallon cask of water, agitate thoroughly, allow the mixture to settle, skim off the oil that rises to the surface, and employ the water—1. For soaking the seeds before use; 2. For sprinkling the ground between the rows or drills after the plants have brairded. Care should be taken to avoid sprinkling the plants." The experiment is well worth trying, and we shall be glad to have the experience of any of our readers who may apply the test.

—— We have received from Messrs. DOWNIE & LAIRD, of Edinburgh, a truss of a very promising seedling RHODODENDRON, named JOHN DOWNIE. It is of good size and very compact, the individual flowers being large, and of a pale rosy claret colour, with darker spots.

—— A fine plant of the magnificent COCHLIOSTEMA JACOBIANUM is profusely flowering in the stove at Kew. It has eight or more panicles, three of which are together in full bloom. It is even grand as a foliage plant, but possesses also the most beautiful flowers of pink and blue, of large size and in great number, interesting as well from a botanical point of view for their very anomalous structure. An explanation of this was given in our volume for 1868, p. 264, and subsequently in the *Journal* of the Linnean Society, where some corrections of the original statement were made. The present specimen is one of a group with several others of beauty and much botanical interest. One of these is the Tillandsia usneoides, referred to last week, now flowering for the first time in cultivation, of which a figure, with description, will appear in the *Botanical Magazine*. Another Bromeliad, as if for contrast, is here in flower. This is Nidularium fulgens, with broad imbricating leaves, the inner of which are coloured scarlet, and form a gay nest for the inflorescence, above the level of which it does not seem to grow. The habit of Nidularium is perhaps too well known to need further description. There is also a plant of Pitcairnia tabuleformis, showing a table-top spread of light-green leaves, the level of which is just being disturbed by the issue of an inflorescence. Not the least interesting is a pan of the rare Streptocarpus Saundersi, each plant now composed of only one solitary leaf, or rather one of the cotyledons, with one or more panicles of pretty white and lilac flowers, appearing to come from its base. Next in point of interest is a specimen of the very curious and grotesque Ataccia cristata. As regards showiness, a specimen of Medinilla magnifica is second only to the Cochliostema; though not large it is very floriferous. Among the smaller growing Gesneraceæ and Melastomaceæ are found some of the most beautifully coloured leaves in cultivation. Here is a specimen of Cyrtodeira fulgida, with bronze and silver leaves and crimson flowers, perhaps the most handsome of its genus in cultivation. On another shelf is a fine pan of x Bertolonia Van Houttei, having more brilliantly coloured leaves than any other plant of the Melastomaceæ, and, by-the-way, showing an unusual feature, that of growing from leaves, just as a Begonia; several species, however, may perhaps do the same, as does also Phyllagathis rotundifolia, a very rare plant of the same order. An elegant specimen of Cocos Weddelliana, so large as likely soon to flower, is a conspicuous member of the group. Lastly requiring notice is Torenia Fournieri, a new species of this extremely pretty but much neglected genus. The other species in cultivation are T. asiatica and T. pulcherrima, both grown in the Royal gardens. T. Fournieri is most nearly allied to the former; it has smaller flowers, but more deeply coloured, and with a yellow blotch on the lower lobe in addition.

—— The May number of the *Journal des Roses* treats at some length the characteristics and history of the Rose Beauty of Glazenwood [Fortune's Yellow], and gives a pretty full account of our newly formed National Rose Society. The principal paper, however, and one that English rosarians will probably enjoy, is on THE ROSE IN ENGLAND (La Rose en Angleterre), by Mr. SHIRLEY HIBBERD, who amidst his many employments finds time occasionally to contribute original articles to foreign periodicals.

—— Several very charming PLANTS are IN FLOWER ON THE ROCKWORK AT KEW. First, there is Trillium grandiflorum, than which no spring-flowering plant, has more chastely-formed white flowers, with such handsome foliage. Another white-flowered plant of the highest merit is Ranunculus amplexicaulis. It might, from the purity of its aspect, be justly styled the Queen of Crowfoots. Houstonia cœrulea is without rival for rockwork, as one of the most diminutive and sweetest of sky-blue gems to be found. Lithospermum prostratum is also blue, but with great depth and mass of colour. It is quite an essential for the present position. Anemone palmata, with rich yellow flowers, is always considered a most select species. It does not, however, make much display. Several Primulas are very pretty, among which are P. spectabilis, with pinkish purple flowers; the more common P. viscosa, and its variety alba, which always will be one of the most indispensable. Lithospermum orientale is a great ornament, and will be so for almost an indefinite time, producing as it grows a multitude of yellow flowers; this, with all its desirable qualities, is somewhat of a rarity. The old Cardamine trifolia, bearing a profusion of white flowers, with dwarf and dense foliage, still retains an important position with choice plants. Dentaria digitata is very showy, with large purple flowers. Arenaria balearica covers the ground with a level cloth of green, and is sprinkled over with an infinite number of white star-like flowers.

—— Mr. BERNARD DYER, F.C.S., of 17, Great Tower Street, London, Member of the Society of Public Analysts, has been appointed Analytical and Consulting Chemist to the Devon County Agricultural Association.

—— Some boxes of SOLOMON'S SEAL (Polygonatum multiflorum), shown by Mr. R. S. YATES, of Sale, Cheshire, at the meeting of the Manchester Botanical Society, on the 27th ult., attracted much attention by the splendid growth of the plants and the abundance of bold spikes of flower they carried. The clumps are lifted from the open ground when

they have made a growth of from 4 to 6 inches, planted in the boxes, and brought on into flower under glass. When the boxes are neatly covered with bark they are very ornamental in entrance halls, window conservatories, and in any place where they can be protected from external cold and have light and a little air. The flower-stems are much prized in a cut state for decorative purposes, their bold, arched appearance being highly effective in large vases. After the clumps have done blooming they rest for a year, and are again similarly employed as necessity arises.

—— In some parts of Cheshire the common PRIMROSE is utilised in a pleasant manner by the cottage residents on the highways. In cases where a Quick hedge fronts the cottage garden by the way-side, a bank is thrown up on the road-side, with a border some foot or so in width, and on this is planted a line of common Primroses, and very pretty they look in full bloom. The woods being so full wayfarers would no doubt respect the bright little Primrose garden; but near to large towns it would be in considerable danger of molestation.

—— We are informed that The Highlands, Jersey, the property of CHARLES KIPLING, Esq., a notice of which appeared in our columns of December 25, 1875, is to be sold by auction at the Mart, on May 15, by Messrs. G. & H. LUMLEY, of St. James's Street.

Home Correspondence.

Royal Horticultural Society.—Dr. Allbutt finds fault with the Horticultural Society for not establishing schools and lectures for teaching young gardeners scientific gardening. Perhaps Dr. Allbutt is not aware that there is such a school for gardeners already at the public gardens at Kew; and he is perhaps not aware also that a grant of public money was lately made to provide the young gardeners with lectures on scientific gardening, but the young gardeners to a man refused to attend them. So long as there is this public school for gardening in the immediate neighbourhood of Chiswick, and so long as the experience of that school is similar to what I have stated, I certainly shall not be inclined to spend the money of the Horticultural Society in trying to compete with Kew. I do not agree with Dr. Allbutt respecting the work done at Chiswick. The lists of fruits and their synonyms, and the reports of the trials of flowers and vegetables, are known to many in foreign countries as well as in England, though they seem not to be known to Dr. Allbutt. As far as I know, these reports are the only means by which a purchaser can learn whether the multitude of plants advertised as new are really such or only old varieties with a new name. No doubt there is room for more work of this kind to be done at Chiswick than is done at present, and I hope that, if a few more of those who care for gardening will join the Society, it will be able, as it certainly is willing, to undertake more of this work. At present I fail to perceive either the justice or common sense of finding fault with the Society in the manner that Dr. Allbutt does, so long as not one in ten of those throughout England who are interested in horticulture either belongs to the Society or in any way helps it in carrying out any work for the promotion of horticulture. Allow me also to say, in answer to the letter signed "Exhibitor," that the change of day was made solely for the convenience of the exhibitors, and in consequence of a memorial signed by all the principal exhibitors at the Society's shows, praying that the day might be altered from Wednesday to Tuesday. *C. W. Strickland, Hildenley, Malton.*

—— If not my argument, I hope his own appropriate quotation (p. 536) will quite "persuade" Dr. Clifford Allbutt to throw in his lot with us, and to influence his horticultural friends to do likewise. *George F. Wilson, Heatherbank, Weybridge Heath.*

The Tulip Literature at Amsterdam.—As you have mentioned the collection of books, pamphlets, &c., relating to the Tulip exhibited at the Amsterdam horticultural show, allow me to say that these books, &c., are all from my private collection. There are about a hundred volumes, comprising several collections of drawings of Tulips from the time of the Tulipomania (1634—1637), and as well all the editions of the pamphlets of that time. This collection, which could have been made yet more extensive if time had permitted, was made up in a hurry, a few days before the opening of the show, amongst much other business, in consequence of the desire expressed by one of my friends abroad, who wished to look over the Tulip literature. As it was a collection not asked for in the programme, I was not sure sufficient space would be allowed to it, therefore it was not shown in that extent which would have given a perfect oversight of it. Had there been time to do so, I would have given a critical list of the various things shown in this collection too, with the intention of soliciting offers of such books, pamphlets, drawings, manuscripts, &c., which are wanting in this collection, and which belong to it, as it is my intention to complete my collection on the Tulip (as I am trying to do for other bulbous plants) as much as possible. *J. H. Krelage, Haarlem.*

Dasylirion longiflorum.—In our notice of this plant at p. 493, we stated that the flowers had been produced in the garden of M. Geoffroy St. Hilaire. It appears, however, that this is an error, and that the plant really bloomed in the garden of M. Gensotten, of Hyères. Several of the flowers were more or less



FIG. 90.—FLOWERS OF DASYLIRION LONGIFLORUM.

imperfect; those that we now represent were among the most perfect. They were drawn by M. Germain de Saint-Pierre—a well-known French botanist.

Drechsler's Fumigator.—Several years ago, when Mr. Drechsler brought out his patent fumigator, he was, for want of suitable mechanical means, obliged to adopt wire for its rotary cage, and which experience has proved does not last long enough to give satisfaction. In carrying out improvements on the first machine

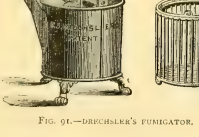


FIG. 91.—DRECHSLER'S FUMIGATOR.

Mr. Drechsler's object was to keep to the round bars, to avoid forging, drilling, and rivetting; to get the whole cage cast in iron, and, if possible, in one piece; to hold the cage firmly at the two ends by a central spindle without obstructing the passage of the tobacco-paper; to make more room inside for a larger cage by removing the gearing to the outside; to remove the useless lid, as by turning no smoke passes out there; and to make the top of the outside funnel-shaped to receive the materials. These things are easy enough of conception, but to make a suitable cage like this for the foundry was the difficulty, which has, however, now been got over, the whole being cast in iron in one piece, even the spindle by which it is made to revolve being also cast into it; and the whole so fixed that it cannot be shaken out of its place, nor get broken or worn out by fair means. To put the fumigator into use, first procure some dry paper, shavings, &c., and set fire to it in preference to using coal or coke. By turning, the machine has a tendency to form a whirl of fire in the centre, and as long as this is in the centre of the material it works all the faster, but the cage must be kept full to prevent the flare passing to the spout, and when the machine gets too hot it must be sprinkled. The machine is, of course, made for speed, and to fumigate from without. There is no need of stopping to refill, as the ashes fall out as fast as produced. It may, of course, be used inside a house where there is no other other choice. The plain cage (fig. 91 B) is also made of cast-iron, and is very nearly like the one inside (fig. 91 A). As coke has to be used in this, small pieces only should be selected. This has been made to meet the wants of those who do not care to go to the expense of the more perfect machine, which costs two-thirds more than the cage.

Adiantum Capillus-Veneris cornubiense.—I have not the least objection to Mr. Tyerman's description of the Adiantum Capillus-Veneris cornubiense, which is very accurate; but I cannot help saying that it has been well known to me and other Cornish gardeners for more years than I like to name. I have grown it freely here for more than thirty years, and am glad that Mr. Trevithick has found it; I fear, however, that this fresh notice of it will lead to its destruction, as new railway is now open to a terminus too near, I fear, to save it from the hands of excursionists. Happily, there is another habitat on the same coast some miles distant, where I hope it may still escape; I, at any rate, will not help to expose it. *T. Philpott, Porthgwidden, Truro.*

Enterprise in the Seed Trade.—The latest development of enterprise in the seed trade consists of a London seedsman sending some sharp lads—not at all too well-bred or polite—into the suburbs to leave at the houses of respectable persons a packet addressed to the occupier of the house, containing an illustrated pamphlet on the growth of flowers, and twelve packets of flower seeds, with the intimation that its value is a shilling, and that, if not retained and a shilling paid for it, it may be given up to a person calling for it later on. The seedsman appears to be borrowing the idea from the vendors of packets of needles, &c., which are generally left by one ill-looking fellow, and called for by another, who is not slow to abuse non-purchasers, especially when the refusal is made through a timid female. On Tuesday, the 1st, a lad left one of these packets at my house, and, on opening it and discovering its contents, I called to him to take it back, but he refused to do so. On 2d inst. an even more disreputable-looking juvenile called for the packet, when I informed him that as the lad who left it with me had refused to take the packet, the goods had been left in my care for one night, and for the custody of the packet I made a charge of one shilling, which I required him to pay before delivering it up to him. He said nothing, but went away and amused himself by copying the name of the house in which I reside. The habitat of this enterprising seedsman is in the vicinity of Haverstock Hill. *X. Y. Z.*

Maréchal Niel Rose.—A charming sight is at present to be seen in the Conservatory-house of J. Maxtone Grahame, Esq., of Cultoquhey, near Crieff. When visiting this place the other day, I saw one plant of Maréchal Niel covering the entire roof of the house, 20 feet by 14 feet, and having upwards of 300 blooms fully expanded and of large size, and as many buds were still unexpanded as will render it attractive for many weeks longer. Mr. McAra, the gardener, estimates that, when done flowering, upwards of 1000 blooms will have been produced. As some readers may not be aware of the suitableness of the Banksian Rose as a stock for Maréchal Niel, I may state that for some years a yellow Banksian was trained up the centre rafter of the house. This was previously cut-in to supply young wood, and in the autumn of 1874 every shoot was budded up the stem, producing the above grand result. Mr. McAra's success induced him last spring to bud newly-rooted cuttings of the Banksian with the Maréchal Niel, and he has succeeded in producing beautiful table plants from 2 to 3 feet high, forming a single stem, with six to eight blooms on each plant. *G. C.*

Cucumber Disease and "Salus."—I shall be very glad to give Mr. Fish my opinion of the disease he mentions if you will allow me. I consider Mr. Fish to be wrong in both the points he brings forward; first in attributing his disease of Cucumbers to a fungus, and, second, in dressing his Cucumber plants externally with "Salus." I may be allowed to ask Mr. Fish if he or any one else has seen the fungus he mentions, if so can he describe it and say what it is? For my part I have never seen any fungus of moment destroying a Cucumber plant. I have little doubt that the disease mentioned by Mr. Fish is in some way brought about by the presence of microscopic worms within the cellular tissue of the plants. These (at present unnamed) worms were first described in the *Gardeners' Chronicle* by Mr. Berkeley as affecting the roots of Cucumbers, and causing the well-

known minute nodosities. I have many times examined diseased Cucumber plants, and I have found these nematoid worms within all parts of the plants, from top to bottom. The question now arises as to how these worms get into the plants, and many answer, given without doubt, is they are introduced with the manure, manurial dressings, or with the earth used. I have obtained apparently the same worms from manure by throwing a pailful of water over a heap of dung, and by making a microscopical examination of the juice which trickles out. Worms and their eggs are present in abundance; and worms which appear to me to be in every way the same with the worms infesting the tissues of Cucumber and other plants, being present in the dung, earth, and water, these worms eat into the rootlets and collars of infant plants, and there lay their eggs; the eggs are hatched within the stems, and the worms eat away the tissues and lay more eggs. As to the "Salus," it should have been applied in strong doses to the manure or the earth; the worms would then have been killed, and the Cucumbers would have had a good chance at starting. As it is, Mr. Fish has been doctoring his Cucumbers for a wrong disease, and if he, or any other Cucumber or Melon grower, will try the plan I have here suggested, I think the result will be more satisfactory; at any rate, an infusion of "Salus" in manurial water instantly kills every worm and other minute animal present, and leaves the dung more potent than at first. *W. G. Smith.*

—— If Mr. Fish (see p. 535) will procure a small quantity of sulphurous acid from the nearest chemist, and dress the leaves, &c., wherever he detects this insidious disease, with a small camel's-hair pencil, it will speedily destroy and take away every trace of fungus. *Note.*—He must be exceedingly careful that the druggist does not substitute sulphuric acid for the harmless sulphurous acid, or the result will be quite as disastrous as by using the Salus. This word of caution is needful, seeing the names are very similar, especially so when spoken. I have experimented largely upon all classes of plants, not excepting Potatos, and I shall be most happy to aid any of my gardening friends. They are welcome to write to me, through your office, assured they will have a speedy and pleasant reply to any communication. *R.*

Orchids in April.—This is pre-eminently the Dendrobium month, but there is a goodly show of other floral gems, as the following, that have been adorning the house in April, will prove:—

Angræcum sesquipedale
Cattleya Trianæ (Bull's No. 7; a superb form of Warscewiczii delicata. Petals 4 inches in diameter. Collected by Mr. Shuttleworth, whose name should be given to it. Mr. Denning has also flowered it)
,, candida
,, mutabilis
,, citrina
Odontoglossum Roezlii
,, gloriosum
,, radiatum majus
,, Alexandræ
,, maculatum
,, cordatum
,, triumphans
,, cirrhosum
Vanda cærulescens
,, suavis Veitchii
,, cristata [tum
Dendrobium fimbriatum oculatum
,, crepidatum
,, thyrsiflorum
,, densiflorum
,, lituiflorum
,, primulinum
,, aggregatum
,, barbatulum
,, Wardianum
,, Devonianum
,, chrysotoxum
,, Paxtoni
,, Farmeri
,, ,, aureum
,, ,, roseum
,, Jenkinsii
,, Kingianum
,, pulchellum
,, macrophyllum
,, Pierardi
,, ,, latifolium
,, infundibulum
,, heterocarpum
,, japonicum
,, cariniferum
Dendrobium crassinode
,, ,, nobile
,, Boxallii
Oncidium ampliatum majus
,, phymatochilum
,, cucullatum
,, sculptum
,, barbatum
,, Papilio
,, Weltoni
,, Philippianum (a spike 12 feet long, with 267 flowers)
,, sarcodes
,, pumilum
Lælia Lindleyana
,, acuminata
Epidendrum crassifolium
,, aromaticum
,, fragrans
,, recurvatum
,, dichromum
Ionopsis paniculata
Lycaste Harrisonæ
,, species
,, Skinneri
Phalænopsis grandiflora
,, Schilleriana
,, amabilis
,, rosea
Colax jugosus
Cyrtopodium Andersonii
Phajus grandifolius
,, Wallichii
Rodriguezia secunda
Brassia maculata
Maxillaria leptosepala
,, picta
Masdevallia Veitchii
,, Lindeni
,, ignea
Miltonia cuneata
Cyrtochilum maculatum
Cypripedium Argus
,, niveum
,, hirsutissimum
,, Schlimmi
,, Harrisonianum
,, venustum
Saccolabium retusum

Edward W. Cox, Moat Mount, Hendon, April 30.

Adiantum gracillimum.—There is here (Riddings House, Derbyshire) a small plant of this beautiful Fern, which has stood in the fernery for, I should say, six months or upwards, in a temperature of from 65° to 70°, but which during that time has not made the least progress. It occasionally throws up a quantity of young fronds which, before they are fully developed, wither and actually die away. The plant is minutely examined, so that it cannot be attributed to insects nor excessive watering. If any of your numerous correspondents would enlighten me as to the cause they would much oblige. *A. Minor.*

The Early Beatrice Peach.—I have to-day (April 28) pulled some beautifully coloured Peaches of this variety, and write to say that I am thankful to the veteran Mr. Rivers for giving us such a valuable acquisition. It begins the Peach season at least a month earlier than heretofore. However much early Grapes may be thought of, for the dessert table nothing is so welcome as early Peaches. *R. Gilbert, Burghley.*

Carnation Souvenir de Malmaison.—I send, for your approval, a sample flower of this Carnation. Although it is not generally admitted to be a winter flowering variety, I find that with careful management it is the most reliable variety we have for that purpose, to say nothing of its size, delicate colour, and perfume. Neither is it in the winter alone that its flowers are attainable, as, with a goodly succession of plants, flowers may be had every day in the year. This, again, is by no means its only recommendation, for with me every plant flowers twice in the year, and so deservedly earns the title of "perpetual bloomer." *W. Johnstone, Gr. to the Marchioness Camden.*

Yucca gloriosa.—The *Gardeners' Chronicle*, vol. vi., p. 337, contains an account of a monstrous development of the stamens and pistils in Yucca gloriosa. I now find that the Kew Herbarium contains a diagram of an exactly similar monstrosity in a species of Yucca (probably gloriosa), which flowered in the gardens July 11, 1855. *N. E. Brown.*

The Rose-house at Gunnersbury.—Perhaps "R. D." would not object to give the size of this house again. If I remember right it was not large, but as the yield seems a great one, could "R. D." also kindly give the number of plants, the size of them, with their ages, &c., and if the Hybrid Perpetuals continue flowering on the same as the Teas? Also the temperature the house is kept at after fire-heat was applied. I have a collection, but it took them much longer to come into bloom, though I began to cut about the middle of December at a mean temperature of 66°; and I am desirous of comparing mine with others, the particulars of which I could give afterwards. *Wm. Paul, Edmonton.*—As this house occupies a warm, sunny nook in the fruit garden, where two walls run up to a point, it is wider on the west than on the east side. It is about 40 feet in length on the longest side, and 33 feet on the narrowest. Against the walls of the house there are about forty plants, some of which have run up the rafters of the house, and have nearly reached the top of the roof. From the bed to the spring of the roof there is a depth of about 4 feet, and there is a wall on three sides, and glass on the west or longest side; and from the spring to the apex of the roof, the length is about 10 feet. The spaces between the taller and stronger plants (which have run up into the roof, and which are either H.P.'s or strong growing Teas) is occupied with Tea Roses spread out fan shaped, and so quite covering the walls. The centre bed contains about sixty plants; a few of these in the centre of the bed run up the pillars which support the roof, and strong-growing sorts like Gloire de Dijon are tied out to strong wires, espalier fashion, thus forming a hedge. The branches of the plants that occupy the bed on either side of this hedge are pegged down, and thus a dense surface of Rose branches is presented to the eye. The plants, as might be expected, vary considerably in size, according to their habit of growth; some in the centre of the bed are quite large. When planted, rather more than two years ago, they were ordinary stuff such as can be had from a Rose nursery. The Hybrid Perpetuals are not so constant in bloom nor so free as the Teas, but the large majority of the Roses are Teas and Noisettes. During the winter, when the weather was frosty and cold, a temperature of about 50° was maintained; it now averages 65°, rising to 70° when the sun shines brightly. Just now there is a kind of pause in the production of flowers, owing to so much of the young growths having been cut away with the flowers, but the plants are studded with fresh shoots that in another week or so will yield a perfect harvest of blossoms. It should be borne in mind that the house occupies a most favourable position, being shut in by trees and walls on the north-west to south-east sides, and fully open to the south and west. *R. D.*]

How to Keep Passion-Flowers.—We were told in childhood that Passion-flowers represented the crucifixion of our blessed Saviour. That of course is a fanciful idea, yet learned botanists tell the same story, though partly in a foreign tongue. They derive "Passiflora, from *passio*, suffering, and *flos*, a flower—referring to the filaments or rays and other parts being likened to the circumstances of Christ's crucifixion." I had my first lesson on this subject from Passiflora cœrulea, the blue one, which was very early introduced into this country from Brazil—so far back as 1699. Though it is considered a greenhouse twining plant, yet in warm and dry places it blooms freely on the front of dwelling-houses facing the sun. I should mention, however, that the walls of such houses are much warmer than common ones exposed to the weather. That accounts for better fruit and flowers being sometimes seen on the south front of the poor man's house than that of the same kinds on the rich man's garden walls, though tended by gardeners. Much may be said on this part of my subject, but I pass on to notice that expanded Passion-flowers are of short duration, say only a day; their loss, however, is quickly made up by the succession of others. This is well-known, yet perhaps less so that Passion-flowers may be kept fresh several days exposed to cold and damp weather. This may seem startling, but what I have to say relative to it quite accords with the oil adage, that many "discoveries are merely accidental." Instance: about the middle of last December, when hunting for Violets on an open border, I lost an expanded blossom of Passiflora princeps, or racemosa, amongst them, which, after being exposed four days to cold drizzling rain, I found expanded seemingly as fresh as when I dropped it. This led me to expose other such blossoms among the Violets, and at the same time I left other blossoms in a warm, moist house among damp moss; these were shrivelled up next morning, while those abroad in the cold kept fresh as the other noted. I repeated the same experiment, with always the same results. I question, however, if such would be the case in summer weather; but be that as it may, I call the attention of others to what was an unexpected incident to *J. Wighton.*

The Floriferous Tulip to which your correspondent "F. H. C." refers is, I have no doubt, T. sylvestris. In a rich loamy soil it has not unfrequently from three to four flowers on a stalk; even on my hungry chalk it has sometimes three. *H. Harpur-Crewe, Drayton-Beauchamp Rectory, Tring, April* 28.

The Weather and Fruit Prospects.—Seldom have the trees done their work better than during the past season; they are literally covered with fruit-buds, but the weather is most threatening. Peaches, Nectarines, and Apricots have had a hard battle to pull a crop through, even with a good deal of protection; and now (April 28), while the wind in the north-east, a stinging frost every night, and also the harshness of March weather throughout the day, the prospects for Cherries and Plums in full flower, Pears just opening, and Apples preparing to follow fast, are full of risk. With a change to milder weather there is every prospect of abundance of fruit, but a little more cold and a continuance of the present winter-like harshness will probably wreck a large portion of our brilliant prospects, and may in fact make the coming season a worse fruit year than the last. *D. T. Fish.*

Ivy.—My experience—long experience—of Ivy is totally different from that of your correspondent at Elvaston; my house is covered with it in every direction, to the very top of my dining-room chimney, and a drier house it is quite impossible to have. One winter the Ivy on the dining-room chimney afforded a secure refuge for about four months to more than 600 starlings. Your Elvaston correspondent must look for other causes than Ivy for damp, or for the destruction of well-put-together masonry. *K. K., Taddyforde, Exeter.*

Chinese Arboriculture.—You refer, with a drawing, to some specimens of trees shown at a late Linnean meeting; they were evidently parts of large trees and shrubs, and of natural growth, if I may be allowed to say so, although so unnatural in their appearance. The Chinese take advantage of similar freaks of Nature and transplant the tree or shrub, and entirely change the form of the ordinary growth of the large trees. They also take cuttings and propagate the deformed part of the tree. The Chinese take infinite pains in cultivating dwarf trees and evergreens in ornamental pots for the house, and they look very well. The dwarfing art to many means to attain the end in view, sometimes by dropping water very slowly on a bough or twig, by bandaging and tying up the stem, and thus dwarfing them, and by propagating from such sports as above alluded to. Londoners and Parisians are finding out what plants will thrive in their houses and become home pets. The India-rubber tree (Ficus elastica) is to us what the forest tree trained and dwarfed into the form of a dragon, fish, or bird, and grown in an ornamental pot, is to the Chinese gentleman. I encourage the growth of blooming plants for outside decoration of London houses, but as one of "the million" who have no opportunity of spending part of the year "out of London" I like to have a constant supply of plants all the year round without the expense of a gardener continually making purchases. I do think

that it would be profitable if some of these dwarfed plants were grown and offered for sale. I have sent them home from China in pots with no other protection than the skylight of the cabin of an American clipper, and they were much appreciated. Great praise is due to the enterprising nurserymen who send out collectors for foliage plants, &c., that would have been passed without a notice a few years back, and I admit we are ahead of the Chinese in selection, but there is always a demand for novelty in plants, especially when such plant will last and requires little care and can be kept in a room or at a window. C.

Reports of Societies.

Royal Horticultural: *May 2.—First Great Summer Show.*—On Wednesday last Her Majesty the Queen paid her first visit to the Society's gardens at South Kensington since the death of the Prince Consort, and as the weather was fine, the display of flowers one of the finest that has ever been seen in the gardens, and the attendance of visitors very large, it may be confidently hoped that the turning-point in the Society's career has been passed, and that good management only is now required to maintain and extend the popularity and enthusiasm manifested on all sides as a consequence of Her Majesty's visit. For the last few years the exhibitors have been considerable losers through the depression in the Society's affairs, not so much through the reduction of the prizes, or the non-award of prizes at all, as from the absence of visitors to the shows. The exhibitors have moreover put their shoulders to the wheel before now, and made splendid displays at a very short notice, but when it became known that the Queen intended to pay a visit to the gardens they determined to exceed all former efforts, and make a show such as would be worthy of the occasion. As we have before stated this was done, and the result was more than could have been anticipated, all the available space in the large conservatory, both the arcades and the long eastern corridor being literally crammed for the most part with gay flowering plants. It was indeed a success—and the thanks of the Society are specially due to Mr. Barron for his untiring exertions in getting the show together; for his admirable disposition of the subjects exhibited; and for the eminently satisfactory arrangements that he carried out for the comfort and convenience of visitors and exhibitors alike. To Mr. Wills also thanks are due for the spirited way in which he contributed to the decoration of the entrance-hall, &c. The Queen's visit was entirely a private one, and made without any ceremony. Her Majesty, accompanied by H.I.H. the Duchess of Edinburgh and H.R.H. the Princess Beatrice, and attended by the Countess of Caledon and Lady Emma Osborne, Sir Thomas Biddulph, General Ponsonby and Colonel Lynedock Gardiner, arrived at the Queen's Gate entrance at a quarter to 12 o'clock, and was received by the President, Lord Aberdare, Lord Alfred Churchill, H. Webb, Esq., Colonel Trevor Clarke, G. T. Clark, Esq., W. B. Hollock, Esq., Dr. Denny, and Alan Hogg, members of the Council. Her Majesty was conducted through the exhibition by the President and Dr. Hooker, C.B., who pointed out the more interesting subjects exhibited. When Her Majesty reached the conservatory the Duchess of Bedford, accompanied by the Marquis of Tavistock, had the honour of meeting the Queen; and Her Majesty was also pleased to accept a very handsome bouquet from the hands of Mrs. John Wills, and the Princess Beatrice a similar one from the Messrs. Veitch & Sons. Her Majesty appeared to thoroughly enjoy the floral treat that had been prepared, and seemed especially to be interested in the hardy flowers common in English gardens.

Coming now to the subject which more closely concerns us—the plants and their exhibitors—we may preface our remarks by stating that, with the exception of the novelties that were before the Floral Committee, and noticed in another place, there was nothing amongst the large groups that called for special comment; hence we must treat the exhibits in a general rather than a detailed manner. We may commence in the large conservatory, in the centre of which were exhibited by Messrs. Whitburn & Young, of Milford, a series of ornamental window flower boxes, showing the adaptability of their zylographic process for that style of decoration, and which Her Majesty did not fail to inspect. Mr. John Wills contributed an extensive and admirably grouped collection of fine-foliaged and flowering plants, in the centre of which he had arranged one of his delightful little decorative surprises, an irregular bed of Selaginella denticulata, studded with Roses, Gloxinias, &c., with the central path of S. densa, the group as a whole securing for Mr. Wills the award of a gold medal. Next in importance came Messrs. Veitch & Sons, with a magnificent bank of Orchids, most effectively mixed with brilliantly coloured Crotons, Dracænas, &c., and which also gained a gold medal. Mr. B. S. Williams also received a gold medal for a large and very effective group of flowering and fine-foliaged plants. From Messrs. Rollisson & Sons, Tooting, came a group of about three dozen admirably-flowered standard Azaleas, which gained a silver medal; and a similar award was made to Mr. Turner, Slough, for a showy group of Palms, Azaleas, &c., and a fine display of show and alpine Auriculas. Messrs. Lane & Son, Great Berkhampstead, staged about sixty medium-sized but beautifully-flowered Roses in pots, and from Mr. Bull came a small collection of Orchids. Several examples of Mimulus moschatus Harrisoni came from Messrs. Harrison, of Leicester. A fine assortment of stove and greenhouse plants came from Messrs. Charles Lee & Son, Hammersmith; and a beautiful display of Orchids was made by Sir Trevor Lawrence, M.P., which gained a silver-gilt medal. Smaller groups of Orchids were also shown by Sir Henry Peek, M.P., Wimbledon House (Mr. Ollerhead, gr.); W. Terry, Esq., Peterborough House, Fulham (Mr. Roberts, gr.); and J. W. Miles, Esq. Shirehampton (Mr. Perry, gr.), both of the last-named exhibitors receiving bronze medals.

The Western Arcade contained a remarkably fine group of Cycadaceous plants, which deservedly gained a gold medal for Mr. William Bull; a magnificent collection of 100 seedling Dracænas, of medium size, well grown, and highly coloured, from Mr. John Wills, which also gained a gold medal; a very extensive and beautiful group of forced Rhododendrons, from Messrs. James Veitch & Sons, with a number of the handsomely-coloured Japanese Maples, from Messrs. James Veitch & Sons, which also gained a gold medal; a very effective group of stove and greenhouse flowering plants from Messrs. Cuthbush & Son, Highgate, which gained a silver medal; a nice group of miniature succulent plants from Messrs. Croucher & Boller, 73, South Row, Kensal New Town, which gained a bronze medal; a handsome group of fine-foliaged plants from Messrs. Osborn & Sons, Fulham, to which was awarded a silver medal; a group of forty splendidly-flowered Rhododendrons, which gained a silver-gilt medal, from Messrs. Lane & Son; a group of well-flowered Roses in pots, and half-a-dozen boxes of cut blooms of Roses, from Messrs. Paul & Son, Old Nurseries, Cheshunt, which gained a silver Banksian medal; and a group of fine-foliaged plants from Messrs. James Carter & Co., to which a bronze medal was awarded.

In the Eastern Arcade the visitor first came upon a display of Fern-cases, made by Mr. J. Bromwich; and next upon a very choice group of plants from Messrs. John Standish & Co., Ascot, which included some grandly grown specimens of Azaleas, Camellias and cuneatum, together with Cinerarias, Azaleas, &c. A silver medal was awarded to the group. A silver medal was also given to Messrs. G. Jackman & Sons for a beautiful group of a dozen and a half well flowered Pelargoniums. From Mr. R. Dean, Ealing, came a nice group of hardy spring flowering plants, which gained a bronze medal. To Messrs. John Laing & Co., Stanstead Park, S.E., a silver medal was voted for a large and good group of fine-foliaged and flowering plants; and Mr. J. Ley, Royal Nursery, Croydon, was also awarded a silver for a fine group of Palms, Ferns, Crotons, and other handsome-leaved subjects. A similar award was also made to Messrs. Barr & Sugden, for a magnificent display of cut blooms of Narcissus, numbering 100 species and varieties. The same firm also received a silver medal for Fern cases, and a bronze medal for window decorations. A nice collection of well-grown gold and silver Tricolor Pelargoniums, shown by Mr. H. Coppin, Rose Nursery, Shirley, Croydon, were highly Commended. Mr. John Burley, Hereford Road Nurseries, Bayswater, received a silver medal for a good group of large Palms, &c.; and to W. E. Hubbard, Esq., Leonardslee, Horsham (Mr. S. Ford, gr.), a silver Banksian medal was awarded for an excellent collection of forced vegetables, seventeen dishes of Apples, and a fine box of cut blooms of Maréchal Niel Rose. Mr. Parr, Esq. (Mr. Roberts, gr.), received another bronze medal for an interesting group of old-fashioned hardy herbaceous plants; and Mr. E. Ayling, gr. to S. Cumings, Esq., Harberton, Highgate, received a similar award for a nice group of Orchids and fine-foliaged plants. Silver Banksian medals were also awarded to R. Thornton, Esq., The Hoo, Sydenham (Mr. A. Ratty, gr.), for a group of about thirty flowering Azaleas; and to J. G. Hepburn, Esq., Sidcup Place, Kent, for a fine collection of about thirty Orchids. W. F. Watson, Esq., Isleworth (Mr. James, gr.), contributed a showy group of Cyclamens, Cinerarias, and Calceolarias; and Polyanthuses in numbers came from Mr. H. Parr, The Gardens, Harrow Weald Park, Stanmore, and Mr. William Caudwell, of Wantage.

The Eastern Corridor was devoted almost exclusively to collections of plants, fruits, and vegetables, exhibited by growers for Covent Garden market, and a magnificent show they again made. Messrs. J. & J. Hayes, Edmonton, were awarded a silver-gilt medal for a very fine bank of flowering plants, consisting of Cinerarias, Deutzias, Pelargoniums, Fuchsias, Hydrangeas, Roses, Heaths and Liliums, &c., all of splendid quality. Messrs. Hawkins & Bennett, Lily Gardens, Twickenham, received a silver medal for a grand display of scarlet, pink and white Zonal Pelargoniums, tastefully arranged in the form of festoons; and Mr. J. Puttick, Acton, had a bronze medal for a group which consisted mainly of Mignonette, Richardias, Pelargoniums, and very dwarf Hydrangeas, &c. Mr. J. Reeves, Acton, staged a magnificent lot of plants, including numbers of Richardias, Pelargoniums, Coleus, Hydrangeas, Lilies, Heliotrope, Spiræas, &c., and was awarded a silver-gilt medal. The same exhibitor also staged a batch of beautifully grown Mignonette, consisting of 1000 plants — a wonderful show of this sweet little favourite, for which he also received a silver medal. Mr. Thomas Pearce, Hayes, Kent, contributed a collection of Heaths, Roses, and Fuchsias, all cleanly and well grown, and was awarded a bronze medal. From Mr. J. Poulton, Fountain Nursery, Angel Road, Edmonton, came a group of 200 beautifully flowered plants of Spiræa japonica, which also gained a bronze medal. Mr. J. Seabrook, Ponder's End, Enfield, received a silver medal for a fine batch of Pelargoniums and Fuchsias; and Messrs. G. Beckwith & Sons, Edmonton, were voted a large silver medal for an enormous collection of splendidly flowered fancy Pelargoniums. Bronze medals were also awarded to Mr. P. Ladds, Bexley Heath, Kent, for an excellent group of Spiræas and Pelargoniums; and to Mr. T. Pestridge, Brentford, for a nicely coloured lot of small bronze Pelargoniums; to Messrs. J. H. Pounce & Sons, 18, Westbourne Grove, W., for a fine bank of flowering plants and cut flowers of Pelargoniums; and to Mr. E. Sawyer, Edmonton, for a collection of plants, numbering about 250, and consisting mainly of Deutzias, Calceolarias, Lily of the Valley, and Pelargoniums. Silver medals were awarded to Mr. C. Paget, Royal Nursery, Clapham, for a grand group of Spiræas, Palms, Ferns, arranged in lines of each and dotted with Dracænas; and to Mr. H. B. Smith, Ealing Dean Nursery, for a large and most effective group of beautifully flowered little Fuchsias, Spiræas, Dracænas, and Ferns, and a good lot of Zonal Pelargoniums, &c.; to Messrs. H. R. & G. Wright, Turner Road, Lee, Kent, for a group of fine-foliaged plants, principally Palms and Dracænas, mixed with a few Orchids; and to Mr. James Sweet, Leyton, Essex, for a group of Pelargoniums, Heaths, Fuchsias, and Cytisus, &c., all of fine quality. Mr. G. Braid, Winchmore Hill, Middlesex, sent a group of 100 well flowered show Pelargoniums, and received a bronze medal, and a similar award was made to Mr. Poupart, Mortlake, for a collection of cut flowers of Pelargoniums, Primroses, Pansies, Narcissus, Wallflowers, Sweetbriar, &c.

Fruit and vegetables were represented here in only small quantities, but those staged were of very high quality for the season. Messrs. Webber & Co., Central Avenue, Covent Garden, took a silver-gilt medal for an admirable collection of fruit, which included two dozen handsome St. Michael's Pines, new black and white Grapes, Apples and Pears, and Sir C. Napier Strawberries; and Bronze medals were awarded to Mr. W. Poupart, Twickenham, for a remarkably good display of vegetables and herbs, some forced and others from the open air; to the Rev. J. R. Watson, Guernsey, for new Black Hamburgh and Muscat of Alexandria Grapes; and to Mr. W. Earley, gr., Valentines, Ilford, for a small collection of Apples and new Grapes. Mr. W. Ingram, Vine Nursery, Aylesbury, also sent a nice sample of Black Prince Grapes; and from Mr. E. C. Mott, Potter's Bar, came half-a-dozen brace of the Improved Rabley Cucumber. Excellent baskets of French and English salading materials were contributed by Mr. W. J. Smith, 374, Kingsland Road, N.E.; and a very good collection of Mushrooms shown in clumps, as grown, by Mr. J. Walker, Thame, Oxon.

TABLE DECORATIONS, BOUQUETS, &c.—The competition and display in this, as in the other classes, much exceeded what we had to chronicle at the previous show. Perhaps it would not be going too far to say that on this occasion the metropolitan decorative florists were fairly represented; but if this assumption is correct, then the results were disappointing. Although there was much to be admired and deserving of the highest praise, there was, on the other hand, also much meriting condemnation. The great and principal faults were, in the bouquets, the large size and crowded packing of the flowers, and in the table decorations monotony and disregard of natural and agreeable contrasts of colour. Of course these faults were not common to all the exhibits, but, according to our notion, the bouquets were nearly all too large. A bouquet for the hand should be so constructed as to be no burden or inconvenience to the bearer, and each of the few different kinds of tastefully contrasted flowers and foliage used should show its natural characters. Quantity, even with quality, cannot atone for bad taste, and although Her Majesty graciously

accepted and carried a large bouquet, we have little doubt that a sprig of some rare or curious flower would have been more acceptable, more admired, and more esteemed. We overheard one florist, who exhibited some pretty bouquets of a moderate size, telling a friend that he could only bring small ones, which he spoke of as scarcely worthy of notice if larger could be obtained. But as the rage for size is so universal, and the exhibitors were nearly all traders in flowers, we shall not indulge in individual criticism, because, well—everyone to his taste—and the public must know, or ought to know, what it wants. Taking the table decorations first, Mr. C. Burley, nurseryman, Brentwood, was 1st; Mr. J. Aldous, Gloucester Road, South Kensington, 2d; Messrs. J. H. Pounce & Sons, 18, Westbourne Grove, and Messrs. C. Wood & Son, 21, High Street, Manchester Square, equal 3d; and Mr. J. Hudson, gr. to H. J. Atkinson, Esq., Gunnersbury House, Acton, 4th. With all the deference due to the gentlemen who made the awards, we cannot help expressing our opinion that the work was not carefully done, and that the last-named exhibitor did not obtain the position he deserved. It is true that the decorations were so different in character and mounting that it was impossible to judge them all from one standard. Thus the first consisted of three stands, the central one with three stages, and a number of button-hole bouquets, on a large plate, glass, &c. In many respects this table was effective, but there was little variety in the button-hole bouquets, and large fully expanded Roses and Richardia æthiopica at the base of the centre stands marred the beauty of the whole. Again, Cinerias on long wires, and leaves of Pampas-grass split into narrow strips, however effective, are, in our eyes, things to be avoided. The second was a laid table, and the decorations were remarkable for the quantity of Ferns and other foliage associated with relatively few flowers, which, with the exception of some showy Pelargoniums, were nearly all white. In this case there was, perhaps, too much green—not a serious fault, certainly—and some small flowers of a decided colour in the place of the Pelargoniums would have been an improvement. Further, the stands were rather too dwarf and too densely furnished for the size of the table. The equal thirds were both laid tables, and on one especially there was a wealth of plate and glass, but the arrangement of the flowers was such as to be beyond serious criticism. The fourth consisted of two stands, most tastefully filled, and a central Palm, with flowers at the base and creeper twined around the stem. The selection of flowers used for the latter purpose might have been more natural, but there was nothing strikingly out of harmony. The button-hole bouquets of this table were pleasingly varied and very attractive. There were two or three other exhibitors in this class, but they contributed nothing calling for description. Bouquets, as already observed, were numerous, and the following exhibitors received awards in the order of merit named: — Mr. J. Bromwich, Buckingham Palace Road, for a ball bouquet; Mr. C. W. Buck, Centre Avenue, Covent Garden, for a bridal bouquet, of which he contributed three; Mr. G. Strudwick, Bayswater Terrace, Kensington Gardens, for a bridal bouquet; and Messrs. Wood, Parmley & Co., Park Side, Albert Gate, for a bridal bouquet; Miss Moyes, Stockbridge Terrace, Pimlico, and Mr. W. Stone, Centre Avenue, Covent Garden. To describe these in detail, as well as the many other floral devices, we have not time, and it would be scarcely fair to select one or two, because, with the exception of the fault mentioned above, many of them had their special merits. We were pleased to see that none of the exhibitors repeated the butterfly and humming-bird trick; and nearly all had got away from the old style of a level surface of crowded flowers. In some cases there was, however, far too much show of wire. A very striking and beautiful "Court bouquet" was exhibited by Mr. Bromwich, the principal flowers of which were intended to represent the two fashionable colours. These were Dendrobium chrysanthum and small Rose buds. Whether these exactly represented the fashionable tints we are not prepared to say, but they very well illustrated what pretty association may be obtained in this way. Other exhibitors in this class were Mr. Aldous, Mr. A. Barnes, Sussex Place, South Kensington, Mr. J. W. Smith, Kingsland Road, Messrs. E. Green & Co., Victoria Street, Belgravia, Mr. J. W. Mott, Holland Gate, and Messrs. C. Wood & Son. Among miscellaneous cut flowers Messrs. Barr & Sugden's collection of Narcissus demands special notice. It was doubtless the most complete collection ever seen at an exhibition. It was well set up, with Ferns between to break up the monotony of colour and form; and all who saw it must admit that the gold medal awarded to these gentlemen was well merited.

Fern-cases, window-cases, and window-boxes were shown by the same firms mentioned in our report of the last show, and they were so tastefully filled, many of them, that everybody ought to see how much superior to artificial ornaments they are for embellishing an apartment.

GARDEN IMPLEMENTS, GREENHOUSES, GARDEN SEATS, &c.—This department of horticulture was exceedingly well represented. Messrs. Thomas Green & Son, Blackfriars Road, S.E., had a large assortment of mowing-machines, &c., and exhibited, for the first time, a new carpet-sweeping machine, which we hope shortly to illustrate; Messrs. E. & E. Horley, Toddington, Beds, showed several examples of greenhouses, garden frames, &c.; Mr. John Matthews, Royal Pottery, Weston-super-Mare, had a small stand of flower-pots, &c.; and Messrs. Fletcher, Lowndes, & Co., 13A, Great George Street, Westminster, contributed a model of a greenhouse constructed on their patent principle; Messrs. Waite, Burnell, Huggins & Co., 228, Upper Thames Street, E.C., showed the American mowing-machine "Excelsior." Mr. J. C. Fox, Royal Horticultural Society, South Kensington, had a number of garden seats, flower baskets, &c., and Messrs. Read & Co., 35, Regent Circus, exhibited garden engines, syringes, pumps, &c. Messrs. Thomas & Co., Edgware Road, had a large display of wirework goods.

SCIENTIFIC COMMITTEE.—Dr. Hooker, C.B., Pres. R.S., in the chair. The doings of this committee, as the others, were somewhat disturbed by the visit of Her Majesty, as elsewhere related, but it is so seldom that deliberative assemblies of this kind are honoured with a Royal visit that the day is indeed to be marked with a white stone.

Auricula Disease.—Mr. Andrew Murray made the following observations on this subject:—"The mystery attending the Auricula disease is now

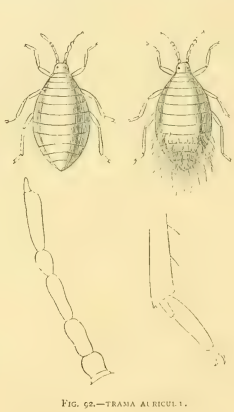


FIG. 92.—TRAMA AURICULA.

solved. At Mr. D'ombrain's suggestion, Mr. J. T. D. Llewelyn, of Unis-y-Gerwn, Neath, South Wales, has been kind enough to bring me a plant with the disease well established on it, and bearing plenty of a woolly aphis round its collar and about its roots. This aphis was in two stages—some individuals being provided with a woolly excretion, and others without it. Those without it corresponded in general appearance with both the figure and description of Trama radicis, given by Koch in his monograph of Pflanzenläuse. It has the same form, the same minute eyes adapted to its semi-subterranean mode of life, the same lateral insertion of the legs, &c., but on more minute examination there are some trifling differences which may perhaps warrant us in considering this as a new species, the more so that, neither in Koch's description, nor in Walker's in the list of homopterous insects in the British Museum (p. 1061), nor in Westwood's description of Rhizobius Helianthemi (Pr. Ent. Soc., Jan. 2, 1843; Ann. Mag. Nat. Hist., xiv. 453), which Walker gives in his List, but not in his Supplement, as a synonym of Trama radicis, is there any mention made of any woolly secretion—this, however, being a thing that is not always present, or perhaps it would be more correct to say, not present at all times or ages, may have to be looked at with caution as a specific distinction. The colour of the body in the Auricula insect is a little greener than in Trama radicis, which is spoken of as a louse-coloured white, and the legs and antennæ are olive-brown, whereas in T. radicis they are concolorous. Colour, however, does not go for much. If we could trust to the description of the antennæ by the different authors this must be a distinct species, but I am afraid we cannot. Koch says they are seven-jointed; Westwood and Walker six-jointed. When placed on a microscopic slide the antennæ certainly seems to be only six-jointed, but when the living aphis is examined with a lens, there is seen in addition a small bulb from which the antennæ take rise, which may be either an actual joint or a tubercule. Koch has obviously considered it a joint. Walker, who seems to describe from a slide mounted in Canada balsam, has probably overlooked it. Besides this, the proportions of the other joints of the antennæ of this species correspond with none of those that have been hitherto described. The annexed figure will show what they are in this species. None of Koch's figures are sufficiently enlarged to allow us to trust absolutely to them (if we did, they would indicate a still wider difference); we therefore propose to describe this as a new species of Trama, under the name of Trama auriculæ. Four species of Trama have been described. There is Trama radicis, of Kalenbach and Koch (T. troglodytes of Heyden's synopsis without description), which has been found on the roots of Crepis biennis; Trama flavescens of Koch, found on the upper roots of Artemisia vulgaris; Trama pubescens of Koch, found on the roots of the common Yarrow; and Trama helianthemi (Rhizobius Helianthemi of Westwood), found on the roots of the Jerusalem Artichoke.

Trama auriculæ.—Same characters as Trama radicis, with the following differences. The colour of the body greenish white, and in some individuals bearing a woolly excrescence behind, the legs and antennæ darker. Taking the antennæ as seven-jointed, the first joint is a tubercule not usually visible; the second is shorter and thicker than any of the rest; the third is about a half longer than the second, and is thinner than it; the fourth is about the same length as the third, but slightly thinner; the fifth is rather shorter than half the length of the fourth, and is perhaps a trifle thicker; the sixth is twice the length of the fifth; and the seventh is a mere appendage stuck on like a projection at one end of the sixth. Walker, in his description of Trama radicis, gives the following as the proportions of the joints of the antennæ:—First and second joints short, third very long, fourth and two following joints moderately long. Koch in his description says that the third and fifth joints are equal in length. Westwood does not note the respective lengths of the joints.

One of the most remarkable things about this insect's appearance is that it seems to have been observed by Auricula growers all at once in different parts of the country at the same time. The injury that it has done has in some cases been very disheartening; in others it appears to have been more easily kept under. Mr. Llewelyn had been quite successful in exterminating it in his plants, that he had to go to a less fortunate neighbour to obtain for me a plant that would show it in its characteristic state.

In a note which I have since received from him he gives the following additional information:—

"With respect to this aphis I spent a most enjoyable day at the Crystal Palace Auricula Show on Tuesday, and saw amongst others Mr. D'ombrain; he had brought with him a pot of affected Auricula, which he showed me. There was a good deal of woolly matter upon the roots but no insect, and the matter appeared to me to be stale, as though the aphis had been there and had gone.

"Several with whom I spoke were aware of the existence of such an insect, but made rather light of the mischief it does. Soft-soap, water, or tobacco-powder was said quickly to destroy it, but the attack should be treated at once or mischief will be done. Mr. D'ombrain seems to have suffered most severely, and he did not show at the Palace at all. *John T. D. Llewelyn.*"

Doryanthes excelsa.—The following communication accompanied some photographs of the flowers of this noble plant, coloured by the Dowager Marchioness of Normanby, who, it will be remembered, sent some flowers of this plant to the committee on a former occasion. Mr. Elliott, her Ladyship's gardener, thus writes:—

"The plant of Doryanthes excelsa now flowering at Mulgrave Castle was introduced by the Marquis of Normanby from Queensland, in 1872, and was potted in a No. 1 flower pot and placed at the warm end of a stove, where for the first year it produced but little foliage but after that it made great progress. It first began to send up the flower-stem in February, 1876, which grew to a height of 13 feet 10 inches (the house not being high enough a cap had to be put on the top to accommodate it), and it flowered in March of the following year. The blossoms consist of one rich cluster at the extreme point of the stem, about fifty in number, all perfectly erect, of a deep red colour, each containing a quantity of gum. It has continued in flower from first to last about a month. *Mulgrave Gardens, April 14.*"

The President remarked that he remembered to have seen in his youth this plant in bloom near Glasgow.

Narcissus nanicus, &c.—Mr. Burbidge sent the following communication, together with specimens of the plants referred to:—

"Herewith I send three flowers of a curious Pyrenean Daffodil –Narcissus maticus of J. Gay. It is evidently very near to our own wild Daffodil, but has a much longer and narrower cylindrical corona. It is very variable, as will be seen by the three forms sent, all picked from the same small bed of collected bulbs. I also hand you two flowers of the large lilac-purple-flowered Calochortus Gunnisonii, and two forms of the pretty little C. Mawii, sometimes known as C. caruleo in gardens. The larger form of C. Mawii has one of its stamens in a curious petaloid state. *F. W. Burbidge.*'

Plants Exhibited.—The Rev. Mr. Harpur-Crewe showed flowers of the handsome Tulipa Orphanides, T. Clusiana, T. Haageri, T. fragrans, T. Eichleri, and others; also the Mentone form of Scilla italica. Mr. Green showed flowers of a Crinum from the garden of Sir George Macleay, called C. scabroperunculatum. Mr. Elwes showed, among other things, Iris Heylandiana of Boissier—a species in the way of Susiana, but less effective.

FLORAL COMMITTEE.—W. B. Kellock, Esq., in the chair.—First-class Certificates were awarded to Messrs. James Veitch & Son for the magnificent Anthurium Brownii figured and described in this journal at p. 745, vol. vi.; for Lomaria discolor bipinnatifida, a neat-habited Fern, and for Coleus multicolor, with reddish bronze-coloured, deeply-cut leaves—a novelty certainly, but it is difficult to see why it was certificated. To Mr. John Wills, for Dracæna Mrs. Bause, one of the batch of seedlings raised from D. concinna, crossed with D. Regince—a dwarf, dense-habited, and brightly-coloured plant, that will prove valuable for decorative purposes. To Mr. B. S. Williams for Aralia filicifolia, a beautifully-cut Fern-leaved plant, with the stem and leaf-stalk spotted and barred, and for Adiantum Williamsii. A Second-class Certificate was also awarded to Mr. Williams for × Zygopetalum Clayii, the result of a cross between Z. maxillare and Z. crinitum. To Mr. W. Bull for Zamias Lindeni, Roezlii, and obliqua. To. W. B. Kellock, Esq., for Agave schidigera princeps—a striking plant with somewhat narrow leaves, boldly and distinctly banded in various directions with white, and with numerous rather broad filamentous processes. It is a seedling raised by the exhibitor, and, in addition to the Certificate, was awarded a gold medal. To Messrs. W. & A. Brown, of Hendon, for show Pelargoniums Mr. J. A. Dickson, Salaa, Fascinating, and Commander. To Mr. Turner for show Auricula Sarah, a beautiful self, of a plum colour shaded with purple; for alpine Auricula John Ball, noticed in our last. To Mr. Sweet, Leyton, for Pelargonium Empress of India, a white show variety, with darkly blotched upper petals, and valuable as a decorative plant. To Messrs. Paul & Son, Cheshunt, for the new H.P. Rose, Emily Laxton. To Mr. James, for Cineraria Mrs. Beck, a large, smooth, recurved flower, of a rich lilac shaded magenta colour, and fine white eye. To Mr. James Douglas, gr. to F. Whitburn, Esq., Loxford Hall, for alpine Auricula Prince, a large black-velvet-coloured self, with a rather pale yellow paste; and for alpine Auricula Florence, a very large, almost black self, with a pale yellow centre. The flower measured nearly 2 inches across, and is of fine form. G. F. Wilson, Esq., Heatherbank, Weybridge, sent a flowering plant of Mitella cordifolia, a rare hardy plant for rockwork and borders, with white flowers, and a habit of growth somewhat similar to Tilimas. Mr. Stevens, gr. to the Duke of Sutherland, Trentham, showed a late flowering variety of Cotoyanus cuneata—a plant about 3 feet across and splendidly flowered. In addition to the plants above named, Messrs. Veitch also showed several plants of the new Hydrangea, named Thomas Hogg, but the flowers were too green to warrant an award from the committee.

FRUIT COMMITTEE.—John Lee, Esq., in the chair. Sir Henry W. Peek, Wimbledon House (Mr. Ollerhead, gr.), exhibited several very fine well ripened fruits of his Lavendisha, and received the award of a gold medal. A Cultural Commendation was awarded to Mr. P. Edwards, gr. to Mrs. Tristram, Fowley, Liphook, for a good sample of Black Hamburgh Grapes. To Mr. C. Haycock, gr. to R. Leigh, Esq., Barham Court, Maidstone, came a fine dish of James Veitch Strawberries, and three brace of Cooling's King of the Cucumbers. Mr. G. T. Miles, Wycombe Abbey Gardens, exhibited three nice Jamaica Pine-apples and a ripe Melon, for which he was awarded a Cultural Commendation. From Mr. W. Cox, gr. to Earl Beauchamp, Madresfield Court, came examples of home-grown Citrons of fine size. Mr. Batters, gr. to Mrs. Willis Fleming, Chilworth Manor, sent a good dish of Maclean's Little Gem Peas, grown in 8-inch pots in a cool house. Mr. Stevens, Trentham, contributed some fine fruit-bearing branches of Cherries; and Mr. W. Wildsmith, gr. to Viscount Eversley, Heckfield, had a Cultural Commendation for a fine dish of Auguste Nicaise Strawberry. An excellent dish of Oscar Strawberries came from Mr. Hinds, gr. to Sir T. Edwards-Moss, Bart., Otterspool, Liverpool.

Manchester Botanical and Horticultural: *April* 27.—One of the pleasant monthly meetings of this Society was held on the above date, and with it took place the annual Northern exhibition of the National Auricula Society. Some of the leading plant growers of Manchester are liberal supporters of these meetings, which bear the same relationship to the Manchester Society as do the meetings of the Floral and Fruit Committees to the Royal Horticultural Society. The only regret is that the plants are not staged in a better public apartment than the old Manchester Town Hall, which is very imperfectly lighted from without.

The great feature of this meeting was a magnificent group of plants sent by J. Broome, Esq., Didsbury (gardener, Mr. A. Williams). This included some finely grown and flowered examples of Cypripedium caudatum, Odontoglossum vexillarium, O. species in the way of triumphans and charmingly marked; O. luteo purpureum, with two very fine spikes; O. Halli, O. Alexandræ, O. hystrix, Aerides Fieldingii, A. virens, Cattleya Mendelii, Oacidium serratum, nicely bloomed; O. sphacelatum, very large; Phalænopsis Luddemanni, P. Schilleriana and P. amabilis, Cypripedium Hitchii, the curious and ever-looking Indian Ataccia cristata, Anthurium Scherzerianum, Clerodendron Balfourianum, Genoma gracilis, said to be one of the finest plants in cultivation; Cocos Weddelliana, Raphia flabelliformis variegata, some remarkably fine heads of Yucca filamentosa variata, &c. The gold medal of the Society was awarded to this fine group. W. Leech, Esq., Fallowfield (Mr. W. Swan, gr.), had the bright, clear yellow Dendrobium tricolor; D. devonianum, with ten capital spikes; Odontoglossum Pescatorei and O. Pescatorei maculatum, of fine form, and very handsomely spotted with purple; Masdevallia Veitchii superba, having more of the purple glow on the flowers than is generally seen; Epidendrum Frederick William, a bold and striking form, the long tube and sepals bright rosy crimson, with white and rosy purple lip—awarded a First-class Certificate; Colax virgineus, Cattleya citrina, &c. S. Schloss, Esq., Osborn Villa, Bowdon (Mr. Cardwell, gr.), had Pothos violacea, bearing racemes of white berries, changing to a purple tint with age; a very fine Anthurium Scherzerianum, a superbly grown example of Tæmnia Thouarsii, the capital specimen of Gleichenia dicarpa, admirably grown; Aralia Veitchii gracillima, &c. A First-class Certificate was awarded to Colonel Clay for a seedling Zygopetalum, the petals claret-brown, the lip wholly suffused with pale purple. This was raised between Z. crinitum and Z. maxillare, having the growth of the former with the shape of flower of the latter. The same award was made to Sarracenia Fildesi, a large bold form, the pitchers handsomely tinted with gold, from James Fildes, Esq. From Samuel Barlow, Esq., Sickenhill Hall, Chadderton, Manchester, came a large group of flowering and foliaged plants, including several of the fine hybrid Rhododendrons raised by Mr. Isaac Davies, Ormskirk; baskets of show and alpine Auriculas, Polyanthus, Primroses, &c., and a well-grown example of Cypripedium villosum, with forty-three flowers; a very interesting specimen. Mr. R. S. Yates, Sale, sent some boxes of Solomon's Seal, finely grown and flowered; a vase of lovely forced Roses, a box of cut blooms of some early flowering hardy Rhododendrons, &c.

The National Auricula Exhibition. — This annual show was scarcely so large as that of last year, owing to the flowering of several of the leading exhibitors not being in bloom; and especially was this true of those residing in the Todmorden district, which is looked upon as one of the latest in England, as far as the Auricula is concerned. It is always the means of bringing together a great number of the Northern florists; and so far from the taste for Auriculas declining in the North it would appear to be on the increase, and many enquiries are constantly being made for varieties to cultivate. The Auricula has long been a favourite with the Lancashire florists. When it was first introduced to the county is not exactly known, but it is generally supposed to have been during the religious persecutions in Flanders, when the Flemish weavers, driven by atrocious cruelties from their native land, came to England about 1570, and settled in Lancashire and Norwich. Lancashire then became a manufacturing district, and it is well known that the Flemish weavers brought their collections of Auriculas and Tulips with them, and thus they were distributed to different places in England. In 1725 the Auricula was extensively grown by the florists of Middleton and the surrounding towns and villages, the cultivators being mostly handloom weavers.

The more elastic conditions under which Auriculas were recently shown at the Crystal Palace were absent at Manchester. For instance, the supports allowed to the trusses in the South are not permitted in the North, the reason being that it is considered if the flower-stem will not maintain its truss of flowers in an erect position it shows want of adequate cultivation. The result is, that the strongest of stems, through the plants being turned out of the pots to assist in lightening the carriage to the show, added to the heat of the room, become limp and ungainly in appearance, and with a great loss to the floral effect. Visitors desirous of inspecting the flowers have to handle them, and a truss sometimes gets quite snapped off. There is no class for twelve Auriculas at Manchester, the premier prize being for six plants, in order to give the growers of small collections a chance of competing; and in all the classes for pans, *i.e.*, where two or more plants are competing, as much difference in class as possible is required. The short grass used at Manchester for stuffing the pots to keep the plants in an erect position is not nearly so good as the moist green moss used at the Crystal Palace, and there is much less attention paid in the North to the general effect in the arrangement of the competing collections of plants than there is in the South. The lessons taught at the Crystal Palace will no doubt be pondered, and bear fruit by-and-by.

At Manchester the Rev. F. D. Horner, Kirkby Malzeard, Ripon, was again to the fore, being placed 1st with six dissimilar varieties, one at least of each of the classes. The varieties were, green-edge, Booth's Freedom and Trail's Anna; grey-edge, Lightbody and Lancashire Hero, the last-named having a truss of ten splendid pips; white-edge, Smiling Beauty; and self, C. J. Perry: as perfect a half dozen as one could well desire to see. 2d, Mr. B. Simonite, Rough Bank, Sheffield, with green-edge, Talisman (new) and Prince of Greens, very fine, notwithstanding its constitutional weakness in the tube; grey-edge, Lancashire Hero, with five very fine pips, and George Lightbody; white-edge, Frank Simonite (new); and self, Spalding's Metropolitan. 3d, Mr. H. Wilson, Halifax, with green-edge, Trail's Anna and Improver; grey-edge, Ringleader; white-edge, True Briton and Taylor's Glory; and self, Pizarro, perhaps the very finest of the dark selfs, the clear white refined paste contrasting so well with the shining velvety margin. 4th, Mr. J. Unsworth, Todmorden, green-edge, Lovely Ann; grey-edge, George Lightbody; white, Richard Headly and Smiling Beauty; self, Lord of Lorne and Pizarro. In the class for four dissimilar varieties, one in each class, the Rev. F. D. Horner maintained his ascendancy with Trail's Anna, finely shown, in 1st place; Booth's Freedom, and indeed a seedling from it; grey, George Lightbody; white, John Simonite, a fine bold flower of great merit; and self, Meteor Flag. 2d, Mr. B. Simonite, with, green, Lovely Ann; grey-edge, William Bradshaw (new); white-edge, John Simonite; and, self, Pizarro: a fine quartette of "cracks" from both exhibitors. 3d, C. Royds, Esq., Rochdale, with, green-edge, Barlow's King, a somewhat scarce old variety, well deserving of cultivation; grey, Privateer; white, Taylor's Glory; and self, Ellen Lancaster. 4th, Miss Steward, York, with green-edge, Lovely Ann; grey, Rev. George Jeans; white, Bond's Perfection; self, Pizarro.

In the class for two varieties it is required they be dissimilar both in variety and class. The first condition appears superfluous at first sight, but it is really intended to prevent two greys being shown in two classes, as for instance grey-edge George Lightbody, which can sometimes be shown both as a grey and green edge. Here the Rev. F. D. Horner was again 1st with grey-edge C. E. Brown, and white-edge Smiling Beauty. 2d, Mr. T. Mellor, Ashton-under-Lyne, with grey-edge General Bolivar, and self, Pizarro. 3d, C. Royds, Esq., with green-edge Prince of Wales, the edging being of a vivid dark green; and self, Ellen Lancaster. 4th, S. Cooper, Esq., Timperley, with green-edge Imperator, and self Mr. Sturrock. There was a good competition in this class, not less than ten pairs being staged.

In the classes for the best grey, green, white edge, and self, a large number of flowers were shown, and the task set before the judges was one calculated to test their patience and coolness of judgment to the utmost. A prize and eight other prizes are given in each class, and it is a condition of the competition that the variety winning the premium prize may win once more in the class; others once only. In these classes competing plants must have not less than three expanded pips, but in the pans there must not be less than five pips. As a rule the plants were shown with as many good pips as possible.

The premium green-edge was Lancashire Hero, so destitute of meal on the edge as to be practically a green-edge. It came from the Rev. F. D. Horner. Then followed Imperator, shown by Mr. B. Simonite. Geo. Lightbody and Lancashire Hero followed in the order of merit. Colonel Taylor, Prince of Greens, and some promising seedlings were also shown. The premium grey-edge was George Lightbody, shown by Mr. S. Barlow; and the Rev. F. D. Horner came next with the same variety. Then followed Lancashire Hero, Dr. Horner, a fine new variety, raised by Mr. J. Read, of Market Rasen; Samuel Barlow, new and very promising; C. E. Brown, General Bolivar, Syke's Complete, and Alexander Meiklejohn, the pip fine, but somewhat rough on this occasion. The

premium white-edge was Smiling Beauty, followed by Lightbody's Alma, from the same exhibitor. Then followed Trail's Beauty, Smith's Ne Plus Ultra, Richard Dean, a promising seedling, raised by Mr. B. Simonite; John Simonite, Fanny Crossland, and Ann Smith. The premium self was Othello, from Mr. H. Wilson, Halifax; then came Pizarro, Ellen Lancaster, Meteor Flag, Lord Clyde, Mr. Sturrock, Lord of Lorne, a bright and striking red self; Sims' Eliza, and Bessy Bell.

The best Lancashire Hero in the show was that staged by the Rev. F. D. Horner in the class for six varieties. Would that old Robin Lancashire, the raiser, lying in peace in his grave in Middleton Churchyard, could have lived to see his grand flower so superbly shown. The best green-edge was Booth's Freedom, also shown by the Rev. F. D. Horner. The best grey-edge was George Lightbody, shown by Mr. B. Simonite.

Alpine Auriculas are always well shown at Manchester, a few amateur cultivators grow them uncommonly well. Only shaded flowers are eligible for competition. The best four varieties came from Richard Gorton, Esq., Eccles, who had Diadem, a beautiful golden-centred seedling of his own raising, the ground colour black, with well-defined edge of bright reddish'crimson; Ovid, Beatrice, and Dolly Varden. S. Cooper, Esq., Timperley, Cheshire, with Ovid, Diadem, Beatrice, and Dazzle. 3d, Miss Steward, York, with Conspicua and three seedlings. In the class for a single alpine with golden centre, S. Cooper, Esq., was 1st and 2d[with Dazzle and Ovid; then followed R. Gorton, Esq., with Timid, Diadem, Neatness, and Tennie. In the class for a single alpine with white centre Miss Steward was 1st and 2d with seedlings; then came R. Gorton, Esq., with Mauve Queen, a lovely pale mauve-edged flower; and following in order of merit came Fair Rosamond, George Lightbody, and Elcho.

There yet remained the Polyanthus, and as nearly every truss of flower was reduced to three pips, and there was a great sameness between them, the effect was one of monotony. The best pair were Cheshire Favourite and Exile, shown by Mr. J. Dyson, Hill Top, Chadderton; and the same exhibitor had the five 1st prizes in the class for a single plant, staging Exile, Cheshire Favourite, and President. The second best pair came from Mr. M. Partington, Chadderton, who had Exile and Lord Lincoln, a scarce old variety. Other varieties shown in the class for a single plant were Lord Lincoln, Smith's Duke of Wellington, and George the Fourth.

First-class Certificates of Merit were awarded to grey-edge Auricula, Dr. Horner (Read), a fine variety that may be appropriately described as a refined Richard Headly; and to Polyanthus Duke of Wellington, from Mr. G. Smith, New Villa, Edmonton.

After the judging was over, the judges, exhibitors, &c., dined together, under the presidency of Samuel Barlow, Esq., and certain business arrangements were discussed and transacted.

Royal Horticultural of Ireland: *April* 26.—The spring exhibition took place at the Exhibition Palace, the plants being arranged in the great transept, the florists' flowers, fruits and vegetables, in the Leinster Hall. The show was of average merit in every department.

Azaleas were not quite so well shown as in previous years. The cup for the best nine, in pots of any size, was well won by Mr. Watson, who had finely grown specimens of Murryana, Stella splendidly bloomed, Triumphans, and Criterion. The cup for a similar number in 12-inch pots was awarded to Mr. W. H. Fry, whose nine included good plants of Criterion, Iveryana, and Mars; the second prize going to Miss Powers, a new exhibitor, for a group which many thought ought to have occupied a higher position, including, as it did, some excellent examples of good cultivation.

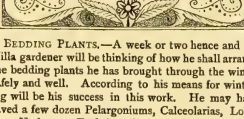
The cup for twelve exotics, in pots of any size, went to Mr. Westby for a capital group of finely-grown plants, including a brilliant Anthurium Scherzerianum, a well-flowered Imantophyllum miniatum, two fine Crotons, splendidly bloomed specimens of Pimelea spectabilis and Darwinia tulipifera, and fine plants of Dicksonia squarrosa and Chamædorea elegans. Lord James Butler and Miss Power, of Temple Hill, Blackrock, were the other competitors in this class, both groups including many choice specimens. His lordship's group was 2d, and Miss Power's 3d. The cup for twelve exotics, in 12-inch pots, also went to Mr. Westby, whose group included well handled examples of Aphelexis macrantha purpurea, Erica Cavendishiana, E. Victoria, Dracæna Shepherdi, D. excelsa, Lomaria gibba, a very fine plant; and Yucca aloifolia variegata. Mr. R. W. Boyle was placed 2d, with an excellent group, and Lord James Butler 3d. The group staged by the latter exhibitor included a fine specimen of the beautiful Cocos Weddelliana.

Orchids were represented by two fair groups exhibited by Mr. Boyle and Mrs. White, the first-named exhibitor having a well-bloomed Dendrobium nobile a capital specimen of Cypripedium caudatum, and nice plants of Phalænopsis Schilleriana and Odontoglossum Pescatorei. Pelargoniums were shown in perhaps as fine condition as we have ever seen them at this early season, the groups staged by Mr. Westby, Mrs. Manders, and Mr. Boyle being highly creditable to their respective exhibitors. Ferns were splendidly shown. In Mr. Westby's six were very fine plants of Gleichenia dicarpa and Davallia Mooreana, and Mr. Riall's lot included a fine Todea superba and a beautiful plant of Hymenophyllum demissum. In the way of variegated and fine-foliage plants, one of the best things was the lot of six in 10-inch pots exhibited by Mr. Watson, all his plants being remarkably well grown, special praise being due to his specimens of Pandanus Veitchii, Dracæna ferrea grandis, and Croton Johannis. There was an excellent display of Cinerarias, as also of Cyclamens, the last-named being remarkably well shown by Mr. Guilfoyle and Mr. Millner.

The show of Hyacinths was first-rate. The Lord-Lieutenant's Cup for the best eighteen was capitally won by the Sculptor-General, a new and promising exhibitor, his flowers being all that the most critical Hyacinth fancier could desire. The *crème de la crème* of his collection comprised Mont Blanc and La Grandesse, whites; Macaulay and Vuurbak, reds; Florence Nightingale, Cavaignac, and Koh-i-noor, pinks; and Charles Dickens, and Garrick, blues. The 2d prize fell to Mr. C. S. King, who had fine flowers of Cosmos, Queen Victoria Alexandrina, and Grandeur à Merveille; the 3d prize being awarded to Messrs. Campbell for an excellent collection. The competition in the classes for twelve and six Hyacinths was also close and spirited.

The admirers of that old and beautiful spring favourite, the Auricula, could not fail to have been pleased with the display in this department, all the groups staged being of the highest merit. The 1st prize for the best nine was taken by the Rev. Frederick Tymons was a grand lot, which included splendid flowers of Superb, Turner's C. J. Perry, and Finlayson's Sir R. Peel; Mr. Leland coming next in merit with a first-rate collection. In the class of six the last-named exhibitor took 1st place, his lot comprising very fine flowers of Barker's Nonsuch and Headly's Royal Purple; and in Mr. Tymons' lot, which was next in merit, were fine specimens of Metropolitan and Sir W. Peel. The show of cut Roses was excellent, and some of the stands could scarcely have been finer than seen in June. In Mr. Riall's box were very fine flowers of Gloire de Dijon, Anna Alexieff, Dupuy Jamain, Prince Letxtzky, and Maréchal Neil. The prize for a stand of twelve blooms of one variety was awarded to Mr. Riall for a superb stand of the last-named variety.

The show of fruit and vegetables was, of course, at this early period of the season, meagre. One of the most interesting things among the miscellaneous exhibits was a bouquet of flowers placed in a glass shade filled with water, exhibited by Mr. Ward. *Condensed from the "Irish Farmers' Gazette."*



BEDDING PLANTS.—A week or two hence and the Villa gardener will be thinking of how he shall arrange the bedding plants he has brought through the winter safely and well. According to his means for wintering will be his success in this work. He may have saved a few dozen Pelargoniums, Calceolarias, Lobelias, Verbenas, Fuchsias, &c., and by-and-by the enjoyment his flower garden will yield him will be materially enhanced by the consideration that it is owing to his own care and attention the leading subjects are at hand with which to work out his summer pictures.

Supposing his Pelargoniums, for instance, are still in store-pots—that is, in the cutting-pots in which they were placed in the autumn—they will be materially helped by being potted off singly into small pots. If there is no room to dispose of the plants when so potted they had better remain in the store-pots, but they should be well watered, and be kept free from dead and decaying leaves. If there are four or six rooted cuttings in a pot, they cannot be separated for placing in the beds at planting-out time without disturbing the roots and sacrificing much of the soil about them. If a little fine soil can be placed about the roots when planted out, and the plants are kept sprinkled overhead for a few days if the weather be warm and dry, they soon recover, but they still receive a check. On the other hand, all plants turned out of their pots with an undivided ball are thereby enabled to stand exposure much better and escape the check experienced by plants taken out of the store-pots. This holds good of all bedding plants, and Calceolarias and Verbenas suffer more than the others.

But whatever may be the plan adopted, the hardening off of the plant is a matter of urgent necessity. Things that have been struck in a hot-bed frame, for instance—the dung frame which we have so frequently recommended to Villa gardeners in the absence of any little striking house—need removal to where they should be kept close for a few days, and eventually exposed by day, and when the weather is mild by night also. Plants that were kept over the winter in cool houses or frames should now be removed to some sheltered place in the open air; and a light covering of some kind placed over the plants by night when frost threatens.

A neighbour of ours, who was wintered some bedding plants in a cold frame with considerable success, found himself in want of it for raising a few things on a hot-bed on which the frame was to be placed. The question for consideration was what to do with the plants. Having some flower beds vacant he took our advice and bedded out the hardiest subjects, and having obtained some sprays of Laurel which had come from a neighbouring garden where a Laurel hedge was being pruned, he stuck a number of these sprays among his plants, and in this way they are protected from frost and cold winds. Meanwhile the roots are laying hold of the soil, and the plants acquire a greater amount of resisting force. His tender plants were disposed of temporarily in this way. A few old wine boxes were broken up, and with these a homely wooden frame was extemporised, 18 inches high all round. Then a bed was formed of rough cinders, with some fine ashes at the top, and the plants having good balls of soils to them were planted out in a bed made of soil and cocoa-nut refuse. Two or three strips nailed together made a framework, which is laid over the top by night, and by day when necessary, and the plants appear as comfortable as when placed under glass. By shifts and contrivances, of which the foregoing is a very good example, plants of a somewhat tender character may be housed and cared for till the weather is genial enough for them to be planted out in their beds.

Half-hardy annuals that were sown in heat some weeks ago will soon be ready to transplant. Stocks, Asters, Amaranthus melancholicus, Perilla nanki nensis, Lobelia speciosa, Tagetes signata pumila, Petunias, Marigolds, Phlox Drummondii, Saponaria calabrica, Zinnias, and others too numerous to mention, are all more or less useful for filling up beds and borders in summer, in fact they can be used to brighten up odd corners here and there, so as to give the borders a furnished appearance. If as soon as large enough the most forward plants could be transferred from the seed pans or boxes to other seed boxes, or to a bed made up in a frame, placing them about 2 inches apart in some light soil, they would grow into size and become nice stuff by the time they were required for planting out permanently. Useful handy boxes for all kinds of cuttings and seeds can be made by any one a little ready in using a saw and a hammer and nails, from ½ inch or ⅔ inch white deal. This material makes more lasting boxes than when they are constructed of any refuse stuff obtained by breaking up cases, &c. A very handy-sized box is one 20 inches long by 12 inches in width, and 4 inches in depth. It is well to have the bottom of a little stouter material than the sides. Holes should be pierced in the bottom of the boxes for drainage. When planted, a thin layer of small pieces of broken pots should be spread over the bottom, then a thin layer of moss. In this way good drainage can be secured, and the advantage of employing the moss is, that it prevents the soil being washed down among the crocks, and thereby impeding the drainage. If any refuse soil be left from the potting-bench it can be used to fill these boxes, mixing with it some leaf-mould and silver-sand.

It is always well to make these boxes as durable as possible, as they are among the most useful things a Villa gardener can have in his garden. They may be put to many uses during the year. They can be materially preserved by standing them on brickbats, &c., when filled with plants or sown with seeds, and when unoccupied they could be put in a shed or any suitable place till again required.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, MAY 2, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading at 32° Fahr.	Departure from Mean of 18 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean for Day.	Dew Point.	Hygrometrical Deductions from Glaisher's Tables xth Edition. Degree of Humidity. Sat. = 100.	WIND. Average Direction.	RAINFALL.
April 26	In. 29 77	In. 0.09	° 50.0	° 36.5	° 13.5	° 41.8	− 5.7	40.0	91	ENE: E.S.E.	In. 0.00
27	29.63	−0.14	51.6	36.0	14.7	43.1	− 5.6	35.8	74	ESE	0.03
28	29.58	−0.28	48.5	40.0	8.5	43.6	− 5.3	35.7	74	NNE: N.	0.00
29	29.67	−0.10	51.2	40.0	11.2	44.6	− 4.5	38.9	80	N. E.N.E.	0.22
30	29.97	+0.21	53.5	40.3	13.2	41.0	− 5.4	38.1	79	NNE: N.	0.00
May 1	30.19	+0.41	48.1	31.9	13.7	40.0	− 9.8	32.2	73	N. N.N.E.	0.00
2	30.08	+0.31	50.7	37.1	13.6	42.0	− 8.1	31.2	64	E. N.E.	0.00
Mean	29.84	+0.07	50.5	37.9	12.6	42.7	− 6.5	35.8	77	N.E.	SUM 0.22

April 26.—A dull cloudy day. Cold. Cloudless at night.
— 27.—A fine day, cloudy and cool. Strong wind.
— 28.—Overcast, dull and cold throughout.
— 29.—A dull raw day. Steady rain from 3 30 P.M. to 6 P.M.
— 30.—Fine but dull and cloudy. Cold.
May 1.—A dull, overcast day. Cold and raw.
— 2.—A fine day, but cloudy and cold. Cloudless at night.

LONDON: *Barometer.*—During the week ending Saturday, April 28, in the suburbs of London the reading of the barometer at the level of the sea decreased from 29.80 inches at the beginning of the week to 29.55 inches by the afternoon of the 23*d*, increased to 29.98 inches by the evening of the 26th, decreased to 29 72 inches by the morning of the 28th, and increased to 29 83 inches by the end of the week. The mean reading for the week at sea level was 29 77 inches, being 0 09 inch lower than that of the preceding week, and 0 19 inch below the average.

Temperature.—The highest temperatures of the air varied from 61° on the 22d to 48½° on the 28th; the mean value for the week was 54½°. The lowest temperatures of the air ranged from 34½° on the 24th to 46½° on the 22d; the mean of the seven values was 38½°. The mean daily range of temperature in the week was 16½°, the greatest range in the day being 23½° on the 24th, and the least 8½° on the 28th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—22d, 51°.7, +3°.9; 23d, 45°.1, −2°.9; 24th, 44°.7, −3°.5; 25th, 43°.2, −5°.1; 26th, 41°.8, −6°.7; 27th, 43°.1, −5°.6; 28th, 43°.6, −5°.3. The mean temperature of the air for the week was 44½°, being 3°.6 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 122½° on the 22d, 121½° on the 24th, and 118½° on the 23d; on the 28th the reading did not rise above 53°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 27° on the 25th and 29½° on the 24th; the mean value for the week was 34½°.

Wind.—The direction of the wind was mostly from the E.N.E., and its strength moderate. The weather during the week was generally dull and cold for the season. Thunder was heard on the 22d, 23d, and 24th.

Rain fell on three days during the week; the amount collected was 0.12 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 71½° at Portsmouth, 63½° at Nottingham, and 61° at Blackheath; at Bradford 50½° was the highest temperature; the mean value from all stations was 57½°. The lowest temperatures of the air observed by night were 29° at Cambridge, and 29½° at Nottingham; at Truro 42° was the lowest temperature; the general mean from all stations was 34½°. The range of temperature was the greatest at Portsmouth, 33½°, and the least 13½°, at Bradford; the mean daily range of temperature from all stations was 23½°.

The mean of the seven high day temperatures was the highest at Portsmouth, 60½°, and the lowest at Bradford, 47½°; the mean value from all stations was 51½°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 34½°, and the highest at Truro, 45½°; the general mean from all stations was 38½°. The mean daily range of temperature in the week was the least at Bradford, 8½°, and the greatest at Portsmouth, 19½°; the mean daily range from all stations was 13½°.

The mean temperature of the air for the week from all stations was 43½°, being 4½° lower than the value for the corresponding week in 1876. The highest were 49½°, at Portsmouth, and 49°, at Truro; and the lowest 41½°, at Wolverhampton, Sheffield, Bradford, and Sunderland.

Rain.—The fall of rain was generally larger in Yorkshire and Durham than elsewhere. At Bradford, Leeds, and Hull about 1¼ inch fell, and at Sunderland 1⅜ inch (nearly) was measured, whilst at Blackheath one-tenth of an inch only fell. The average fall over the country was two-tenths of an inch. The weather during the week (with the exception of Sunday, the 22d) was generally dull and cold. A slight thunderstorm occurred generally on the 22d inst. Lunar halos were seen at Bristol on the 22d and 24th.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 55° at Paisley to 46° at Leith; the mean value from all stations was 50°. The lowest temperatures of the air ranged between 31° at Paisley and 35° at Glasgow and Greenock; the average value from all stations was 33½°. The mean range of temperature from all stations was 16½°.

The mean temperature of the air for the week from all stations was 41°, being 3½° lower than the value for the corresponding week in 1876. The highest occurred at Glasgow and Aberdeen, both 42½°, and the lowest at Edinburgh, 39½°.

Rain fell to the amount of 1¼ inch at Paisley and 1 inch at Greenock; at Perth half an inch fell; the average fall over the country was three-quarters of an inch.

DUBLIN.—The highest temperature of the air was 56½°, the lowest 29°, the range 27½°, the mean 45½°, and the fall of rain 0.05 inch.

JAMES GLAISHER.

Variorum.

THE WOODMAN'S CRAFT.

O, the woodman's craft is a goodly craft,
He through sun and shade chowers;
As strong and brown as his hatchet's haft,
As simple as the flowers;
Of pleasure or toil he nothing lacks,
As he avoids his song and he swings his axe
In spring-decked forest-bowers.

When all the winds of March are blown,
And Apple-boughs are budding;
When swallows from the South have flown,
And lambkins, scudding
Across the sun, scarce dim his rays,
Full merry and fair are the woodland ways
When April streams are flooding.

With throstlecocks the groves ring out;
Round hut and byre and shieling,
High, low, and near and round about,
The blue-backed birds are wheeling;
And saucily boasting his robber name,
The raucous pies, our stints for shame,
Where eggs are for the stealing.

Beneath the Ash, whose barren head
Still looms all dark and frowning—
Beneath the gracious green and red
That make the young Oak's crowning—
Last autumn's leaves can scarcely hide
The tufts of Primrose, morning-eyed,
With cloak of winter's browning.

Then merrily ring the axes keen
Where stalwart arms are swinging;
And goodly shows the broad blade's sheen,
The sunbeams backward flinging,
As thicket's marge and hidden glades
Ring clearer than the ringing blades
With woodmen's jovial singing.

A goodly craft, and a gentle craft,
And a craft no evil fearing,
Is theirs who live by helve and haft
Where thickets are for clearing,
As the good man's hatchet swings aloft,
And the good wife sings from the binding-croft,
When summer days are nearing.

B. Montgomerie Ranking, in "London Society."

Answers to Correspondents.

BLUE LIGHT: *E. D.* We have had no practical experience, but on theoretical grounds should doubt the advisability of using blue glass.

CAMELLIA LEAVES: *W. P. D.* There is no trace of fungi on the leaves, and we cannot otherwise account for the spotting.

DOUBLE VIOLET: *J. Laing.* The double white Violet you send is a very fine thing, the flowers pure white, fully double, and quite an inch across. We suppose it is sent as a novelty, and look upon it as really a good thing.

HOTEIA: *W. E.* The correct name is Astilbe barbata, the other names are synonyms.

INSECTS: *S. Burton.* The insect found feeding on your Vine leaves is a weevil, Otiorhynchus sulcatus, a well-known pest in gardens.

INSECT IN POTATOS: *A. G. B.* Said by hemipterists to whom it has been shown to be the pupa of Reduvius personatus, but the opinion not given with confidence, and seems doubtful. *A. M.*

MAIZE: *W. H. G., Bath.* From the leading American seedsmen.

MEASURING: *Novice.* Your question does not come under our province. Get the nearest carpenter or painter to give you a lesson on the subject.

NAMES OF PLANTS: *James Service.* Narcissus maximus.—*Ch. Stringer.* Spurmannia africana.—*Rob.* The Montpellier Maple, Acer monspessulanum.—*A Novice.* Fritillaria Meleagris.—*John E. Daniel.* Correctly named Scilla amœna.—*A. D.* 1. Bifrenaria Harrisonæ; 2. Lycaste aromatica.—*P. H. G.* The Dendrobe bought at Sir Stevens' is D. Findleyanum, which has only been seen with Sir Trevor Lawrence before. The flowering with you on July 15, 1875, of Schlimmia trifida may be the first time it flowered in England. *H. G. Rchb.—Ute.* 1. Narcissus incomparabilis var. Orange Phœnix; 2. N. odorus var. treminalis; 3. N. Tazetta var.—*A. O. W.* Pittosporum undulatum.

POLYANTHUS: *P. W.* An ordinary gold-laced variety. The lacing is too narrow for the florists' standard.

SEAKALE LILYWHITE: *Stuart & Mein.* The sample received proved, when cooked, to be of good colour, very tender, and of excellent flavour. There can be no doubt about its being a great improvement on the ordinary variety.

SEEDS FROM ABROAD: *J. Meadows.* 1, Desmodium; 2, Desmodium gyrans, a native of the East Indies and of herbaceous habit; 3, Desmodium cajanifolium, an evergreen from Caracas.

SPIRÆA JAPONICA: *A Novice.* Divide the crowns after flowering, and plant them in rich sandy loam. They require plenty of moisture while growing. In Holland this plant is grown in great quantities for foreign markets, amongst the Hyacinths, in pure sand and cowdung. See p. 526.

VINES: *C. B. P.* The injury done to your Vine leaves has not been caused by any constitutional disease in the Vine, but, as we believe, by the action of a brief period of bright sunshine after the dull weather lately experienced, intensified perhaps by deferred ventilation. Scalding is the term applied by gardeners to this form of injury, and there is plenty of it this spring.

CATALOGUES RECEIVED.—Messrs. S. Dixon & Co. (34, Moorgate Street, London, E.C.), Descriptive Catalogue of Chrysanthemums, Ferns, Fuchsias, Pelargoniums, &c.—Messrs. J. Warner & Sons (The Crescent Foundry, Cripplegate, E.C.), Descriptive List of Horticultural Ironwork, &c.—J. Vander Swaelmen (The Lily Nursery, Gendbrugge, Ghent, Belgium), Special List of Liliums, Azaleas, Rhododendrons, Herbaceous Plants, &c.—W. Rumsey (Joyning's Nurseries, Waltham Cross, N.), Catalogue of Bedding Plants.—The Detroit Seed Company (Detroit, Michigan, U.S.A.), Catalogue of Vegetable and Flower Seeds.—Messrs. Dickson & Sons (1, Waterloo Place, Edinburgh), Descriptive Catalogue of Florists' Flowers.—W. Bull (King's Road, Chelsea, London, S.W.), Retail List of New, Beautiful, and Rare Plants.

COMMUNICATIONS RECEIVED.—S. P. O.—J. N. V.—H. V.—D.—J. D.—F. C. Brussels (best thanks).—Schenk.—W. T. D.—E.—J. T. R.—W. B. H.—J. P. Sparta.—O.—G. E.—J. A.—P. M.—A. L.—R. C.—E. J. N.—T. D. M.—Enquirer (next week).—E. S.—W. R. S.—J. S.—H. R.—J. G. H.—W. O.—J. C.—A. G. R.—H. E.—T.—W. C. R. (next week).—J. C.—A. E. C.—D. A. P.

Markets.

COVENT GARDEN, May 3.

A fair amount of business has been doing during the week, a good supply of all kinds of fruit being now to hand. Grapes still continue to fall in value, the demand not keeping pace with an increased supply. Forced vegetables remain the same. *James Webber, Wholesale Apple Market.*

VEGETABLES.

	s. d.	*s. d.*
Artichokes, per bush.	4 0	..
— Eng. Globe, doz.	4 0	6 0
Asparagus, Fr., per bun.	0 0	..
— English, p. bun.	8 0	10 0
— Fr., natural, bun.	1 6	2 0
— Giant, per bun.	30 0	..
— Sprue, per bun.	1 6	..
Beans, French (nets) per 100	.. 2 6	3 0
— French, Long-pod, ½-bushel	.. 8 0	..
Beet, per doz.	1 0	2 0
Cabbages, per doz.	1 0	2 0
Carrots, per bunch	3 0	5 0
— New Fr., p. bun.	2 0	..
Cauliflowers, per doz.	2 0	4 0
Celery, per bundle	1 6	2 0
Chilis, per 100	3 0	..
Cucumbers, each	0 6	1 6
Endive, per doz.	1 0	2 0
— Batavian, p. doz.	2 0	3 0
Garlic, per lb.	0 6	..
Herbs, per bunch	0 3	0 4
Potatos.—Kent Regents, £5 to £6; Essex Regents, £4 10s. to £5; Kidneys, £8 per ton.		

FRUIT.

	s. d.	*s. d.*
Apples, per ½-sieve	3 0	8 0
Cobs, per lb.	1 0	1 6
Grapes, per lb.	8 0	16 0
Lemons, per 100	4 0	10 0
Oranges, per 100	4 0	12 0
Peaches, per doz.	15 0	25 0
Pears, per doz.	12 0	..
Pine-apples, per lb.	4 0	7 0
Strawberries, p. oz.	0 6	1 0
Figs, green, each	1 0	2 0

CUT FLOWERS.

	s. d.	s. d.
Azaleas, 12 sprays	0 6	2 0
Blue Bells, 12 bunch.	2 0	9 0
Bouvardias, per bun.	1 0	4 0
Camellias, 12 blooms	2 0	9 0
Carnations, per dozen	1 6	4 0
Cowslips, 12 bunch.	1 0	6 0
Cyclamen, per doz.	2 3	0 9
Daffodil, double, 12 bunches	3 0	9 0
— single, 12 bun.	2 0	6 0
Eucharis, per doz.	6 0	12 0
Euphorbias, 12 sprays	2 0	9 0
Gardenia, per doz.	4 0	12 0
Heliotropes, 12 spr.	0 6	1 0
Hyacinths, 12 bunch.	6 0	18 0

PLANTS IN POTS.

	s. d.	s. d.
Azaleas, per dozen	24 0	60 0
Begonias, per doz.	6 0	12 0
Bouvardias, do.	12 0	24 0
Calceolaria	12 0	24 0
Cineraria, per doz.	6 0	18 0
Clematis	24 0	60 0
Coleus, per dozen	3 0	9 0
Cyclamen, per doz.	9 0	24 0
Cyperus, do.	6 0	12 0
Dracæna terminalis	30 0	60 0
— viridis, per doz.	18 0	24 0
Ferns, in var., p. doz.	6 0	30 0
Ficus elastica, each	2 6	15 0
Fuchsias, per dozen	9 0	18 0
Genista	9 0	18 0
Heaths, variety, doz.	12 0	60 0
Lily of Valley, 12 spr.	0 9	3 0
Mignonette, 12 bun.	4 0	9 0
Myosotis, 12 bunch.	3 0	12 0
Narcissus, 12 sprays	1 0	2 0
Pelargoniums, 12 spr.	1 0	2 0
— zonal, 12 sprays	0 6	1 6
Primroses, per dozen	0 6	2 0
Primula, dbl., p. bun.	1 0	2 0
Roses, indoor, p. doz.	3 0	12 0
Spiræa, 12 sprays	1 6	4 0
Stephanotis, 12 spr.	6 0	12 0
Tropeolum, 12 bun.	1 0	6 0
Tulips, per dozen	0 6	2 0
Violets, 12 bun.	1 0	4 0
Wallflowers, p. doz.	3 0	9 0

	s. d.	s. d.
Heliotrope, per doz.	6 0	18 0
Hydrangea, per doz.	12 0	30 0
Lily of Valley, each	1 6	3 6
Mignonette, per doz.	5 0	9 0
Myrtles, do.	3 0	12 0
Palms in variety, each	3 6	21 0
Pelargoniums, scarlet, per doz.	4 0	12 0
Rhodanthe, per doz.	10 0	18 0
Richardia æthiopica, per doz.	9 0	18 0
Roses, per dozen	24 0	60 0
— fairy, per dozen	9 0	18 0
Spiræa, per doz.	12 0	30 0
Tulips, per dozen	6 0	24 0
Valotta purpur., doz.	12 0	18 0

SEEDS.

LONDON: *May 2.*—Inactivity of demand, and a tendency to lower prices, characterise just now the trade for agricultural seeds. For the moment, indeed, owing to recent failures, the seed market must be described as quite disorganised, and for some articles it is difficult, and in fact impossible, to fix the value. For some two or three weeks longer a dragging demand may be expected. As soon as the present backward sowing season is over we may look for greater steadiness; and an approximate idea can then be formed as to holding-over rates. For grass seeds there is a moderate request at unaltered quotations. Sainfoin and Lucerne move off on former terms. Spring Tares, in sympathy with the strong advance in all descriptions of grain, are 1*s.* to 2*s.* per qr. dearer. Hemp, Rape, and Linseed are also stiffening in price. Canary seed, under the influence of a strong speculative inquiry, exhibits a marked advance. Blue Peas, with a lively sale, are also considerably higher. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday Wheat was from 6*s.* to 8*s.* per quarter dearer than on Monday se'nnight, and at this week's markets were not very readily obtained. Barley was quoted about 3*s.* per qr. higher. Malt was worth more money. In Oats there was a rise of from 2*s.* to 3*s.* per qr. on the week; Maize fetched an advance varying from 3*s.* to 4*s.* per qr.; Beans and Peas realised 2*s.* per dearer; while as regards flour country sacks made from 5*s.* to 6*s.*, and American barrels from 3*s.* to 4*s.* more money than on Monday se'nnight. The top price of town-made flour, 100, was raised 6*s.*, or to 60*s.* per sack.—On Wednesday trade was quieter, and to effect sales some reduction from the rates of Monday had to be submitted to. This applies to all classes of produce.—Average prices of corn for the week ending April 28:—Wheat, 55*s.* 10*d.*; Barley, 40*s.* 6*d.*; Oats, 25*s.* 8*d.* For the corresponding week last year:—Wheat, 44*s.* 11*d.*; Barley, 34*s.* 1*d.*; Oats, 26*s.* 3*d.*

CATTLE.

At the Metropolitan Market on Monday prices for beasts advanced, and a fair clearance was effected. Trade was not very active for sheep, and prices on the average were scarcely as good as last week. Scarcely any advance was realised in lambs, but choice calves were scarce and dear. Quotations:—Beasts, 4*s.* 4*d.* to 5*s.* 4*d.*, and 5*s.* 6*d.* to 6*s.*; calves, 5*s.* 6*d.* to 6*s.* 10*d.*; sheep, 5*s.* to 5*s.* 6*d.*, and 5*s.* 8*d.* to 6*s.* 4*d.*; lambs, 7*s.* 4*d.* to 8*s.* 4*d.*; pigs, 4*s.* to 5*s.*—On Thursday there was very little change in the trade. In the beasts trade hand sold at about Monday's value, though quotations did not range quite so high. Sheep moved off with a moderate demand. Prime calves were in fair request, but lambs met no inquiry.

HAY.

Business at Whitechapel market was firm on Thursday, with a steady demand. Quotations:—Clover, best, 105*s.* to 135*s.*; inferior, 85*s.* to 95*s.*; hay, best, 102*s.* to 130*s.*; inferior, 75*s.* to 85*s.*; and straw, 45*s.* to 57*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 120*s.* to 130*s.*; inferior, 110*s.* to 120*s.*; superior Clover, 132*s.* to 140*s.*; inferior, 110*s.* to 126*s.*; and straw, 55*s.* to 60*s.* per load.

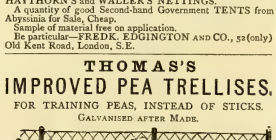
POTATOS.

The Borough and Spitalfields markets reports for Monday gave business as being steady. Kent Regents, 95*s.* to 120*s.* per ton; Essex do., 85*s.* to 120*s.*; Scotch do., 90*s.* to 110*s.*; Victorias, 130*s.* to 160*s.*; Scotch, 110*s.* to 120*s.*; flukes, 140*s.* to 170*s.*; kidneys, 120*s.*—On Thursday English and Scotch were firm, and foreign sold unevenly. Quotations:—Victorias, 140*s.* to 160*s.*; York Regents, 120*s.* to 150*s.*; Scotch do., 120*s.* to 140*s.*; French round, 80*s.*; German reds, 80*s.* to 85*s.*; Belgian kidneys, 100*s.* per ton.—The imports into London last week comprised 19,934 bags from Antwerp, 14,710 Hamburg, 5865 Bremen, 1844 Harlingen, 1873 Dunkirk, 1287 Ghent, 1001 Dantzig, 158 packages 50 bags Malta, 116 bags Calais, 76 Rotterdam, and 50 sacks Rouen.

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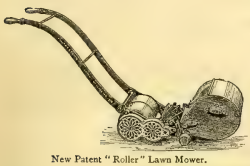
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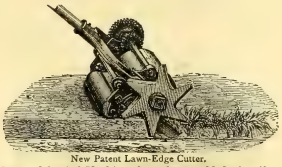
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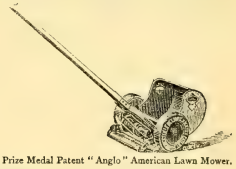
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TABLE CUTLERY. The Blades are all of the finest Steel.	Table.		Dessert.		Carvers, per pair.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
3½-inch ivory handles ....per doz	14	0	11	0	6	0
3⅞ ,, ,, ,, ,,	18	0	14	0	8	0
3⅞ ,, ,, to balance ,,	20	0	15	0	7	0
3¾ ,, ,, ,, ,,	26	0	20	0	8	0
4 ,, ,, ,, ,,	30	0	22	0	8	0
4 ,, fine ,, ,,	33	0	24	0	9	6
4 ,, ,, extra large ,,	36	0	28	0	10	6
4 ,, ,, African ,,	42	0	35	0	13	6
4 ,, silver ferrules ,,	42	0	35	0	15	0
4 ,, silvered blades ,,	48	0	35	0	—	
Do. electro-silvered handles ,,	23	0	19	0	7	6

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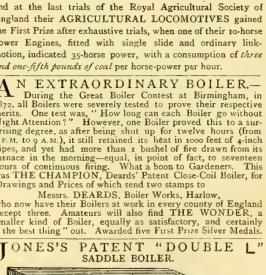
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STEAM PLOUGHING MACHINERY,
ROAD LOCOMOTIVES, TRAMWAY LOCOMOTIVES,
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For Prices, Description, and Reports of Working, apply to the Manufacturers,
AVELING & PORTER,
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AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES: and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of *three and one-fifth pounds of coal* per horse-power per hour.

AN EXTRAORDINARY BOILER.—During the Great Boiler Contest at Birmingham, in 1872, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 1000 feet of 4-inch pipes, and yet had more than 1 bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners. This was THE CHAMPION, Deards' Patent Close-Coil Boiler, for Drawings and Prices of which send two stamps to
Messrs. DEARDS, Boiler Works, Harlow,
who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

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These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel: the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

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High.	Wide.	Long.	Feet.	£	*s.*	*d.*
20 in.	18 ,,	18 ,,	300	7	0	0
20 ,,	18 ,,	24 ,,	400	9	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

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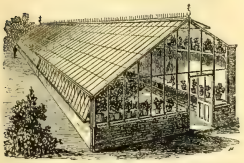
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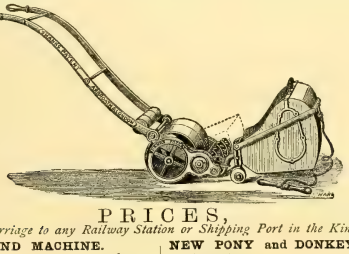


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Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

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The Hand Machines are all fitted with Silent Movement, and can be used either with or without the usual Front Rollers.

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The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

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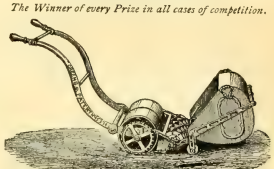
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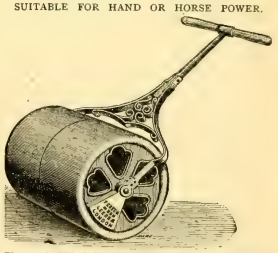
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WIRE, best quality	..	.. 10 per 100 yds.
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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

ALTERATION IN DAYS OF MEETING.—On and after TUESDAY, May 15, the MEETINGS of the FRUIT and FLORAL COMMITTEES will be held on TUESDAYS instead of WEDNESDAYS. The dates in future will therefore be—

TUESDAY, May 15	TUESDAY, August 7
,, June 5	,, August 21
,, June 19 (Great Summer Show of the Season)	,, September 4
,, July 3	,, October 2
,, July 17	,, November 6
	,, December 4.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—SCIENTIFIC, FRUIT, and FLORAL COMMITTEES' MEETINGS, on TUESDAY next, May 15, at 11 o'Clock. GENERAL MEETING at 3 o'Clock, for the Election of Fellows, &c.

Admission 1*s.* Band from 4 o'Clock P.M.

N.B.—On this occasion the Fruit and Floral Committees will meet in the CONSERVATORY, where Exhibits will also be shown.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

SPECIAL NOTICE. — SUMMER EXHIBITION of PLANTS and FLOWERS, WEDNESDAY next, May 16. All Plants and other Objects for Exhibition must be in the Exhibition Tent before 9 A.M.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

FIRST SUMMER EXHIBITION of PLANTS and FLOWERS, WEDNESDAY next, May 16. Gates open at 2 o'Clock. Tickets to be obtained at the Gardens, only by vouchers from Fellows of the Society, price 5*s.* each.

The Exhibition of AZALEAS by Mr. Jackman is now open.

CRYSTAL PALACE.—GREAT FLOWER SHOW of the Season, SATURDAY, May 12. Dramatic Performance, "Oxygen," by the Company of the Folly Theatre. Promenade Concert and Band of the Guards. Admission 7*s. 6d.*; or by New Guinea Season Ticket.

GRAND FLOWER SHOW will be held by the Orleans House Club, Twickenham, on FRIDAY and SATURDAY, May 25 and 26. The Show will be under the entire superintendence of Mr. Thomas R. Rollisson. Schedules and full particulars can be had of WILLIAM ROLLISSON AND SONS, The Nurseries, Tooting, S.W.

Captain H. WOMBWELL, Manager and Secretary.
Offices, 14, Waterloo Place, S.W.

NOTICE.—A HORTICULTURAL EXHIBITION will be held at Diss on JUNE 20 and 21, when upwards of ONE HUNDRED POUNDS, including two Silver Cups, is offered in Prizes. For Rules and Prize Lists apply to Rev. H. T. FREKE, Hon. Sec.

Burston Rectory, Diss.

GRAND HORTICULTURAL EXHIBITION will be held at Chelmsford on JULY 4 and 5 next, on the occasion of the Essex Agricultural Society's Show, when Prizes amounting to about TWO HUNDRED POUNDS will be offered for competition. Schedules of Prizes may be obtained of Mr. P. EDWARDS, Acting Secretary.

13, New Street, Chelmsford.

SPALDING HORTICULTURAL SHOW, JUNE 27 and 28. Prize Schedules on application to GEORGE KINGSTON, Secretary.

TUNBRIDGE WELLS HORTICULTURAL SOCIETY.

The ANNUAL GRAND EXHIBITION of FLOWERS, PLANTS, and FRUIT, will be held on FRIDAY, July 6, in the Grounds adjoining the Calverley Hotel. Prizes open to all England. Schedules may be obtained of, and subscriptions paid to

Parade, Tunbridge Wells. Mr. E. F. LOOF.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2*s. 6d.* per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LIST for 1877.

Extra Strong SEAKALE, 2*s.* per dozen.
RICHARD SMITH, Nurseryman, Worcester.

ASPARAGUS, Giant, 1-yr. and 2-yr., fine. JAMES BIRD, Nurseryman, Downham.

Special List of Choice Orchids (No. 33).

THE NEWPLANT AND BULB COMPANY beg to announce that the above is now ready, and will be sent post-free on application. It also contains a List of New Ferns, Beautiful Foliage Plants, Pelargoniums, &c., all at low prices. Lion Walk, Colchester.

CATALOGUES. — His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (by post) to

S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

Presented (by post) on application.

NEW CATALOGUE for 1877. For remarks and List of Plants offered, with prices, see last week's large Advertisement Plants true to name, well hardened off, low in price. See New Catalogue.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

All the Best Selected

NEW CONTINENTAL ROSES for 1877. Fine plants of the show now ready.

Descriptive CATALOGUES on application.
WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

Vines, Vines, Vines.—The Planting Season.

THE COWAN PATENTS' COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Canes of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

FRUITING VINES.—Black Hamburgh and other leading sorts, extra fine Canes, not yet started into growth.

SMITH AND SIMONS, Nurserymen, Glasgow.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

To the Trade.

MANDEVILLA SUAVEOLENS.—Strong and thoroughly healthy plants, 8*s.* per dozen, or 4*3.* per 100.

FRANCIS R. KINGHORN, Sheen Nurseries, Richmond, Surrey.

SEAKALE SETS.—For Sale, about 50,000, ready for Planting-Out. Also a large quantity of TARRAGON. Apply to

H. THORNTON, 12, Maxwell Road, Fulham, S.W.

Scarlet Runners. English-saved.

To MARKET GARDENERS and LARGE GROWERS. JAMES FARRAR and CO. offer a very fine lot of the above, in moderate terms.

Seed Warehouse, 86, Golden Lane, Barbican, London, E.C.

To Rose Growers.

WANTED, to PURCHASE, TWENTY Specimen and Half-specimen ROSES, in pots. State name and size of plants, also size of pots in which they grow, and lowest price.

WM. BARROW, Esq., Bishop's Teignton, Teignmouth.

WANTED, Three or Four Dozen STRAWBERRY PLANTS, in 32-pots, prepared for Forcing, to Fruit at once; any short but well carry a good crop.

CHARLES YOUNG, The Nursery, Balham Hill, S.W.

To Amateurs, Gentlemen's Gardeners, and Others.

WANTED, choice CUT FLOWERS for the Trade.

FLOWERS, Mr. Gilbey, Post-office, Stoke Newington, N.

Acacia Wood.

WANTED, about One Ton of ACACIA (Robinia) WOOD, in logs. Apply, stating price free on rail, to

SOUTHALL BROTHERS AND BARCLAY, Birmingham.

Splendid Novelty.

HARRISON'S New MUSK.—For full description and particulars, see p. 460 of *Gardeners' Chronicle*, or apply to

HARRISON AND SONS, Leicester.

FIFTY THOUSAND BEDDING PLANTS in variety for Sale, at Wholesale and Retail prices: all grown in separate pots, and in excellent condition. CATALOGUES on application.

F. W. COOPER, Florist, Huntingdon.

VERBENAS, VERBENAS, VERBENAS. —Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6*s.* per 100, 50*s.* per 1000. 100 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, for 6*s.* Terms cash.

H. BLANDFORD, The Dorset Nurseries, Blandford.

Verbenas, Verbenas, Verbenas.

WILLIAM BADMAN offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, at 12*s.* per 100; or turned out of pots, 10*s.* per 100. Good rooted Cuttings, 6*d.* per 100, 50*s.* per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S.E.

Pelargoniums.

CHARLES TURNER can supply strong healthy plants of all the classes; they will have a good head of bloom this season.

The Royal Nurseries, Slough.

Special Offer.—150,000 Vesuvius.

WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, 10*s.* per 100; or from store-pots, 8*s.* per 100, 75*s.* per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S.E.

Geranium, "Wonderful"

WILLIAM CLIBRAN AND SON can now supply fine strong plants of Vesuvius, at 6*s.* and 9*s.* per dozen, free for Cash with order.

Oldfield Nurseries, Altrincham.

NEW REGAL PELARGONIUMS (Two of the Gems of the Season),

"PRINCE OF WALES" and "PRINCESS OF WALES."

Price 1 guinea each.

To be sent out the first week in May by

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

ALTERNANTHERAS, magnifica and paronychioides.—Splendid stuff, in any quantity, shaken out of pots, 6*s.* per 100, 50*s.* per 1000. Special quotations for larger quantities.

WILLIAM HOLMES, Frampton Park Nursery, Hackney, London, N.W.

HYDRANGEA, Thomas Hogg, new white —Strong plants, 3*s.* each, 30*s.* per dozen; smaller do., 2*s. 6d.* each, 24*s.* per dozen.

CALCEOLARIAS, Gem, very strong, 10*s.* per 100.

W. GROVE, Nurseries, Tupsley and St. Owens, Hereford.

BELLE DE CHATENAY.—We have much pleasure in offering this most splendid new Violet, flowers pure white, very double, quite an inch across, post-free, 5*s.* each. Special Trade offers.

JOHN LAING AND CO., Nurseries, Forest Hill, S.E.

CENTAUREA GYMNOCARPA PLUMOSA, of dwarfer growth and more silvery leafage than the type, in 3-inch pots, 4*s.* per dozen. C. RAGUSINA, in 3-inch pots, 3*s.* per dozen, 20*s.* per 100. Out of pots, package free.

J. J. MARRIOTT, Mellish Road, Walsall.

Special Offer to the Trade.

TROPÆOLUM SPECIOSUM, in pots, 20*s.* per 100. POLEMONIUM CERULEUM VARIEGATUM, 15*s.* per 100.

HOWDEN AND COMPANY, Nurseries, Inverness, N.B.

EULALIA ZEBRINA.—The subscribers offer well established plants of the above beautiful Grass, figured in *Gardeners' Chronicle*, May 5, 1876. Price 10*s.* each.

JOHN LAING AND CO., Nurseries, Forest Hill, S.E.

Special Offer.

CHERRIES for Autumn, Winter, and Spring Decoration.—Roots, 5*s.* per dozen; 30*s.* per 1h.

DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties on application. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double: with every sort of Early Spring Flowers. LIST on application.

Mr. WEBB, Calcot, Reading.

Gentlemen's Gardeners, Amateurs, and Others

REQUIRING

GARDEN POTS of best quality, are requested to send their orders to

J. MATTHEWS, Royal Pottery, Weston-super-Mare.

Price List on application.

With this Number is issued a COLOURED PLATE of Designs for CARPET BEDDING, and an Eight-page SUPPLEMENT descriptive of Modern FLOWER GARDENING.

SALES BY AUCTION.

Importations of Saccolabium guttatum, Aerides Fieldingii, Dendrobium Wardianum, D. crassinode Barberianum, and D. formosum (spring flowering variety), Cattleya Skinneri, Oncidium varicosum, and other popular Orchids.

MR. J. C. STEVENS has received instructions from Messrs. James Veitch & Sons, Royal Exotic Nursery, Chelsea, to SELL by AUCTION, at his Great Rooms, 21, King Street, Covent Garden, on MONDAY next, May 14, at half-past 12 o'Clock precisely, without reserve, a splendid lot of imported ORCHIDS. The plants are all in excellent condition, and comprise many highly popular kinds, all worth the attention of Orchid Growers.

On view the morning of Sale, and Catalogues had.

Stove and Greenhouse Plants—(Sale No. 4050)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, May 15, at half-past 12 o'Clock precisely, the first portion of the stock of Specimen STOVE and GREENHOUSE PLANTS, from the well-known Nurseries of Messrs. Lee, of Hammersmith, and sold in consequence of the land being required for building purposes.

On view the morning of Sale, and Catalogues had.

Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 16, at half-past 12 o'Clock precisely, an importation of DISA GRANDIFLORA and DISA HERSCHELLII, a consignment of MEXICAN ORCHIDS, comprising some extraordinary fine masses of Lælia albida and L. autumnalis, fine plants of Odontoglossum Cervantesii, O. Ehrenbergii, Epidendrum nemorale, E. vitellinum, Cattleya citrina, &c.; an importation of INDIAN ORCHIDS, a quantity of imported plants of Aerides Warreri, Dendrobium album, D. Freemanii, Cœlogyne glandulosa, C. barbata, &c.

On view the morning of Sale, and Catalogues had.

A Choice Collection of Established Orchids. Ferns, &c.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, on WEDNESDAY, May 16, at half-past 12 o'Clock precisely, a collection of ESTABLISHED ORCHIDS, the property of a Gentleman giving up their culture, including amongst others fine plants of Aerides Fieldingii, four flower spikes; Cattleya superbiens, A. autumnum, Cattleya exoniensis, Cattleya crispa superba, C. Wagneri, Lælia purpurata, Dendrobium leads; Cattleya labiata autumnalis, Aerides Warneri, Cypripedium Stoneii, Phalænopsis Schilleriana, Phalænopsis Luddemanniana, Odontoglossum niveum majus, Dendrobium Schroderi, Dendrobium densiflorum and D. Wardianum, Lælia Turnerii, Oncidium ampliatum majus, Calanthe vestratrifolia, Calanthe Masuca. FERNS, consisting of Gleichenia flabellata, Cheilanthes argentea, Davallia dichotoma. PALMS, Cocos Weddelliana, Thrinax elegans, Livistona altissima, &c.

On view the morning of Sale, and Catalogues had.

Important Notice of a Great Clearance Sale of NURSERY STOCK.

MR. J. C. STEVENS has received instructions from Messrs. The to offer for SALE by AUCTION, on WEDNESDAY, June 6, and following days, at half-past 12 o'Clock precisely each day, on the Premises, the entire STOCK of STOVE and GREENHOUSE PLANTS, and all the Greenhouses, Pits, &c., at Hammersmith Nurseries, the land being required for building purposes. More detailed particulars in next advertisement.

Auction Rooms and Offices, No. 38, King Street Covent Garden, W.C.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from J. G. Hepburn, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, June 20 and 21, at half-past 12 o'Clock precisely each day, the entire Collection of ESTABLISHED ORCHIDS formed by him at Sidcup Place, Kent, and in consequence of change of residence, comprising, amongst many others, fine plants of the following well-known sorts, and many of which have been most successfully exhibited:—Angræcum sesquipedale, Cœlogyne cristata, Dendrobium Wardianum, Vanda suavis Veitchii, large, three and four spikes each; Cypripedium caudatum, seven spikes, twelve flowers; Vanda coerulea, Dendrobium Falconeri, large, ninety-three flowers last year, 1876 inches to 3½ inches; Cattleya Mendelii, Odontoglossum Phalænopsis, good plants; O. Roezlii, twenty-five flowers, thirteen spikes; O. vexillarium, O. nævium majus, eight spikes; O. crossonense, Oncidium Marshallianum, O. Phalænopsis, Dyeronium, good variety; D. thyrsiflorum; Odontoglossum Alexandræ, O. Pescatorei, O. pulchellum majus, O. cirrhosum, O. Madrense, good variety, O. Rossi Decumbens, O. Hallii, Dendrobium Davallia Veitchii, M. Linden, M. Harryana, Calanthe Veitchii, &c.

On view the mornings of Sales, and Catalogues had.

Moor House Nursery, Ilford, Essex.

Close to the Station.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Hewitt to SELL by AUCTION on the Premises as above, on WEDNESDAY, May 16, at 12 o'Clock precisely, the whole of the well grown BEDDING PLANTS, consisting of the usual assortment, also 700 Tea and other Roses, 100 Camellias in 24-pots, 5 fine specimen shrubs, 5 to 8 feet; 65 fruiting Vines, Cyclamens, Azaleas, &c.

On view the day prior to Sale. Catalogues had on the Premises, and of the Auctioneers, 68, Gracechurch Street, E.C., and Leytonstone, Essex.

N.B. The NURSERY TO BE DISPOSED OF. For particulars apply to the Auctioneers as above.

Upper Clapton, E

Within five minutes' walk of the Clapton Station.

MESSRS. PROTHEROE AND MORRIS are instructed by J. Lelacheur, Esq., who is leaving the neighbourhood, to SELL by AUCTION, on the Premises, The Cazenoves, opposite Cazenove Road, Upper Clapton, E., on THURSDAY, May 17, at 12 o'Clock, the whole of the choice STOVE, GREENHOUSE, and BEDDING PLANTS, together with the GARDEN IMPLEMENTS.

Catalogues may be had of Mr. BURNHAM, the Gardener on the Premises, and of the Auctioneers.

Garston, near Liverpool.

HIGHLY IMPORTANT SALE OF CAPITALISTS, PROMOTERS OF COMPANIES, FLORISTS, ENGINEERS, BUILDERS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed with instructions from the Cowan Patents Company (Limited, who, now that they have achieved the great object for which the estate was purchased viz., that of exhibiting to the public their famous combined heating and gas-making apparatus, thus producing with a great saving heat, light, and time with the same fuel—have resolved to dispose of this Property, and confine their future operations to their London Establishment, to SELL by AUCTION, on the Premises, on TUESDAY, May 29, at 2 for 3 o'clock precisely, the valuable FREEHOLD ESTATE formerly belonging to Mr Joseph Meredith, and known as the Garston Vineyard, Garston, near Liverpool, having a frontage of nearly a mile to three railway stations, and which will be offered first in an entirety, and if not thus sold, in two Lots, as follows:—

Lot 1.—All that valuable piece of FREEHOLD LAND, about 4 A. 3 R. 28 P., possessing an important building frontage of 730 feet to the Speke Road, with the modern Detached Brick-built WELLING HOUSE thereon, and conveniences, together with Thirty GREENHOUSES, the whole of which are of the best modern construction, fitted with every appliance for carrying to the utmost perfection any class of Plants and Fruits, and containing about 50,000 feet of Glass and Woodwork, and about 19,000 feet of Hot-water Piping, arranged on the Cowan's Patent Heating and Combined Heating and Gas-making Apparatus—the most economical system yet invented, requiring no stoking, even in severe weather, and unsurpassed for steadiness of heating; also the erection of GARDENERS' BOTHIES, STABLING, COACH-HOUSE, and other offices, and the entire Erection of Established VINES, nowhere equalled for the quality and weight of their production; and all other Stock planted out.

Lot 2.—All that valuable piece of FREEHOLD LAND adjoining, particularly eligible for Building, about 1 A. 2 R. 32 P. in extent, having a frontage of 285 feet to the Speke Road, and with the following Lot, a valuable Range of Workshops, Engine-House, and 6-horse Power GAS-ENGINE, by Otto, admirably adapted to any Engineer, Horticultural Builder, &c.

The property may be viewed any day prior to the Sale. Particulars, Plans, and conditions of Sale, may be obtained fourteen days before the Sale, on the Premises, of Messrs. WHITLEY AND MADDOCK, Solicitors, 6, Water Street, Liverpool; of Messrs. COPE AND CO., Solicitors, 4, Victoria Street, Westminster, London, S.W.; and of the Auctioneers and Estate Agents, 68, Gracechurch Street, London, E.C.: and Leytonstone, Essex, E.

Garston, near Liverpool.

CLEARANCE SALE of the whole of the Valuable Stock of STOVE, GREENHOUSE, and BEDDING PLANTS, UTENSILS-IN-TRADE, &c.

MESSRS. PROTHEROE AND MORRIS are directed to SELL by AUCTION, without reserve, on the Premises, The Garston Vineyard, Garston, near Liverpool, on WEDNESDAY, June 6, and following days, by Order of the Cowan Patents Company (Limited), who have resolved to dispose of the Freehold Estate, and to confine their future operations to their London Establishment, the entire Stock of STOVE and GREENHOUSE PLANTS, comprising handsome Palms, Gardenias, Crotons, Eucharis, Anthuriums, &c., in 60's, 48's, and smaller sizes, a quantity of Choice Greenhouse Plants, 50 very large Specimen Camellias, 500 fine Azalea indica, 20,000 Miscellaneous Bedding Plants, including 12,000 Geraniums, 3000 Fruiting and Flowering Vines, 500 Chrysanthemums in pots: also 2 CART-HORSE, Two Covered Spring VANS, Capital PONY-CART, LIGHT SPRING CART, Glazed Sashes, IRON ROLLER, FLOWER-POTS, and other sundry articles connected with the Trade.

Catalogues may be obtained fourteen days prior to the Sale, on the Premises, of the Auctioneers and Estate Agents, 68, Gracechurch Street, London, E.C., and Leytonstone, Essex.

N.B.—The Valuable FREEHOLD ESTATE will be offered by Auction, on the Premises, on TUESDAY, June 5, at 1 for 2 o'Clock precisely.

Preliminary Notice of Forthcoming Sales by

MESSRS. PROTHEROE AND MORRIS, Auctioneers, 68, Gracechurch Street, London, E.C., and Leytonstone, E.

MAY 29.—At the EXOTIC NURSERY, Tooting, S.W. A choice Assortment of Greenhouse and Stove Plants, Orchids, &c.

MAY 31.—At the BURY NURSERY, Bury Street, Edmonton. The whole of the Stove, Greenhouse, and Bedding Plants, together with the Utensils in Trade. The Nursery to Let, with Possession.

Surrey.

The HEATHERSIDE ESTATE, an important Freehold Property, within a short distance of the Railway Station, borough, and within easy access of four railway stations, from one of which (Furnborough) London is reached in about fifty minutes. The Estate comprises a Residence, with Stabling and Outhouses, four newly-erected Cottages, extensive Farm Buildings, Stables, and Sheds, and about 300 Acres of Land, commanding magnificent views, the greater portion of the land being in a high state of cultivation, and planted with a vast assemblage of Fine Coniferæ and other Ornamental Trees. There is a long range of Greenhouses, Forcing-houses, and Pits, and the property has been laid out, at an enormous cost, in ornamental roads, lined with avenues of choice trees, so as to adapt it to the purposes of an Ornamental Nursery Ground in connection with a residence, and offers a most desirable site for Lots for Building Purposes, for which the undulating character of the ground renders it peculiarly suitable. The Estate will be Offered for Sale in two Lots, and is in the heart of an exceedingly healthy and capital sporting district. Numerous mansions and villas have been erected and are now being built in the immediate neighbourhood. Possession will be given.

MESSRS. DEBENHAM, TEWSON AND FARMER will SELL, at the Mart, on TUESDAY, May 15, at 2 o'Clock, the above-mentioned valuable FREEHOLD ESTATE, which offers a first-class investment, either as its present position as a Residential Property, or with a view to Re-selling or Re-letting it out for Building purposes, for which the charming drives and walks already formed upon it, and the proverbial salubrity of the climate and soil, render it very available. Plans and particulars of

Messrs. ROBINSON AND PRESTON, Solicitors, 25, Lincoln's Inn Fields; of Messrs. KEARY, STOKES AND GOLDNEY, Solicitors, Chippenham, Wilts; of Messrs. WAITNEY AND TILLIARD, Solicitors, 29, Clement's Lane, E.C.; and of the Auctioneers, 80, Cheapside, E.C.

Chiswell Street, Finsbury, E.C.

Close to Moorgate Street Railway Station.

TO BUILDERS, CARVERS and GILDERS, FLORISTS, and OTHERS.

MR. B. HIXON has received instructions from Messrs. R. H. Obbard & Co., who have sold the Lease of the Premises in consequence of ill-health, to SELL by AUCTION, without reserve, on the Premises, 12 and 13, Chiswell Street, Finsbury, E.C., on WEDNESDAY, THURSDAY, and FRIDAY, May 16, 17, 18, at 1 o'Clock precisely, the whole of the VALUABLE STOCK-IN-TRADE of a Wholesale Glass Warehouse, consisting of 5000 feet of Sheet Glass, 700 feet of Roll Plate, 350 feet of Polished ditto, 500 feet of Diamond Quarry, 350 feet of Patent Plate, 1200 feet of Plot Metal, 2000 feet of Crowns, 700 feet of Fluted Glass, 800 feet of Double Matted, 150 feet of Stained Glass, 3000 feet of Enamelled Glass, 200 Boxes of (stock sizes) Sheet Glass, containing 300 and 400 feet each; 2000 Shades, Globes, Glass Shades, Gilt and Black Stands, 1000 Opal, Engraved, and Ground Gas Globes, 150 Propagating Glasses, 300 Glass Tiles, a quantity of Cucumber Tubes, Hyacinth Glasses, and also the Fixtures and Fittings, consisting of Mahogany and Japanned Glass Cases, Counters, Mahogany Desks, Stools, Mordan's Iron Safe, Copying Press, Two Dials, and other articles too numerous to mention.

On view the day prior to Sale, and Catalogues obtained at the Auction Rooms, 8, Chiswell Street, E.C., on the Premises, or of Mr. B. HIXON, Auctioneer and Valuer, 28, Knightrider Street, Doctors' Commons, E.C.

Islington, N.

IMPORTANT SALE of about 50,000 BEDDING PLANTS, and about 200 ORCHIDS.

MR. W. F. BOFF will SELL by AUCTION, without the slightest reserve, on the Premises, the Northampton Park Nursery, Canonbury Road, Islington, N., on THURSDAY, May 31, at 12 o'Clock precisely a fine and well-grown assortment of about 50,000 BEDDING PLANTS, also about 200 ORCHIDS.

On view day prior to Sale. Catalogues on the Premises, and of the Auctioneer and Valuer, 203, Upper Street, Islington, N.

WANTED, to PURCHASE, or on LONG LEASE, a NURSERY in England, with Dwelling House, also Glass and other Erections. Apply, stating price and all other particulars, to

T. M., *Gardeners' Chronicle* Office, W.C.

Hothouse Plants and Ferns.

TO BE DISPOSED OF, by Private Treaty, and in One Lot, in consequence of intended Conversion of Hothouse to Vinery, about 600 highly EXOTIC PLANTS and FERNS. For particulars apply, and offers to be made to

Mr. HENRY C. WEAVER, Auctioneer, Taunton, Offices, 1, Bath Place, Taunton, April 18.

Partnership.

TO BE DISPOSED OF, the HALF SHARE of the BUSINESS of a NURSERYMAN and FLORIST, long established, and large returns, but capable with more capital of considerable increase. Amount required, about £1500. Principals only to apply to

Messrs. DUNN and PALMER, Solicitors, 96, London Wall, E.C.

BATH and WEST of ENGLAND SOCIETY, Established 1777, and SOUTHERN COUNTIES ASSOCIATION.

Patron: H.R.H. the PRINCE OF WALES, K.G.
President: The MARQUIS OF LANSDOWNE.

CENTENARY MEETING,
Bath, JUNE 4, 5, 6, 7, and 8.

GREAT EXHIBITION of LIVE STOCK, POULTRY, CHEESE, MACHINERY, IMPLEMENTS, WORKS of ART and HORTICULTURAL SPECIMENS.

JOSIAH GOODWIN, Sec.
4, Terrace Walk, Bath, May, 1877.

Greenhouse Seeds.

CALCEOLARIA, CINERARIA, PRIMULA and CYCLAMEN, saved from plants that have taken Prizes throughout the kingdom: one packet each of the above for 2s. 6d.

PENGILLEY and POOL, Seedsmen, 59, Queen Victoria Street, London, E.C.

RICHARD WALKER has about 300 of the best strains RECURVED CAMELLIAS, 18 to 24 in. per 100; 12 to 18 in. per 100; 9 to 12 in. per 100; 6 to 9 in. per 100; best stock in England; splendid LEMON THYME, 8s. per 100; PENNYROYAL, good roots, 8s. per 100; Scarlet King and pink DAISIES, large roots, 5s. per 100; double white ROCKETS, 2s. per dozen Terms cash

Market Gardens, Biggleswade, Beds.

To the Trade.—Pelargoniums, Show and Fancy.

JAMES GARAWAY and CO. offer leading sorts, their selection, good plants in 48-pots, to flower in May, at 50s. and 60s. per 100.

JAMES GARAWAY and CO., Durdham Down Nurseries, Clifton, Bristol.

New Fuchsias.

MR. LOWE'S Gardener has permission to send out a very limited number of his remarkable and distinct FUCHSIAS, in order to distribute them, at the nominal price of 10s. 6d. for ten varieties.

J. HUSBANDS, The Gardens, Highfield, Nottingham.

NEW CHRYSANTHEMUMS. — Fulton, Fulgore, La Nymphe, Laciniatum; strong young plants of the above choice kinds, 2s. 6d. each.

Mrs. Dixon, Conrad, Midle. Deleaux, Dictator, Sho-Gakho, Belle Castellane, Beauté Parfait, 1s. each.

Also a large collection, including all the principal older varieties, from 4s. per dozen.

A descriptive Priced LIST on application to

T. JACKSON and SON, The Nurseries, Kingston-on-Thames.

Cheap Bedding Geraniums.

ALFRED FRYER offers the following good Beddets at per dozen for cash—Golden Tricolors: Peter Crowe, 12s.; Prince of Wales, 6s.; Lady Cullum, 3s. 6d.; Sir Robert Napier, 3s. 6d.; Mrs. Pollock, 3s.; Sophia Dumaresque, 3s.; Silver Tricolors: Lass o' Gowrie, 4s. 6d.; Queen of Henrys, 4s. 6d.; Miss Burdett Coutts, 3s. 6d.; Mrs. John Clutton, 3s. 6d.; Prince Silverwings, 3s. Double flowered: Marie Lemoine, 3s.; or one of each for 5s. No charge for packing if orders are returned at once: 2180 post-free for 6d. per dozen extra. For Priced LISTS apply to

ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

Clearance Sale.

CHOICE AMERICAN and OTHER POTATOS.—Price 2s. per peck, or 8s. per cwt., free on rail, Norwich: Early Rose, Champion Regent, Red-skin Flourball, Bresee's Peerless, Brownell's Beauty, Yorkshire Hero, Scotch Blue Regents, Wood's Scarlet Prolific, Alpha, &c. Orders will be sent out in succession till all are cleared.

DANIELS BROS., Seedsmen to the Queen, Norwich.

Dahlias.

CHARLES TURNER can now supply strong Plants of all the classes, also the following New Varieties offered for the first time, viz.:—Artiste, Burgundy, Black Knight, Canary, Chris Ridley, Drake, Lewis, Elsa, Figaro, Mrs. Urquhart, The Rover and Vivian Grey.

The Spring DAHLIA GUIDE, containing full descriptions of above and all the most popular plants, may be had free on application.

The Royal Nurseries, Slough.

FIFTY THOUSAND MAGNIFICENT DWARF ROSES, in POTS.

ROSES for BEDDING, at 12s. to 18s. per dozen, 100s. per 100.

TEA-SCENTED ROSES, superb, established in 6-in. pots, adapted for greenhouse or conservatory, 30s. per dozen, 200s. per 100. Descriptive CATALOGUES on application.

WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

New Bedding Tropæolum, "Hunteri."

DOWNIE AND LAIRD have much pleasure in offering for Spring delivery the above, an excellent Bedding Nasturtium, surpassing its parent Cooperi, being of a dwarfer habit: we can with perfect confidence recommend it. Price, per dozen plants, 12s.; per 100, 72s. 6d. Usual discount to the Trade.

West Calder Nursery, Edinburgh.

Cheap Bedding Plants.

H. J. HARDY has much pleasure in offering fine and healthy autumn-struck plants of the following:—

GERANIUMS, Vesuvius, Master Christine, Jean Sisley, Triumphant, Madame Vaucher, and other best Bedding sorts, at 8s. per 100 from store; 10s. per 100 from single pots.

CALCEOLARIA FLORIBUNDA AUREA, 5s. per 100 from stores.

Package free and carriage paid for 20s. worth. Terms Cash. H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk. Please note alteration of Address.

RODGER, McCLELLAND AND CO. have still a few extra strong plants of

HYDRANGEA PANICULATA GRANDIFLORA, 1½ to 3 feet high, 12s. to 18s. per dozen.

CLEMATIS JACKMANII, 20s. per dozen.

„ PRINCE OF WALES, 9s. per dozen.

TROPÆOLUM SPECIOSUM, beautiful hardy climber, 6d. per dozen.

MUHLENBECKIA COMPLEXA, one of the most elegant of hardy climbing plants (like Maidenhair Fern), 6s. to 9s. per dozen.

64, Hill Street, Newry.

Cheap Plants—Special Offer.

WILLIAM BADMAN offers, as under, all strong stuff:—

VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 12s. per 100; well-rooted cuttings, 6s. per 100, 50s. per 1000; from stores, best sorts, 8s. per 100.

CALCEOLARIA, Golden Gem, 5s. per 100, 40s. per 1000.

LOBELIA, speciosa (true), 3s. per 100, 20s. per 1000; Blue-stemmed, grandiflora, all from cuttings, 5s. per 100, 40s. per 1000.

PELARGONIUMS, Vesuvius, from stores, 8s. per 100, 75s. per 1000; from Sisley, 12s. per 100; Madame Vaucher, 10s. per 100; Master Christine, 12s. per 100: all from single pots.

„ Tricolor, Mrs. Pollock, 20s. per 100; Crystal Palace Gem, 12s. per 100; Flower of Spring, 12s. per 100.

HELIOTROPE, finest dark, good bushy plants, 12s. per 100: rooted cuttings, 6s. per 100.

AGERATUM, Imperial Dwarf, blue, fine bedding plant, 5s. per 100.

IRESINE LINDENI and COLEUS VERSCHAFFELTI, crimson leaf, 6s. per 100; 50s. per 1000.

CENTAUREA CANDIDISSIMA, fine silver leaf, 3s. per dozen; 20s. per 100.

Packing included. Terms, cash.

Cemetery Nursery, Gravesend, S.E.

TO THE TRADE and Large Buyers.

FUCHSIAS, CHRYSANTHEMUMS, COLEUS, HELIOTROPES, SALVIAS, VERBENAS, PELARGONIUMS, in all the best sorts, 15s. per 100.

PINKS, PENTSTEMONS, PHLOXES, PANSIES, 20s. per 100.

PYRETHRUMS, PÆONIES, CARNATIONS, PICOTEES, 35s. per 100.

IRESINE, AGERATUMS, LOBELIAS (from cuttings), CALCEOLARIAS, MESEMBRYANTHEMUMS, 5s. per 100.

GERANIUMS, Zonal and Nosegay, in great variety, 15s. to 20s. per 100; Bicolor, 20s. per 100.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

DAHLIAS, DAHLIAS, DAHLIAS.—2000 of the finest varieties, 4s., 6s., 9s., and 12s. per dozen.

PELARGONIUMS, 2000, Show, Fancy, and French, 6s., 9s., and 12s. per dozen.

ROSES, 500, in pots, well established, 12s., 18s., and 24s. per dozen.

GERANIUM, Wonderful (Smith's), 9s. per dozen, strong plants.

An immense stock of STOVE and GREENHOUSE PLANTS of all the leading varieties.

CATALOGUES on application.

HENRY WALTON, Edge End, Briefield, near Burnley.

Verbenas for the Million.

SIDE can now supply, for cash, strong, healthy, spring-struck Verbenas, free from disease of any kind, at 6s. per 100; well-hardened, extra good plants, 8s. per 100, including Purple, Scarlet, White, Pink, and many other shades of colour. All true to name, and package free.

CALCEOLARIAS, aurea floribunda, and other varieties, good strong plants, 8s. per 100, 60s. per 1000.

HELIOTROPE, light and dark, 6s. per 100.

COLEUS VERSCHAFFELTI, 10s. per 100.

IRESINE LINDENI, 8s. per 100.

GERANIUMS, Crystal Palace Gem, good plants, established in single pots, 15s. per 100. Cash with order to

S. SIDE, Alma Nursery, Farnham, Surrey.

To Parties Furnishing New Houses.

H. WALTON begs to intimate to the above that he has for sale an unrivalled collection of FLOWERING and FOLIAGE PLANTS of extra size suitable for immediate effect, which must be cleared out to make room. Also an immense stock of STOVE and GREENHOUSE PLANTS of all the newest and most approved varieties.

H. W.'s CATALOGUE is now ready, and will be forwarded post-free on application to

H. WALTON, Edge End Nurseries, Briefield, near Burnley, Lancashire. Edge End is distant from Burnley, 3 miles; Accrington, 9 miles; Skipton, 14 miles; Bradford, 30 miles; Manchester, 30 miles; Huddersfield, 30 miles; Leeds, 35 miles; Wakefield, 40 miles.

TO OBTAIN THE

Best Garden Lawns and Croquet Grounds

SOW

SUTTON'S

LAWN GRASS MIXTURE,



Which forms a close velvety turf in a very short time. For making New Lawns or Croquet Grounds 3 bushels or 60 pounds is required per acre, or 1 gallon to every 6 rods (or perches) of ground.

For improving those already in turf, 20 pounds should be sown per acre.

Ma rch, and May are the best months for sowing.

Price 12. 3d. per lb., 22s. 6d. per bushel, carriage free.

From Mr. J. MERRICK, *Gardener to* S. Forster, Esq., *Le Court.*

"The Seed you sent me last year turned out uncommonly well. Several gentlemen who came to Le Court could scarcely credit, from the appearance of the lawn, that it was only sown in May. In August it was as fine and thick as I have seen some lawns that had been laid down for three years."

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds Gratis and post-free.

Sutton's

THE QUEEN'S SEEDSMEN, READING.

IRELAND AND THOMSON have pleasure in intimating that their CATALOGUE of STOVE and GREENHOUSE PLANTS, FERNS, PALMS, ORCHIDS, &c., is now ready, and will be forwarded post-free on application.

ADIANTUM FLEMINGII.—A sport from A. concinnum, and is in every respect much superior to the species that produced it. Its dense, compact, semi-erect habit, with the dark green colour of the fronds, which in their young state are of a beautiful deep purple tint, constitute it a most decided acquisition for exhibition purposes, and is almost without an equal as a table Fern. Price 10s. 6d. and 21s. each.

NEW BEDDING PLANTS for 1877.

I. & T. desire to call attention to the following splendid novelties:—

LOBELIA, St. Martin's Blue, new bronzed-leaved, price 12s. per dozen, 5s. per 100.

VIOLA, Sir Walter Scott, splendid new bedding, price 12s. per dozen, 5s. per 100.

GERANIUM, Marchioness of Huntley, new bronze, price 18s. per dozen.

For detailed descriptions see *Gardeners' Chronicle.*

I. & T. are now sending out the above. Orders will be executed in rotation.

Craigleith Nursery, Comely Bank:

Seed Warehouse, 20, Waterloo Place, Edinburgh.

Bedding Plants! Bedding Plants!

F. AND A. SMITH have an immense stock of strong and well-grown Hardy Plants, in great variety, which they offer at moderate prices. All orders of 20s. and upwards delivered free within a radius of 6 miles of St. Paul's.

The Nurseries, West Dulwich, S.E.

NEW PELARGONIUM, "Leamington Lassie" semi-double Pink. First-class Certificate from Royal Horticultural Society.

This Pelargonium formed the coloured supplement of the *Gardens* for April 28, 1877. Extract from *Gardens*:—"'Leamington Lassie' is a Pelargonium that takes a very high, if not the highest rank, in the section to which it belongs. For decorative purposes it stands almost unrivalled, blooming as it does freely throughout the winter.—*Grimes, Cufford.*"

Prices:—Good strong Plants, 5s. each, £2 2s. per dozen; larger plants for present blooming, 7s. 6d. each. Usual Trade discount.

Notice to the Trade.—Special quotations for the following varieties of PELARGONIUMS:—Queen Victoria, Captain Raikes, Prince of Novelties, La Ville de Caen, &c.

JOHN PARSONS AND CO., Ranelagh Gardens, Leamington.

BEDDING PLANTS, BEDDING PLANTS.—Zonal and Nosegay GERANIUMS, 2s. 6d. and 3s. per dozen, 18s. and 20s. per 100; Bicolor do., 3s. and 3s. 6d. per dozen, 25s. and 30s. per 100; variegated do., 3s. and 3s. 6d. per dozen, 25s. and 30s. per 100. CALCEOLARIAS, 2s. and 2s. 6d. per dozen, 14s. and 18s. per 100. AGERATUMS, 2s. per dozen, 12s. and 15s. per 100. HELIOTROPES, ECHEVERIAS, MESEMBRYANTHEMUMS, fol. var., BEDDING PANSIES, VIOLAS, SALVIAS, 2s. 6d. and 3s. per dozen, 18s., 20s., and 25s. per 100, according to size. DAHLIAS, 3s. 6d. per dozen, 24s. per 100. FUCHSIAS, CHRYSANTHEMUMS, and COLEUS, 3s. per dozen, 20s. per 100. Golden PYRETHRUMS and best SEDUMS, for carpet bedding, 2s. per dozen, 6s. per 100. Tuberous BEGONIAS, bolivianus, Sedeni Victoria, and magnifica, for bedding, 6s. per dozen.

CATALOGUES on application.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bush from June to June, and continue on until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.

RICHARD SMITH, Worcester.

Two Hundred Thousand

CARPET and OTHER BEDDING PLANTS.—Including Alternantheras amœna, amœna spectabilis, magnifica, paronychioides, and all other varieties; Antennaria tomentosa, Arenaria balearica, Lobelia Emperor William, Mentha pulegium gibraltaricum, Sagina procumbens, from stores, at 8s. per 100, 70s. per 1000. Coleus Verschaffelii, Kleinia repens, Leucophyton Brownii, 10s. per 100, 80s. per 1000. Also a large stock of all kinds of Plants that are suitable for Subtropical and Carpet Bedding.

CATALOGUES now ready, free on application. Orders executed in strict rotation. Terms cash, package included.

WILLIAM MILES, West Brighton Nursery, Chiltonville, Sussex.

N.B.—Designs for Carpet Beds and Contracts for Planting same in any part of the country.

Pelargoniums, Dahlias, Verbenas, Calceolarias, FUCHSIAS, AND OTHER PLANTS.

WOOD AND INGRAM beg to offer the following, perfectly clean, strong, and healthy, thoroughly established in single pots:—

PELARGONIUMS, Show, Spotted, and Fancy, fine flowering plants, in 5-inch pots, good named sorts, 50s. per 100, 8s. per dozen.

HERBACEOUS CALCEOLARIAS (fine Exhibition strain), extra fine plants, in 5-inch pots, 9s. per dozen, 12. each.

CAMELLIAS, 25 sorts to name, 24s. per 12, 42s. per dozen.

GLOXINIAS, in variety, to name, 18s. to 30s. per dozen.

FUCHSIAS, 24 sorts to name, 4s. to 6s. per dozen.

VERBENAS, Scarlet, Purple, White, and Pink (free from disease), extra fine plants, 12s. per 100.

„ in great variety, to name, *from store pots*, 5s. per 100, 45s. per 1000.

DAHLIAS, Show, Fancy, and Bedding, finest named varieties, 4s. per dozen, 25s. per 100.

PELARGONIUMS, Golden Tricolor, Macbeth, 4s. per dozen; Mrs. Pollock, 3s. 6d. per doz., 25s. per 100; Sir R. Napier, 3s. 6d. per dozen; Sophia Dumaresque, 4s. per dozen, 25s. per 100; other choice varieties, 4s. to 9s. per dozen.

„ Silver Tricolor, Charming Bride, 3s. 6d. per dozen; Lass o' Gowrie, 4s. per dozen; Princess Beatrice, 4s. per dozen; other choice varieties, 4s. per dozen.

„ Bronze and Gold, Dolphin, 3s. per dozen; Perilla, 3s. per dozen; Roi de Siam, 4s. per dozen.

„ Silver-edged, Albion Cliffs, Flower of the Spring, Mangles' Pink, Mrs. Vidler, Rajon, 3s. per dozen.

„ Crystal Palace Gem, 2s. 6d. per dozen, 18s. per 100.

„ Single Zonals, Bayard, Charley Casbon, Ianthe, Clipper, Jean Sisley, Lord Derby, Master Christine, Stella, Lady C. Grosvenor, Vesuvius, and many other fine varieties, 2s. 6d. per dozen, 18s. per 100; *extra fine plants*, in 5-inch pots, for window decoration, 6s. per dozen.

HOLLYHOCKS, Seedlings, from a superb collection, free from disease, 6s. per dozen, 45s. per 100.

PHLOX, Herbaceous, best named varieties, 6s. to 9s. per doz.

CARNATIONS, fine border flowers, 5s. per dozen.

CENTAUREA RAGUSINA or CANDIDISSIMA, 3s. per dozen, 20s. per 100.

COMPACTA, 4s. per dozen, 30s. per 100.

AGERATUM, Countess of Stair and Imperial Dwarf; CINERARIA, maritima and m. candidissima; IRESINE, Lindeni and Wallisii; LEUCOPHYTON, Brownii; LOBELIAS, in variety; MESEMBRYANTHEMUM, cordifolium single PETUNIAS, 2s. per doz., 14s. per 100.

ALTERNANTHERAS (sorts), CALCEOLARIA, aurea floribunda, COLEUS, Verschaffelii; ECHEVERIA, secunda and secunda glauca; GAZANIA splendens, HELIOTROPES (sorts), LANTANAS (sorts); Double PETUNIAS (sorts), SALVIAS (sorts), SENECIO, macroglossus (Cape Ivy), 2s. 6d. per dozen, 18s. per 100.

CLEMATIS, best varieties, in name, 12 6d. to 2s. 6d. each.

LOPHOSPERMUM SCANDENS, 6s. per dozen.

MAURANDYA BARCLAYANA, 6s. per dozen.

HERBACEOUS and ALPINE PLANTS in great variety, 6s. per dozen.

The Nurseries, Huntingdon.

B. S. WILLIAMS.

CHOICE

FLOWER SEEDS FOR 1877.

	Per packet.—s. d.
BALSAM, Williams' Superb Strain .. 2s. 6d. and	1 6
BEGONIA FŒBELII	2 6
BEGONIA SEDENI SEMI-PLENA	2 6
BEGONIA, Hybrid, finest mixed..	2 6
CYCLAMEN PERSICUM GIGANTEUM.—This is a great improvement on the old type, the flowers being thrown well above the foliage, each flower measuring from 2 to 2½ inches in length; pure white, with a fine bold violet-purple eye .. .. 5s. and	2 6
CYCLAMEN PERSICUM, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and	1 6
CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and	1 6
CINERARIA, Weatherill's Extra Choice Strain, 5s., 3s. 6d., 2s. 6d., and	1 6
GLOXINIA, Finest Drooping Varieties	1 6
„ Finest Erect Varieties	1 6



PRIMULA, Williams' Superb Strain, Red, White, or Mixed .. .. .. 5s., 3s. 6d., 2s. 6d., and	1 6
PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance	5 0
SOLANUM, Williams' Improved Hybrids	1 6
STOCK, Williams' Improved Giant Scarlet Brompton	1 6
WALLFLOWER, Harbinger, Autumn and Winter flowering	1 0

Packets of Flower Seeds, excepting heavy kinds, Free by Post.

VICTORIA & PARADISE NURSERIES UPPER HOLLOWAY, LONDON, N.

CHOICE FLOWER SEEDS
For Present Sowing.

Our own superb strains, guaranteed of unsurpassable quality. Post-free on receipt of P.O.O. or Stamps.

	Per packet—s. d.
AURICULA, choicest mixed, alpine .. .. 6d. and	1 0
CALCEOLARIA HYBRIDA, very choice, mixed 1s. „	2 6
CINERARIA HYBRIDA, from named flowers.. 1s. „	2 6
CARNATION and PICOTEE, from stage flowers 1s. „	2 6
HOLLYHOCK, Prize English .. .. .. 6d.	1 0
INDIAN PINK, splendid double, mixed	0 4
MIMULUS, Clapham's superb, very fine.. ..	1 0
MYOSOTIS DISSITIFLORA—Forget-me-not	0 6
PANSY, choicest mixed English .. .. 6d. and	1 0
PRIMULA SINENSIS, choicest mixed .. .. 1s. „	1 0
POLYANTHUS, finest gold-laced, choice	1 0
STOCK, Brompton, scarlet Giant	0 6
„ East Lothian, splendid	0 6
SWEET WILLIAM, very choice, mixed..	0 6
WALLFLOWERS, splendid double, mixed .. 6d. and	1 0
GREENHOUSE PERENNIALS, 12 fine varieties ..	5 0
HARDY PERENNIALS, 12 choice sorts, Pansy, Hollyhock, &c.	4 6

DANIELS BROS.,
ROYAL NORFOLK SEED ESTABLISHMENT,
Norwich.

HOLLIES—HOLLIES—HOLLIES.

THIS BEING UNDOUBTEDLY THE BEST SEASON OF THE YEAR FOR
TRANSPLANTING HOLLIES,
We would call the attention of the Public to our Collection of the same.

We possess over 5000 Plants of the COMMON GREEN HOLLY,
fit for immediate removal, from 2 feet to 10 feet.

Also a very large and choice selection of GREEN and VARIEGATED VARIETIES.
Prices of any of the above will be given on stating the height required.

OSBORN & SONS,
FULHAM NURSERIES, LONDON, S.W.

NEW WHITE LOBELIA,
"THE BRIDE."

JOHN PERKINS & SON

Have much pleasure in offering the above Novelty as the best pure White Lobelia ever sent out.

It is free flowering, very dwarf habit, and we can with perfect confidence recommend it.

PRICE PER DOZEN, 9s. USUAL DISCOUNT TO THE TRADE.

52, MARKET SQUARE, NORTHAMPTON.

WM. PAUL & SON

(Successors to the late A. Paul & Son—Established 1806),
PAUL'S NURSERIES, WALTHAM CROSS, HERTS,
Respectfully invite Inspection of their large Collection of Specimen and Half-specimen
ROSES IN POTS, now finely in bloom.

☞ *Visitors by Railway can enter the Nurseries from the Platform, Waltham Station, Great Eastern Railway, half an hour's ride from London.*

WM. PAUL & SON can supply fine plants, in pots, of the NEW ROSES, Magna Charta, 5s each; Queen Eleanor, 3s. 6d. each; Queen of Waltham, 2s. 6d. each; Star of Waltham 2s. 6d. each. The New French Roses of 1877, in strong plants, 24s. per dozen. Older Roses, in pots, hardened plants for present planting, all the leading kinds, 10s. 6d. to 18s. per dozen, £3 15s. to £6 per 100.

Priced Descriptive CATALOGUE free by post on application.

PAUL'S NURSERIES, WALTHAM CROSS, HERTS.

STRAWBERRY,
THE DUKE OF EDINBURGH
(MOFFAT).

THE LAWSON SEED AND NURSERY COMPANY (LIMITED),
EDINBURGH and LONDON,

Have made arrangements with Mr. Moffat, Coldwells, to send out, for the first time, the above-named splendid Strawberry. Fruit very large, firm, and of excellent flavour, bright scarlet colour. A most prolific bearer, and as a main crop for market purposes it is unsurpassed.

Strong Plants, 42s. per 100; 25s. per 50; 15s. per 25; 9s. per dozen.
Trade Price on application.

1, GEORGE IV. BRIDGE, EDINBURGH; 54, BISHOPSGATE ST. WITHIN, LONDON.
April, 1877.

NEW ENGLISH-RAISED SEEDLING ROSES.

MESSRS. BELL & SON,

THE NORWICH NURSERIES,

Are now executing orders for their TWO NEW ROSES, raised at their Nurseries, and described and announced below. They have been thoroughly tested here before being sent out, and can be recommended with confidence as really distinct novelties.

CLIMBING ROSE "CATHERINE BELL."

Very large flowers of a deep rose colour, the backs of the petals a delicate silvery pink, of exquisite shape and very fragrant. It is very free-flowering, and of vigorous climbing habit, making shoots 6 feet to 8 feet long in one season. Figured in *The Garden*, March 18, 1876.

"Your Rose Catherine Bell is both *belle et grande*."—Rev. Canon Reynolds Hole.

Good Flowering Plants, in Pots, 10s. 6d. *each.*

COLOURED PLATES, ONE SHILLING EACH.

HYBRID TEA ROSE "MRS. OPIE."

Bright salmon-rose, tea-scented flowers, with shell-like petals, a most distinct and novel shade of colour among Tea Roses. It will form a charming companion to Madame Falcot, and will be as extensively cultivated as that variety when well known. In flower from May to November. Figured in the *Floral Magazine*.

Good Flowering Plants, in Pots, 7s. 6d. *each.*

BELL AND SON, 10 & 11, EXCHANGE STREET, NORWICH.

NEW DOUBLE WHITE VIOLET, "BELLE DE CHATENAY."

Awarded a First-class Certificate by the Horticultural Society of France.

We offer this magnificent Viola for the first time. The flowers are pure white, most delicately perfumed, of immense size, and very double; in fact, almost equalling in size the well-known white Aquilegia.

It is pronounced by French horticulturists to be the very best double white Violet in cultivation.

Trade price on application.



The raiser says: "This new Violet will be appreciated as a Market Gardener's and Florist's plant, as it blooms most freely and continuously."

The illustration is from some specimen flowers, which are of natural size. We can strongly recommend this Viola as a charming addition to the popular group of flowers.

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Retail Price—Strong Plants, 4s. 6d. (Post-free 5s.)

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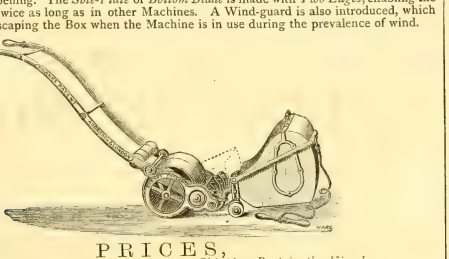
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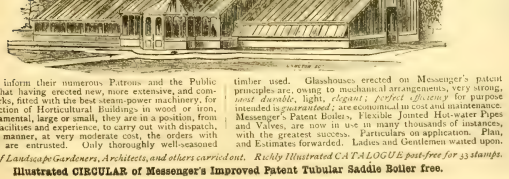
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From the "Gardener," March, 1877.

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ENDLESS FLAME-IMPACT BOILER.

"This boiler is attracting a good deal of attention in the horticultural world at the present time; and as I have just had one of their largest-sized ones fitted up here, and have now got it well tested, perhaps a few lines from me may help to elucidate. It may not be without some advantage to some of your numerous readers. I have had some experience as to the annoyance and extra labour caused by badly-constructed boilers, and any improvement effected in these to save labour and fuel demands the attention of all interested parties.

"To give your readers a better idea of the work this boiler has to do, I may begin by stating that our hothouses consist of a range having a total length of 100 feet, a span-and-three-quarter roofed greenhouse being in the centre, two lean-to Vineries on each side, with Camellia-house and general plant-house at each end; on opposite side of wall we have a Fern-house, partly lean-to and partly span, 99 feet in length, varying in width from 10 to 30 feet. Attached to end of boiler-house is our laundry, with a drying chamber fitted up with about 250 feet of 4-inch piping.

"The whole of the above houses are heated with hot water, and have a total of about 3200 feet of 4-inch piping. We had formerly two oval flue boilers, one being 4 feet 6 inches long, the other 4 feet long. With these two boilers kept hard fired we always found great difficulty in keeping up the temperature during frosty weather, and had frequently to lose a night's sleep attending to the fires. On the last day of last year the 30 ft. larger boiler came to grief—the water from it drowned out the fire; and in taking down some of the brickwork it was found to have cracked beyond repair. To be thus left in the middle of winter with only the one boiler was no joke. I had to look out for another without delay. I have given a good deal of attention to the construction of hot-water boilers, and for years past I had never seen one that came up to my idea of what a boiler should be until some time ago my attention was called to a drawing of Wright & Co.'s Boiler, which appeared in the *Gardener*.

"After talking the matter over with my employer, W. S. Mitchell Innes, Esq., he at once granted permission to get the boiler I had formed such an opinion of. I at once put the order into the hands of Messrs. Meikle & Philp, hothouse builders and hot-water engineers, Tweedmouth Street, and they have fitted it up and attached the piping in the most complete manner. I also got some additional tight valves attached, so that if anything should at any time go wrong it can be attended to without disturbing the piping.

"And now as to the capabilities of the boiler for the work. As formerly stated, I had considerable difficulty in keeping up the heat with the two oval flue boilers kept hard at work. I now find that with the remaining oval flue boiler fully 1 cwt. less up the whole of the houses and the laundry to a degree they never were before, and that with much less coal than it took to fire *one* of the oval flue boilers.

"Our chimney consists of a flue 70 feet long, led horizontally through centre of back wall, with 18 feet of a perpendicular stalk. Some doubt was expressed that, as we required a chimney pipe attached to boiler about 6 feet long, there would be deficiency of draught; but we have found the opposite to be the case. I attached a 6 feet length of 8-inch stove pipe, with elbow at boiler, and cleaning door on the angle, and as I found the draught very strong I got a throttle-valve damper fitted into the bend of the stove pipe, and am able to regulate the fire to a nicety, and by banking-up the fire at 10 P.M., and turning the damper fully half round, I can leave it to work with the greatest confidence till the usual time of commencing labour the following morning; and instead of, as formerly, having to sit up firing the last night at times, half of the night, sometimes whole ones, we can retire to rest at a reasonable hour, confident of sleep being undisturbed by unpleasant dreams of plants and flues going to ruin. In concluding my remarks I may say that not the least of the good qualities of this boiler is its portability. We had not the slightest difficulty in putting it down in our contracted stokehole through a trap-door 4 feet long by 2 feet broad, and fitting it up in a recess 4 feet square, and I am confident that with the assistance of two men I could take the whole to pieces and have it again in full working order in two hours. I have no hesitation in saying that for rapidity of circulation, small consumpt of fuel, portability, and cleanliness, it has no rival, and have no doubt this boiler will win its way; and where coals are high in price it will effect a considerable saving, and as there is good fire space in it it will be found a capital boiler for burning wood and other fuel." J. CUTHILL, *The Gardens, Parson's Green, Edinburgh.*

"We have a very high opinion of this boiler, and predict that it will take a foremost place in heating hothouses and all other buildings, and shall have some further remarks to make about the principles of it next month.—ED. *Gardener.*

"I think yours the most perfect '**Heat Trap**' yet invented.—DAVID THOMSON, *Drumlanrig Gardens.*"

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"QUEEN OF BEDDERS" (NOBLE).

See Coloured Plate (after Mrs. Duffield), "Gardeners' Chronicle," May 5, 1877.

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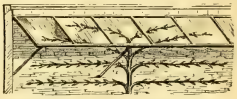
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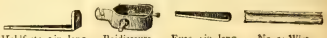
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From the "Gardeners' Chronicle," p. 813, December 23, 1876.

"Amongst the improvements now being carried out by Mr. Smith at Mentmore, the princely seat of the Baroness Meyer de Rothschild, near Leighton Buzzard, we would especially mention the New Palm Stove just erected by the firm of Messrs. James Boyd & Sons, of Paisley. This structure, which is a plain span-roofed building with a lantern ridge, is intended by Mr. Smith for the growth of large Palms, &c., in tubs. It is about 86 feet in length, 30 feet in width, and 27 feet in height. For a large house like this, totally devoid of all ornamentation or filagree work, it is one of the handsomest and best constructed we have seen, and is well worthy of inspection."

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Crofton Hall, Wakefield.
Sandgate, Fulborough, Sussex.
Pickhurst, Withey, Surrey.
Sea View, Sunderland.
Ashburne, Sunderland.
Browtop, Keswick, Cumberland.
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Newbattle, Dalkeith.
Oxenford Castle, Dalkeith.
Castle Kennedy, Stranraer.
Stapleton Tower, Annan.
Glasserton, Whithorn.
Tonderghie, Whithorn.
Belle Isle, Ayr.
Auchmore, Perthshire.
Inverary Castle, Argyleshire.
Mayfield, Dundee.
Ardgowan, Renfrewshire.
Rawcliffe Lodge, Glasgow.
"Kibble Crystal Palace," Glasgow.
Elie, Fifeshire.
Duart Castle, Mull.
Powerscourt and Glanmore Castle, Co. Wicklow.
Phœnix Park, Dublin.
Carton, Maynooth, Dublin.
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SATURDAY, MAY 12, 1877.

SOME FRIENDLY FERNS.

IN an eloquent essay, called the *Queen of the Air*, Mr. Ruskin finds a mystery, "perhaps a personality," in every plant. He is not alone in this conception. Some wild Ferns collected and petted by a lady in Surrey, acquired in a little while an unquestioned quality of personality: we well remember these fascinating plants, and the fate that overtook them. The native Ferns of Surrey are numerous, and a beautiful collection had been removed from their birthplaces in shady lanes and obscure nooks to the home-made fernery of an old road-side house. On entering the front gate by a flight of steps from the road you found yourself in a narrow space between the house and the garden wall, and in this recess, shaded by old lichen-stained and Ivy-covered walls, and overlooked by windows filled with flowers, the Ferns flourished amid broken lumps of grey-tinted sandstone. In a conspicuous position was Polystichum angulare, with a magnificent tame toad generally at home in the central cavity of the plant. A number of the lesser Ferns were nestled among the stones, and a never-to-be-forgotten Moonwort had been removed by the lady's own hand from an adjacent down—where Moonworts grow by dozens—and set in an open corner in its own earth, in the centre of a spit of turf, just as it grew on the hill. Among the Ferns there was not one more personal and friendly than the little Moonwort, which had grown to the usual stature which distinguishes its kind, on some smooth turf in the immediate neighbourhood. The site borrows the name of "Rough" from some clumps of furze; its turf is as smooth as velvet, and well suited for a canter or a stroll; or you may stand on the crowning point, and breathe the fragrance of a furze and fern-clad broom-bedizened sandhill of sunny Surrey; or you may recline and sit upon a Cistus, or lay your head upon the wild Thyme growing on an ancient molehill. Persons afraid of rheumatism and sitting on the ground should by all means interpose something underneath, in order to avoid damp. A lover of forty, or thereabouts, once "popped the question," sitting on this very "Rough," but first he popped his gloves beneath to intercept the damp.

The view from the "Rough" is a perfect Surrey scene, such as scores of artists have transferred to canvas, and hung in the *salons* of the Academy, as invitations to the public to visit Surrey. To reach the "Rough" you arrive at Dorking, climb Coast Hill after passing Westcote, and ask your way to Abinger. Once basking on the wild Thyme the prospect is delicious, and there are, or were, dozens of Moonworts, for we basked there as a boy, and peppered rabbits on the same spot, and having to leave it for a home elsewhere a Moonwort, potted in its own earth—a little 2-inch plant—went with us, and for years put forth its leaves in spring, and prattled, as it seemed, of the "Rough" at Abinger, of rabbit shooting, and other matters. The lady's Moonwort was dug from the same spot, close to the granite cross which marks the spot where Bishop Wilberforce cantered those last steps across the velvet turf to his unexpected grave. She had removed it herself to an open end of the fernery, where it

might find the air it needs. And all her pets one early summer had unfolded their first fronds, when, on a moonlight night, a score of them vanished, and have never since been seen.

The manner of their going has remained a mystery. The only facts we can relate are, that in the early morning a pair of eyes from an upper window peeped down into the fernery below. They were the bright eyes of the lady already mentioned. Without pausing to describe her dress, we shall only say that the sun has rarely risen on anything more pathetic than her aspect as she peered out of that upper window and missed her Ferns. The front door opened almost on the instant, and between two banks of flowers in pots glided a figure clad all in white, and passed at once to the fernery. This was the mistress of the missing plants, their sustainer and friend, whom we have already seen at the upper window. Looking down with her bright eyes in the early dawn, she had observed the rumpled state of the ground below, and her instantaneous suspicions were now being confirmed. Two score at least of her late companions had departed, and ever since we saw her in the early dawn lamenting her Ferns, with long-drawn "Oh's!" and little runs and keen inspections of each spot whence a Fern and a friend had departed, we have never for a moment doubted the "personality" of plants. Nor has the lady herself. The language she used on the occasion proves that her Ferns did possess a personality. "I am perfectly convinced," she said, "they would have never walked off of themselves." They had been dragged forcibly away by persons coming for the purpose, like the Romans when they perpetrated the Rape of the Sabines; and as the Sabine ladies became reconciled to their new protectors, so the ravished Ferns, no doubt, each acquired another "personality" in some other garden, and became the pets of a new owner.

Every cultivated Fern and flower has been entrusted with the mission of attaching those who love them to their homes by indescribable ties, which, in the case just mentioned, only the toad remained to represent. "Poor toady!" the lady was heard to exclaim, "there is only you and I left now—what shall we do?" And about this time the gloves were laid upon the ancient molehill on the "Rough," and so she found another friend besides the toad. But this is only an aside; the main point of our narrative is the friendship and seeming "personality" of plants. It was not strictly true about the Ferns being the lady's only vegetable friends in that delightful, old, grey, and lichen-smudged residence, and the garden round about, for there was a feathered Sumach she was much attached to, and several Arums and other plants tended by her own hands, indoors and out. Still the remark, "Only you and I left now, toady—what shall we do?" shows how cruel a loss is suffered in the theft of Ferns of your own collection, and the sympathy which may subsist between plants and their owners. *H. Evershed.*

New Garden Plants.

DENDROBIUM GRIFFITHIANUM, *Lindl., Bot. Reg.* xxi., *sub.* 1756.

I only knew this in a wild state, from Griffith himself, in Dr. Lindley's and my own herbarium. I may perhaps have had it fresh, but in miserable, wretched single flowers, which are quite insufficient to ascertain a Dendrobium. It is a small, elegant thing, much in the way of the rare D. Palpebræ, Lindl., but with yellow flowers, an entire equal spur, not constricted before its apex, and small, very acute, thick leaves. Like D. Palpebræ it has a lax inflorescence, and very obscure narrow bracts. The well known D. densiflorum, Wall., boasts its overladen dense raceme, its broad conspicuous bracts, oblong leaves, and a much longer stem. I do not believe that D. Palpebræ, Lindl., has to be combined with D. Griffithianum, Lindl., as Dr. Lindley himself suggested, since its spur and its lip (and its colour) appear constantly different. I have obtained it several times fresh, only through Mr. Low's kindness, and it is Mr. Low once more who has just sent me this D. Griffithianum, as it was Mr. Low who introduced the beautiful D. suavissimum. *H. G. Rchb. f.*

AERIDES CRASSIFOLIUM, *Par., Rchb. f.*

At length I have some fresh flowers at hand, though I would like more of them. It surpasses by far what I expected, and I have a certain feeling that it is just the king of all the Aerides. While the flower is of the warmest purplish colour, quite exceeding the flowers of A. falcatum, Lindl. (Larpente, Hort.), and Houlletianum, Rchb. f., it appears to keep its short leaves, since I remember well to have seen it at different times in the collections of Mr. Day and Messrs. Low, when the Rev. C. Parish's showy discovery was introduced with very high regard. I myself suspected it might be a local changed form of A. falcatum, Lindl.: now I have seen it fresh and compared with my dry specimens, I do not hesitate to believe it a very good distinct species, though it is scarcely possible to distinguish it by dried materials. The spur is straight in A. falcatum, Lindl., it is bent under an angle in this species. The side lacinie of the lip are much broader and shorter in this than in the old species. The two keels on the disk of the lip stand close together at the base, they then get contiguous, and diverge finally, arching on both sides. Quite the contrary in A. falcatum, where the keels keep boldly distant, and are convergent in the middle of the lip. For this beauty I have to thank my excellent correspondent, Mr. Stuart Low. *H. G. Rchb. f.*

BLUE GLASS FOR VINES.

A GENTLEMAN near Dundee has, as we learn from the *Dundee Advertiser*, taken measures to put to the test General Pleasonton's assertions as to the influence of blue glass on the growth of Vines, already alluded to in these columns. General Pleasonton's book is the work of a real humourist, so that we can hardly commend it to the notice of Grape growers, unless as a recreation from more serious occupation. The effects of blue glass on vegetation are pretty well known to physiologists, at least so far as laboratory experiments are concerned, and they are not such as to induce a practical man to grow his plants under a blue ray. The best of all ways, however, is to do as Mr. Spence has done, and try it on the large scale. We need hardly point out that the excessive growth alleged to have taken place is not likely to be of that nature which results in well-ripened wood, well-coloured Grapes, and sound constitution. Here is what the *Dundee Advertiser* has to say on the matter, and we should be glad in due time to hear what our friends in that neighbourhood have to report:—

"Some time ago a copy of General Pleasonton's book came into the hands of Mr. Spence, of Coventry Bank. He read it, and, as usual, took an interest in the matter, at the whole thing as absurd, or a piece of Yankee brag. It struck him, however, that although 'blue light' might not develope a hedgehog into an elephant, it might still have a stimulating influence on vegetation. He was strengthened in this conviction by the fact that General Pleasonton read his paper in the first instance before a respectable scientific society; and, further, that Mr. Buist, having a reputation at stake, would have speedily contradicted the General's statements if they were not according to fact. It so happened that Mr. Spence was erecting vineries at the time, and he resolved on satisfying himself as to the effects of the blue-violet ray. Mr. Spence's vineries differ from those of General Pleasonton, inasmuch as the roof is not double pitched. They are built against a lofty wall, and have a fine south exposure. There are two forcing houses, each 30 feet by 15, separated by a transverse section of about the same dimensions running out from the wall. This construction necessitated a modification of the American plan, and Mr. Spence has, by an ingenious arrangement of the glass at the top of the wall, made sure of the violet ray travelling over all the plants. One of the houses—the westmost—is glazed in the usual fashion with white glass; the other is fitted up with rows of blue glass, casting a violet ray in the manner described by General Pleasonton. With the exception of the rows of coloured glass, the two houses are exactly the same in every respect. As to soil, it may be mentioned that in the course of the summer Mr. Spence took a large quantity of turf off his lawn, which was allowed to rot, and in the fall of the year it was appropriated for the purpose of Vine growing. It was placed in both houses, and in both cases bones and bone-meal from Rosemill were used as manure. On January 13 last the two houses were stocked with Vines, of equal age and of the same variety—Black Hamburgs. On the same day, in order farther to test the influence of the blue-violet ray, Potatos were planted in both houses. The Vines and Potatos were placed so as to ensure the same conditions, the colour ray excepted. These operations were gone about with the advice and under the superintendence of Mr. Lawrie, an intelligent and experienced gardener. Heat was put on in both houses on February 8, and the temperature has since then been kept equal, the white house from position having if anything the advantage. On visiting the vineries we found the Potatos which have had the advantage of the 'blue light bath' standing 3 feet above the surface, and so vigorous is the growth, although carrying the full strength of stem, they will require to be staked. In the white house they stood only 2 feet high. The Vines, again, which are bathed in violet, have grown 2 feet 4½ inches, and have a strong vigorous look. Those in the white house, on the other hand, are only 13 inches. Those acquainted with Vine culture will be able to estimate the different results by the following details. A regular note of progress has been kept, and the results have been given in as follows:—First the progress made under the colour ray averaged fully an inch every twenty-four hours. On March 8, exactly a month from the date of forcing, the Potatos under the white glass stood 14 inches above the ground, while under the blue glass they stood 25 inches. The Vines, again, at same date had only grown 4 inches under the white glass, while under the blue they had attained a height of 24 inches. As a further instance of the stimulating influence of the ray it may be mentioned that a Camellia was pointed out to us which had been removed into the 'blue' house because of the sickly look, but which in its new quarters had grown 3 inches in two days. Mr. Lawrie, who has had a life-long experience, says nothing like it has before come under his notice. It would seem, therefore, that there is 'something' in the blue lights, notwithstanding the ridicule to which General Pleasonton's pretensions have been subjected. Had he confined himself to Grape culture, and not claimed for the 'blue light bath' greater virtues than were ever claimed for the Morrison Pill, the 'discovery' might have received more attention than it seems to have done from practical men. As it is, judging from Mr. Spence's experience, the matter is worth attending to by Vine growers in this country. There is evidently enough in the 'discovery' to induce further experiment, and those who may be inclined to go into it need not be deterred by the experience of the Connecticut Cucumber grower, who—as the *Danbury Newsman*, with his usual veracity and fine appreciation of the fitness of things—required a special freight train to convey the Mammoth Cucumber which he reared under 'blue glass.'"

SWEET-SCENTED GREEN-HOUSE PLANTS.

It always seems to me a pity that the plants in the mixed greenhouse are limited in variety, and that a show of flowers, even if only of one or two sorts, is the one point aimed at. We all know the look of the medium-sized greenhouse in small places, which is "always gay." In winter it is bright with Chinese Primroses and Dutch bulbs, succeeded in spring by Cinerarias, Azaleas, or Pelargoniums, Calceolarias, and Fuchsias in summer, with Japan Lilies and Chrysanthemums in autumn. If the owner of the greenhouse is omnivorous in his love of plants, the result is disastrous in the overcrowded stage of ill-used and ill-grown plants—Camellias with yellow foliage, Heaths in a dying state, or we might rather say dead, for in the amateur's mixed greenhouse when a Heath is observed to be unhealthy, hopeless mischief has been done. But setting aside Heaths, which are an acknowledged difficult family to grow in mixed houses, look at the wretched state of the so-called hard-wooded plants, and we must own that Epacrises and Cytisus, &c., are uninteresting when past blooming; and it strikes me in these ordinary greenhouses, so cramped for space, that no plant should be admitted that is not for some reason or other always interesting. For instance (1), plants of sweet-scented foliage; (2), those whose habit or varied growth is peculiar; (3), plants whose seed-vessels are interesting or ornamental, thus having two crops of beauty; or such as should be studied from the seed-pan and known in their different stages of growth, as Acacias, certain species of which in their young state could never be known by one unacquainted with the changes they go through; (4), climbing plants, including specimens of Mr. Darwin's divisions, viz., twining plants, leaf climbers, tendril bearers, hook and root climbers. A selection

from these four sorts of plants, with a sprinkling of the ordinary flowering occupants of the greenhouse, along with Ferns, Aloes, and succulents, would make the amateurs' greenhouse always varied and instructive, enabling them to appreciate more highly and learn better from botanic or large establishments which they may be in the habit of visiting. I do not see why we should encourage growth and progress in our plants, and get mentally contracted and stunted ourselves.

SWEET-SCENTED PLANTS.

To begin with plants of sweet-scented foliage, both soft and hard-wooded, as they give an immediate return. Soft are quickest grown and safest to cut. We have more than thirty varieties of Cape Pelargoniums of distinct perfume, but half that number would be a choice selection of the sweetest, leaving out the beautifully-cut Pheasant's-foot and glutinosum section, as the greenfly adheres to them, and they stick to the cut flowers they are mixed with, and stain gloves and dress when worn. Capitatum, or rose-scented, and its variegated variety, Lady Plymouth; quercifolium, or Oak-leaf; Fair Helen, an Oak-leaf—the oldest; Fair Emily, Prince of Orange, and its variegated variety; lemon-scented, nutmeg-scented, Radula or Stag's-horn, citriodorum and its minimum variety, Lady Scarborough (of the citriodorum section), lobatum or Peppermint, abrotanifolium or Tansy-leaved, vitifolium or balm-scented, Laurencianum or serrulatum. There is great confusion with even these unsatisfactory names, but I have selected those by which they are most generally known.

Balm of Gilead (Cedronella triphylla) one seldom meets with, and Verbena (Aloysia citriodora) is never grown of sufficient size to cut freely from. The Pine-apple scented Salvia? is another pleasant smelling plant; Lavandula Spica (French Lavender), and Prostanthera lasianthа, are sweet and useful for cutting, lasting long in water, as are also Cedronella incana, and a Scutellaria (?) with pale lilac blossoms, both labiate plants of pleasant smell, while Teucrium Marum, not perfectly hardy, must have a place. Humea elegans overpowers all other perfumes, and adheres to whatever it touches, but many are partial to it.

Of hard-wooded plants the sweetest are the Diosmas and Adenandras (heath-like plants), Leptospermum (allied to the Myrtles), and Boronias. Diosma, capitata, fragrans, ciliata, and speciosa are fresh and fragrant, lasting weeks in water, and retaining their leaves and sweetness when dead; but beware of D. crenulata, the intolerable smell of whose foliage is not counterbalanced by its beautiful white starry flowers, in bloom in December.

The Diosmas and Adenandras are so mixed up in nurseries that it is prudent to see and smell the different sorts for one's self, and not vaguely order by a catalogue. Of Leptospermum, bullatum and scoparium are desirable. The latter is covered with its little Myrtle-like flowers, which ripen their seed and come up freely. All these small-leaved plants take up little room, and are not affected by insects. Boronia tetrandra has a very sweet leaf when bruised, not unlike the smell of the flowers of the well-known B. serrulata, and the charming B. megastigma. B. alata, again, with a good-sized lilac flower, has as pertinacious a smell as Diosma crenulata. They are a pair to be avoided; nevertheless that great charm of foliage belongs to them—viz., that unless bruised or drawn through the hand they do not give out their perfume like flowers, and are therefore innocuous. At the same time the perfume, or its opposite, is always there in its true character, unlike a flower which has an evanescent time of perfection, and which requires careful study to watch the exact time of ripeness. But for one individual who looks for sweetness in foliage there will be a hundred who sniff at every flower, and yet never know the real delicious fragrance of a Rose, Carnation, Stock, or Mignonette in its perfection. How annoying it is to the thoughtful observer to have a sweet-smelling flower cut too soon, or when past its best; too early or too late in the day, when it has had too much or too little sun; too damp or too dry. Bees at flowers are like wasps at fruit, the very best judges of perfection; not having their instinct, and not using our own reason and thought, we lose very much enjoyment we might have from sweet-smelling plants. Of greenhouse shrubs the Musk-smelling Aster argophyllus is worthy of a place, both from the silvery upper surface of its leaf, which is brown underneath, as well as for its perfume, for those who like it. A Citron should be grown for its leaves alone, so refreshing; and Myrtles, say four varieties, should certainly be included. Every one likes sprigs of Myrtle, but because it is almost hardy few give a place in the greenhouse for good-sized shapely plants that will bear cutting and bruising *ad libitum*, and with foliage unbrowned by frosts and winds. With the aromatic never-sickening smell of this evergreen I conclude the list of greenhouse plants with sweet foliage. *F. J. Hope, Wardle Lodge.*

ANTIPODAL HYACINTHS.

WANDERING through the Amsterdam show lately, we came on a dozen or so of Hyacinths growing in the singular fashion depicted in our sketch (fig. 93). A glass pot filled with earth is placed on the top of a glass vase filled with water. In the upper pot two Hyacinth bulbs are placed, the one with its growing point directed upwards, the other in the reverse direction. The one Hyacinth shoots upwards into the air, the other is directed downwards into the water. The latter, of course, appears magnified by the glass and the water. There is no sign of the inverted Hyacinth endeavouring to regain its natural upward growth, as we should expect it to. Perhaps some of our Dutch friends who see this will kindly explain how the feat is accomplished. On the spot

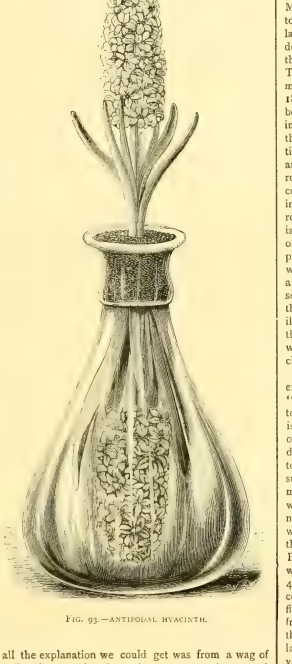


FIG. 93.—ANTIPODAL HYACINTH.

all the explanation we could get was from a wag of a Dutchman, who, in reply to our enquiry, stated that the lower bulb was an Australian, *i.e.*, Antipodal variety!

THROUGH SARDINIA.

REMOTE from the busy haunts of tourists and the bustling centres of commercial life, Sardinia is a delightful retreat in which to enjoy the beauties of Nature, or to study the characteristics of Northern vegetation. Throughout the island the vegetable products of Europe are found side by side with those of Northern Africa. Palms grow along the shores, and their graceful outlines stand out clear against the bright blue sky; in sheltered nooks the Date tree waves its feathery crown; huge Cacti stretch their thorny boughs, laden with Figs, along the ground; Orange trees delight the smell and sight with their fragrant blossoms and golden fruits. In spring Almond trees display their branches laden with silvery flowers; Fig trees, with their large leaves of pale green, shade the scorched ground; and the wild Vine covers the hill-sides with its vigorous shoots. Attempts have been made to add to this glorious vegetation by acclimatising intertropical plants in the island. These attempts, made on a small scale in public and private gardens, have been attended with fair success; but it would be an error to suppose that these plants can ever become objects of extensive culture in Sardinia, where they require a special treatment, and succeed only in some favoured spots along the shores.

The climate of Sardinia would be one of the finest and healthiest in Europe were it not for the exhalations of the numerous marshes, which infect all the parts of the island adjacent to the sea. Winter can scarcely be said to exist; the sun is warm even in January, and the sky is seldom clouded. The moderate cold of January is succeeded by eight months of intense heat, and the thermometer rises to 86° and 90° in the shade. Rain is rare, and falls chiefly in March and April. The marshes are a great obstacle to the development of agricultural industries, and the labourers who are obliged to work in the plains bordering on them esteem themselves fortunate when they escape with a few months' suffering from fever. The area occupied by these marshes is about half a million acres, and they have an average depth of 18 feet. The western part of Sardinia is the most beautiful and picturesque district of the island, and, indeed, is almost the only portion of it accessible to the ordinary traveller. In all other parts communication is almost impossible, especially in the northern and eastern regions, where there is scarcely a parish road, and which still are what they have been for centuries—an utter wilderness, traversed only by roaming shepherds. The shepherds of Sardinia are a thoroughly nomad race, scattered over all parts of the island. Some are owners of the flocks they keep, others are only their guardians. They wander from place to place with their flocks, taking their families with them, and subsisting chiefly upon game, milk, and fruits. They visit the rude stone huts which serve them as homes not more than once or twice in the year; and abandon their wandering life only when illness or old age condemns them to idleness. During the greater part of the year they sleep out-of-doors, with no other shelter than the hooded cloak of coarse cloth usually worn by the peasants.

Upon the western side Sardinia is traversed by an excellent highway, 130 miles in length, called the "Royal Road," which leads from Sassari, the chief town in the north, to Cagliari, the capital of the island, in the south. The country around Sassari is one of the best watered and most fertile parts of Sardinia, and is noted for its Grapes and Oranges. The town is beautifully situate upon a gentle slope, and surrounded by numerous low hills. The hills and mountain slopes are cultivated in terraces, and planted with Vines, Oranges, and Mulberry trees. To the north and east are extensive forests of Cork trees and wild Olives. Many of the former are remarkable for their size and age. A few miles from the village of Ploughes there is a magnificent tree of this species, whose trunk at a few feet from the ground measures 40 feet in circumference. The Olive trees also attain colossal dimensions. To protect them against the floods, which in winter frequently descend in torrents from the mountains, they are surrounded by low walls, the number of which gives a peculiar aspect to the landscape. The Olive is the most extensively cultivated tree in Sardinia, whose soil seems to be peculiarly adapted to its requirements. Until very recently a royal decree was in force which conferred letters of nobility upon every Sardinian who had planted a certain number of these trees, and, on the other hand, there was a law, dating from the seventeenth century, which declared those persons excommunicated who destroyed the Olive trees of their enemies. The tree is propagated by cuttings, and is planted in the proportion of about forty trees to the acre. It grows slowly, and begins to bear at four years, but does not yield a full crop until the tenth year, when the average return is 20 gallons of Olives per tree. The Sardinian Olives are plump, juicy, and full-flavoured, and only require improved culture to take a far higher place in the market than those of France or Spain. From 7 to 9 gallons of ripe Olives are required for 1 gallon of oil under the primitive system of pressing practised in the island.

The most mountainous part of Sardinia lies in the vicinity of Maccomer, midway between Sassari and Oristano. The mountains are almost all covered from their bases to their summits with dense forests of superb Firs, Chestnuts, Oaks, Beeches, and Larches. The underwood consists mainly of Pistacia, Cistus, Erica, Globularia, and the like. The soil of these mountains is reddish, and very fertile, but as yet it is wholly in a state of Nature. In this district there are barren desolate plateaus whose solitude is broken only by the flight of the eagle or the hoofs of the savage mouflon. Here and there are rich valleys, in which a few miserable hovels built of loose stones and turf are the only signs of man's presence. These huts seldom contain more than one room ; chairs and tables are regarded as superfluities, and the inmates sleep upon beds of leaves covered with goatskins. On one side of the hut a small piece of ground, seldom more than an acre in extent, is planted with Grapes and Maize in wild confusion. The wealth of the inhabitants of this district consists in flocks of goats and pigs, which are fed on the rich natural pasturage of the valleys, and on nuts and acorns in the forests. The natives are a tall, well-made race, but almost African in the swarthiness of their complexions.

On the royal road, about 70 miles to the south of Sassari, lies the town of Oristano, near which is the village of Milis, justly celebrated for its Orange groves. Milis is a lovely little village, whose white houses and picturesque church contrast pleasingly with the verdure of the orchards amid which it is embosomed. The road thither from Oristano leads through a well cultivated piece of country, with a row of low hills on either side. Huge old Oaks and Chestnuts clothe the heights, and the hedges are composed of Laurels and Cacti. The soil round about Milis is of volcanic origin, and particularly suited for the growth of Orange trees. The orchards are 300 in number, and contain upwards of half a million of trees, which produce twelve millions of Oranges annually. From a pavilion which stands higher than any of the others, the visitor can obtain a magnificent view over the surrounding district, which is certainly the garden of Sardinia. Huge, black, glazed-looking volcanic rocks are scattered in all directions over the country. The Orange groves are surrounded by hills, which, with their heavily wooded summits, protect them on all sides. Here and there upon the slopes are rude huts, encircled by wild, neglected vineyards. The Orange orchards are the most attractive feature, and merely to enjoy a walk through them is alone worth the voyage to Sardinia. One of the finest is that belonging to the Marquis di Boyl. This orchard contains 10,000 trees, many of which reckon their years by centuries : it is leased for £160 a-year. One of the trees in this garden is especially worthy of notice—its trunk is 5 feet in diameter, and to the splendour and sweetness of its flowers and fruits it joins the height and majesty of the Oak. The productiveness of these trees is enormous, and some individuals yield as many as 5000 Oranges yearly. Early in the month of May is a good time to visit Milis, as well as the island generally. The Orange groves are then in their spring beauty, and animated by the song of birds, and by the murmur of thousands of little brooks, which water the huge black roots.

On the way from Oristano to Cagliari lies (near the village of Monastir) the broad plain of Campidano, one of the richest and best cultivated parts of the island. The soil in this district is also volcanic, and very fertile—it often returns 50 bushels of Wheat or Maize for one ; but at present, despite the patient industry of the inhabitants, the plain does not produce one quarter of what it would under a modern system of culture. The agricultural implements have not been altered since the days of the Romans, and are both badly made and difficult to handle. The Sardinian peasant toils hard but earns little, and is heavily oppressed by the agents of the Spanish and Italian nobles to whom the greater part of the island belongs, and who squander their revenues in Madrid or Rome. The peasants are wholly without capital, and conduct their operations in the most primitive manner. The estates are very large, but the farms rarely exceed 20 or 30 acres. The tenure is emphyteutic, and the tenants are, to a certain extent, serfs, as they cannot abandon their farms unless they provide other occupiers on the same terms. Upon the death of the tenant, his heir pays a fixed sum to the proprietor, and about 29 per cent. of the annual produce to the State ; in the collateral line the last sum amounts to 50 per cent. In the case of sale a year's extra rent must be paid to the proprietor ; this condition renders sales very rare, and binds the tenant to the soil. The land-tax, which amounts to about one-fourth of the revenue, is borne on the official valuation, which is very inexact. The farmers are restricted to the culture of certain crops ; Wheat is the chief grain crop, but Maize is also largely grown. The harvest begins in June, and the grain is trodden out by the feet of horses in the fields. Beans are largely cultivated as fodder ; they are sown in November, as the hot dry winds of spring retard their growth. The tenant depends chiefly upon his Olive crop for his rent. Palms are also largely planted, and every village has its grove of these graceful trees. Attempts have been made to establish the culture of the silkworm, and Mulberry trees have been largely planted ; but the intense heats of May and June are as hurtful to the insect as the fickleness of the weather elsewhere. The houses of the farmers are constructed of bricks or stones, have only one storey, and each of the rooms is entered from an outer balcony. The farm offices comprise a large barn, a poultry-house, and an open yard for cattle. The peasants seldom eat meat, green vegetables preserved in oil, cheese and bread compose their fare. Agricultural labourers live in large villages far from the fields ; and during the busy season they are lodged in temporary huts at the scene of work.

Beautiful as are many parts of Sardinia there is a general air of barrenness and wretched neglect lying heavily over the land, and in traversing its uninhabited plains and dense forests it is difficult to believe that one is still in Western Europe. Sardinia, with an area of six millions of acres and a highly fertile soil, could support in comfort two millions of people, yet its present population does not exceed half a million of badly-clothed, ill-housed, semi-starved peasants and herdsmen. *Y. D. W.*

COCHINEAL IN THE CANARIES.

A VERY depressing report on the general prosperity, or rather decline in prosperity, of the island of Grand Canary reaches us from the British Vice-Consul. The immediate cause of this decline, we are told, is to be met with in the depreciation of cochineal, the only important product of a country that depends exclusively on its agriculture. The ultimate causes, however, seem to be many and complicated. The large profits realised from cochineal in former years led to its exclusive adoption wherever the Cactus could be made to grow. These profits were squandered in extravagance, even before they were made, and as the value of the article fell, the growers found themselves in debt to the merchants. At last a time came when the production of cochineal yielded little or no profit, but there was no other product to take its place, and the growers were unwilling to cut down the Cacti on which they had employed so much of their capital. The production continued to increase, and the prices to diminish. The advances made by the merchants to the growers not being in many cases covered by the value of the crops, credit was to great extent suspended ; merchants would sell goods only for cash, and the sales not only were diminished, but had to be made at smaller profits. Coined bullion also had to be exported to cover the adverse balance of trade, and this increased the difficulty of exchange.

It has been stated that the immediate cause of the decline in prosperity was the depreciation of cochineal, and that this was brought about by the too-extended production, consequent upon large profits. But these profits were driven to an abnormal height by circumstances independent of any legitimate supply and demand. One was (and still is) the competition amongst the buyers, who are generally dealers in imported goods, and who are not only compelled to make their returns in cochineal (there being no other article of export), but obtain a readier sale thereby for their importations, either through barter, or by causing more coin to circulate. This caused the price of cochineal to rise in the island and to fall in the consuming markets, the loss by the shipper being covered by the profit on the sale of his importations. The margin between the profit on one article and the loss on the other, became gradually less and less. Another circumstance consists in the gigantic frauds that have been committed in the island, the effects of which are still being painfully felt. One of these frauds was to ship a large number of bags filled with Barley and stones on board a vessel called the *Candida*, and to insure them as holding cochineal ; the vessel was lost under most suspicious circumstances, but the shipper received the insurance money.

The present depressed state of the island is clearly attributable to its almost sole dependence upon its agricultural produce, which is chiefly centred in one article, namely, cochineal ; and the depreciation of this article, together with the difficulty or impossibility of at once substituting another product that may yield better returns.

FLOWER FARMING.

THE Jasmine cultivated in the South of France for perfumers' purposes is Jasminum grandiflorum, which is propagated by grafting on the common white Jasmine, J. officinale. The whole process of cultivation, together with the cost of labour and the average returns, are given in the last number of M. Dehérain's excellent *Annales Agronomiques*. From this it appears that cuttings of Jasminum officinale are planted in rows nearly 3 feet apart, each cutting being at a distance of 5—6 centimetres from each other. In May the ground is hoed (*binage*), and water is supplied during summer as may be required. In order to secure a crop of some kind, the first year vegetables of various kinds are grown between the rows. Leeks are found beneficial, but Radishes and Peas (*Pois chiches*) are deemed injurious to the Jasmines. The vegetable crop covers the expense of the yet unproductive Jasmine. In the second spring the Jasmines are fit for grafting. Ordinary cleft-grafting is practised, the stocks being headed down to an inch or two above the soil. A good workman, aided by a woman to tie the graft, will work 1000 to 2000 Jasmines a day, the man earning five francs, and the woman a franc and a half a day.

In June the grafts are uncovered, and watering is freely practised, according to circumstances. Stakes are then placed along the line, about 3 to 4 feet apart, and tied together by reeds fixed horizontally 18 inches or so above the soil. To these supports the young shoots are tied. At the end of August flowers are produced, but in the following years they are yielded considerably earlier.

It is necessary that the flowers be gathered perfectly dry ; hence if there is seen during the night to be an imminent chance of rain, men are sent into the town at 3 o'clock in the morning to rouse the women and summon them to the farm to pick the flowers before the rain comes. The women are summoned by what is called in Provencal *patois* the "graila," this being a large shell (*coquillage*), which serves as a horn.

In November the plants are earthed-up to a height of 18 inches, so that the base of the grafts may be protected from frost. In the third year, in January, watering is effected by liquid manure, the earth is drawn away from the base of the stem, the stakes are removed, and all the dead branches are pruned. The stakes are replaced, and the process of irrigation is repeated as before. The proprietors of the flower farms at Grasse have the right to make use of the sewage of the town, which is collected in cemented tanks, and distributed by irrigation. In the early spring, as above stated, the solids of the sewage are applied with the liquid, the sewage being stirred up for the purpose, but during the summer the liquid sewage alone is used for purposes of irrigation. The irrigation for Tuberoses and Jasmines is effected at the rate of 60 litres a minute, or 43,200 litres per diem of twelve hours. A hectare of ground is considered to be sufficiently irrigated in eight days ; at each operation then a quantity of water equal to more than 345,000 gallons is made use of. It is calculated by M. Hugues that 1000 plants of Jasmine, grafted and planted in good soil, furnish in the second year after grafting 50 kilogrammes of flowers, but less in poorer soils. In subsequent years the production of flowers is very much larger, so that it is estimated that in the first year 3200 kilogrammes of flowers per hectare are produced ; in the second year 5000. The women who pick the flowers get 45 centimes a kilogramme, each kilogramme being sold to the perfume-makers at 2 *fr.* 25 cent. The general duration of a plantation of Jasmine is stated to be fifteen to twenty years. The nett annual receipts from a hectare of ground established as a Jasmine plantation are estimated to be about 5800 fr., but this is only in favourable seasons—at other times spring frosts, hail, wind, and other causes

greatly diminish the profits. The production of these beautiful perfumes from the foulest of matter, is one familiar enough to the gardener, but the general public hardly realise a fact of so vast practical moment to them, and one which might serve to point many a moral.

Another fact not generally known is, that many perfumes, called Lilac, Heliotrope, Sweet Pea, &c., are not extracted from the plants whose name they bear, and whose fragrance they more or less successfully simulate, but they are fabricated by the perfumer, who cunningly mixes together in certain proportions the essences derived from various flowers, and which when thus blended afford the required fragrance.

THYRSACANTHUS RUTILANS.

OF all plants that flower during the early spring months the above is, I think, without exception, the most graceful and beautiful, and quite unapproachable for table decoration—a purpose for which it is peculiarly adapted, and where it shows off its elegant tube-shaped blooms to the best possible advantage. These are suspended on long thread-like stems, that depend from the tops of the plants in the most graceful manner, and being of a bright scarlet colour the effect is greatly heightened by the contrast of the white cloth beneath, and the artificial light they are usually seen under. Besides being of such use in the above kind of embellishment, the Thyrsacanthus rutilans is particularly suitable for standing in vases on brackets or other elevated positions in rooms, or any situations of that kind, where it can stand clear above other plants. Considering its highly ornamental character, the ease with which it may be grown, and the great length of time it lasts in perfection, it is surprising one so seldom meets with it except where large collections are grown, but were it better known its merits would, I am sure, make it much sought after and more appreciated than it now is.

Those who are not so fortunate as to possess plants of it, will find the present a good time to obtain them to work up a stock for next season. Premising they are got fresh from the nursery, the best way to do this is to keep the plants rather dry for a week or ten days and in such a position that they can have plenty of sun and light to harden the growth somewhat before taking off the tops to form cuttings. This may then safely be done with the certainty that each will strike, provided it is placed singly in a small pot in sandy soil, the pots being stood where they can get a brisk moist heat such as a propagating box affords. Failing this, the next best situation is to plunge them in damp moss on a slate in the stove, and to cover them with a bell-glass, over which a piece of paper or something of that kind should be laid during the day to keep off the sun. So treated they will soon root, when they will require more light and air to prepare them for shifting into larger pots. These should be 6 inches in diameter, which is the handiest size for table decoration and such-like uses. When required for this kind of work the plants should be grown with single stems, and therefore must not be stopped but allowed to grow on to any height they may attain during the summer, which under good management will range from 2 feet to 2 feet 6 inches, and when furnished with their long pendulous flower-stems robed with blossoms and dangling in the graceful manner they always do, form objects of great beauty.

After severing the heads for cuttings, the old plants should be kept dry for a few days till the wound heals over, and then plunged in bottom-heat to induce them to break, when they should be partially shaken out and repotted in fresh soil consisting principally of fibry loam and well decomposed leaf-mould, in which they greatly delight. Any that may be treated as above, will form several stems, varying in number according to the buds left at the time of cutting them back, and if these are regulated and tied out they will form grand specimens for conspicuous places in warm conservatories or greenhouses, where they can stand clear of other plants or be elevated above them. During the summer months Thyrsacanthus does best in pits or small low houses plunged in some light loose material such as half-decomposed leaves or cocoa-nut fibre, to prevent a too rapid desiccation of the roots, which is sure to take place unless the pots are protected in some way.

Such subjects as these, and others of a like nature having thick fleshy stems, can always be grown and made to flower in a much more satisfactory manner when they can be treated apart from the usual occupants of the stove, where as a rule they get a greater amount of shade than is desirable, and which therefore prevents their making that firm mature growth so essential for producing plenty of blossom. In pits or low houses the conditions are favourable to this, as they can have full exposure to sun and light, and are altogether more under control. The only insects that are at all troublesome are the brown or turtle scale, which may readily be got rid of by careful hand-washing, if done before they get from the stems to the leaves, where it is not so easy to dislodge them. *T. S.*

Florists' Flowers.

THE WALLFLOWER.—The Wallflower has been termed "that sweet old flower, that has so long dwelt on walls and old ruins, hallowing their mouldering remains." The description is decidedly poetical, but quite true, and many an old piece of wall is beautified in springtime with this good old flower.

It is one of the most extensively grown of our common garden plants. Acres upon acres of the Wallflower are grown round London for supplying the markets of the rich and famous city with fragrant posies in the pleasant springtime. But this season the spikes of rich dark flowers are not being gathered nearly so early as they were last year; the Wallflowers are quite late; and the early spring that so many were inclined to foretell, is in many of its features a remarkably late one.

He who grows Wallflowers for market is particular in two respects: first, in having a good strain with a low bushy habit; and, secondly, in sowing early in the spring in order to have well established plants by the end of the summer to stand the winter. Any one who has observed the plantations of Wallflowers being grown for market will have noticed the dwarf and peculiar bushy growth, the branches issuing from the stalks almost down to the soil in which they are growing. From the point of each branch, and also from the points of the lateral growths, flowers are given forth, and thus a well-bloomed plant of a dark Wallflower forms a capital bouquet in itself; and as precocity is a matter of considerable importance—for happy is the man who can be first in the market with bunches of Wallflowers—the practice prevails among the market growers of marking a few of the earliest plants to bloom, provided colour and habit can also be had in combination.

Of the common Wallflower there are several varieties, not one of which but deserves a place in the garden. The fine dark-hued strain of the variety grown for market is one; a variety with larger and looser flowers, named Young Blood-red, is another, but it lacks the peculiar branching habit belonging to the market strain. Then there is the dwarf and early yellow flowering type, that is extremely pretty in early spring, and is best known as the Belvoir Castle Dwarf Yellow, plants of which can now be met with in Covent Garden and other markets. When this is quite true in character the stalks and buds should be of a pale whitish green, without any trace of dark about them. This strain is much used by Mr. Ingram in his charming spring garden at Belvoir Castle, Grantham. To have it true to character it should be grown from seed every year, care being taken that it is saved from the correct type. What is known as the Golden Tom Thumb Wallflower is a fine strain for decorative purposes when true to character; the flowers are large, well formed, and of a pure golden-yellow colour. It is of somewhat vigorous growth, and almost too tall to deserve the name of Tom Thumb. It invariably comes very true from seed, and appears as if it had been well selected at the outset.

The German single Wallflowers, so called because the seeds are imported from Germany, supply tints of crimson, blue, purple, yellow, &c., some of which are very attractive, and when grown in beds of mixed colours make a good display. But they are generally deficient in habit, throwing up a main spike, and having but few side branches. The choice old double kinds, such as the double yellow, double orange, double purple, double dark, &c., good and valuable though they are, are too much banished from our gardens in the present day; still they are occasionally met with in cottage gardens, grown so fine as to fill the observer with envy. These cannot be propagated by seed like the single varieties, but are increased by cuttings, which root freely when properly managed. Then there is the strain of double German Wallflowers obtained from imported seed, some of which are very large and bold, but of quite a different habit of growth to that of our English double Wallflowers. The German strain is much prized for the large fragrant flowers it produces by those who have a fondness for double flowers, but they are much later in blooming than the English single varieties.

The Wallflower does well in almost any soil, but especially in a good rich sandy loam, where its numberless root fibres can fasten themselves in the soil. The ground intended to be planted should be deeply dug, and so made ready for the plants. A piece of soil that has been manured for a previous crop will do well for Wallflowers.

The market growers sow their seed early in February and March, so as to transplant at the end of April or early in May. It is a good plan to pinch off the tap-root up to the fibres, and then the roots are put forth laterally in the soil. Advantage should be taken of showery weather to put the plants out, and the soil should be pressed in firmly about the roots. They soon lay hold of it, and the plants become well established by the time dry summer weather sets in. If transplanting be deferred later, it scarcely gives the plants time to make growth before dry weather comes, and they do not fill out and become nice and bushy.

The cooler and moister the weather at the time the Wallflower blooms, the richer are the crimson hues that gild the blossoms. The flowers of the finest strain of dark Wallflowers will turn yellow when hot dry weather sets in, as it sometimes does in early spring. The more holding the soil the better will be the flowers under any circumstances. The stronger and more firmly rooted the plants the better are they enabled to stand the rigours of winter. *R. D.*

Foreign Correspondence.

SPARTA: THE KERMES OAK.—I have been making a tour for some months in Greece, and now send you a specimen of the Holly-leaved Oak [Quercus coccifera], from the neighbourhood of Amyclæ, in Laconia, together with the small red gall, which is gathered from it in the summer, and which is still exported from Gythium, as it used to be from Marathonisi, near Cape Matapan, in the days of the Phœnicians. This, like the cochineal, is not a natural product of the tree, but results from the attack of an insect, producing a similar result. While the public mind has been much attracted of late to the remarkable discoveries by Dr. Schliemann of the extraordinary deposits of gold and jewels in the adjoining district of Argolis, in the supposed tombs of Agamemnon and others, it will be no doubt interesting to your readers to find that antiquarian matters of equal interest to them exist in the district of Laconia, celebrated for possessing, amongst others, the historical city of Sparta or Lacedæmon. The shrub in question abounds on the lower spurs of the range of Mount Taijgetum, and more or less through this part of Greece. Referring to this shrub, Theophrastus says:—"ἡ πρῖνος τὸν φοινικοῦν κόκκον φέρει" (*Hist. Plant.*, l. 3, c. 8); and Pausanias refers to it as follows:—"The leaves are smoother than those of the Lentisk (σκῖνος)," which is equally abundant in the same locality; "but in other respects it resembles that plant." "The fruit is like that of the Nightshade (στρύχνος), but in size is similar to the Vetch (ὄροβος). On this there breeds a small insect, which when the fruit is ripe becomes a fly resembling a gnat (κωνωψ); the fruit of the coccus is therefore gathered before the fly is hatched, and its blood is then a dye for wool." This is so far correct. It appears, moreover, that the insect has a great preference for the young wood. The berry does not appear, as some have described it, as a fruit would do, but is the result of the puncture of a gall-fly. As the fly seldom visits the plant when large, the mode of attracting it is by burning the bushes, which in consequence send out new shoots near the ground which are frequented by the fly. The gall so procured produces a finer colour, and the labour of collecting is centralised. It is interesting to note the statement of Pausanias, that it is used as a dye for wool, as it is now almost confined to the African trade, and is sent to Tunis in order to dye the fez, a woollen cap. It is curious that the plant growing near it, and not, on a casual inspection, dissimilar, bears a somewhat similar name to the πρῖνος,

viz., the *ὀχρὸς* or Lentisk. The Phœnicians, though celebrated for their grand dye, the purple—the use of which by any but imperial persons was forbidden in Rome by repeated edicts—would be only too glad to obtain a substitute, and indeed irrespective of such edicts a commoner dye would be required for the more numerous but poorer persons; and as the berry, described as "*πρωνοκοκκων*" by ancient writers, was easy of access to the Phœnicians, it is reasonable to assume they would have stations on the coast, as Strabo and others state they had in Britain for the purchase of tin. There are two such settlements, or rather stations bearing their name, "Phœnicus," close by this district — one near Hydmid in Messenia, and the other at the eastern side of Cythera, now Cerigo, an island just south of the present place of export. It is interesting to note further that this article still continues in its old channel of commerce, while with us the cochineal is the rich red dye; the Tunisians, almost successors to the Carthagenians, are the great purchasers of the *πρωνοκοκκυς*, as no doubt the Sidonians and Carthaginians were of old. *J. S. Phené.*

Apiary.

MASSACRE OF DRONES.—This could not escape the notice of ancient naturalists. Pliny and others considered that the drones were stung to death by the workers; but their views of the habits of the insects are too much mixed with the fabulous, in fact they considered that the queen bees were males. This false belief prevailed to the "middle ages." Hunter, however, mentions the "workers harassing them [drones] to and fro without stinging them," and nearly the same may be said of Bonnet, while Huber and Reaumur assert the "slaughter of drones is effected by the stings of the workers." Those who hold this belief consider that the bees insert their stings between the segments of the abdomen of the drones. This, however, does not accord with my former statement of the bees throttling the drones with their mandibles in the vital part under the wings. Those conversant with bees know that they live a considerable time after their abdomens are crushed, nay, severed from their bodies, and the same with wasps. Again, Dunbar and Bevan speak of bees using their stings in combats among themselves. The latter, however, seems to have doubts, because he found the dead bees had their stings, meaning that they generally leave the poisoned darts in the wounds. Now if this be so in their combats with the drones, it would be equally fatal to themselves. Bevan, however, qualifies this a little, at least he observes:—"By allowing the bee to draw out her sting gradually when we ourselves are stung—which, if we have sufficient firmness to remain still she would instinctively do by bringing the barbs close down to the sides of the dart—the life of this insect might be preserved, and pain in the wounded part be much lessened, but the excitement of both parties seldom admits of such forbearance." When stung by bees I pluck the stings from the wounds, without using prescribed remedies, because the pressure or rubbing when applying them tends only to excite the poison in wounds, as scratching does Nettle stings. *T. Wighton.*

Natural History.

TIME OF ROOKS HATCHING.—Bird nature is in many respects not unlike human nature. Some are precocious and hasty in their connubial arrangements, whilst others are dilatory and backward. Then, again, there are accidents to be encountered—death in the shape of poison, or the gun, often takes away the head of the family or his mate, even before the house is constructed (I picked up four dead birds in one day, under the trees here, that had evidently been poisoned), and a fresh mate has to be sought, and the family arrangements are delayed. During the severe gale that occurred on April 13 last year many of the nests were blown out of the trees, and the helpless young perished. The old birds immediately commenced putting things to rights, and many of them laid again, and there were young birds in the nest as late as the end of June, and perhaps an odd nest or so later. This year again the hatching is late, and will be very uneven, as during a gale that happened some time ago many nests were blown down. An old man that has worked here more than forty years says the rooks are later in building and hatching than they used to be. However that may be, there is, I think, no doubt that rooks like ourselves are very much influenced by circumstances over which they have no control. Judging from my own observation, I should say the hatching season here extends from about April 1 to the end of June, according to season and circumstances. *E. Hobday, Ramsey Abbey, Hunts.*

THE STORK.—Our pages have recently contained, *à propos* of the great Exhibition at Amsterdam, a descriptive account of the bulb-fields at Haarlem, and of the method of culture there adopted. We have now to mention a gardeners' friend, and one



FIG. 94.—STORK'S NEST.

so useful, and so protected by the kindly feeling of the Hollanders, that it would be as great a sacrilege to kill a stork as to shoot an albatross. They are encouraged to build on the housetops, and among the bulb-gardens may be often seen a tall pole, some 30 feet or so high, set up for the bird to build its nest upon (fig. 94). Curious is it to see the old birds encouraging the timorous young ones in their first flight from the top of one of these poles to the neighbouring house-roof. The stork arrives in Holland from the south early in April, and makes himself useful as scavenger-general, by diminishing the number of frogs, mice, moles, and other gardeners' foes.

EARLY ARRIVALS.—I heard the corncrake on the 3d, and the wryneck on the 2d. *B. W., Hants.*

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—With young plants of all the varieties of Pimelea it is not advisable to let them bloom where the object is to get them on in size without delay, consequently it will be well now to cut back the shoots without waiting till the flowering is over as in the case of larger plants; if shortened back at the present time it will admit of the young after-growths being stopped once through the summer, and still give time for the shoots that are produced after this getting strong and fully matured before autumn. In the case of P. spectabilis especially, if the growth is not commenced sufficiently early in the season there is not time after stopping for the wood to get strong enough. A mistake that is frequently made in the cultivation of these plants, particularly the strongest growers, is not shortening the shoots sufficiently back, by which means, through the short duration of the leaves as compared with many greenhouse plants, they get naked and bare at the bottom—an unsightly condition they are much oftener seen in than any other hard-wooded subjects; the shoots should be cut back fully one-half from the point to which they were stopped last season. More than most other hard-wooded plants, it is also essential that whilst in a small state the strongest branches should be bent right down to the top of the pot, for if this is neglected in their first stages it is next to impossible, from the erect unpliable nature of the shoots, to accomplish this afterwards. All plants that are thus treated should be freely syringed through the summer, and the atmosphere about them kept as moist as circumstances will permit. Inattention to this is certain to result in their getting infested with red-spider to an extent that completely spoils them. Young stock of other strong-growing plants, such as Chorozemas, Polygalas, Adenandras, and Eriostemons, should be similarly cut back, and the strong growths kept tied low down. Leschenaultia biloba ought also to have the shoots shortened; L. formosa and L. intermedia, being naturally of a more branching habit, do not require so much stopping, but in their case the strong growths should be kept tied out, which tends to throw more vigour into the weaker ones. Regularly attend to the training of all twining plants, such as Kennedyas and Gompholobiums, so that their shoots are not allowed to become entangled; if neglected for a few weeks at this season extra labour is entailed, as well as injury to the growth. Young plants of Daphne indica that have been in a little heat for the last six or eight weeks, and that are in strong condition, should now have the points of the young growth pinched out; the after breaks will furnish them better than if allowed to go on without stopping. The different varieties of Statice should also be similarly treated as to warmth, by which means they will make as much progress in one season as they would in two with ordinary greenhouse temperature. Give them the lightest position the house or pit they are in will afford, with a thin shade when the sun is powerful. These, especially the more erect habited kinds, like S. Holfordii, must have their shoots attentively regulated, or from their upright tendency they soon become unsightly. The wood, although of a stubborn nature, will bend, the principal difficulty being in preventing their splitting in the forks of the shoots, to stop which they should be braced together with strong bast. Use the syringe freely to these, as they are subject to thrips, aphides, and spider.

SOFT-WOODED GREENHOUSE PLANTS.—Kalosanthes, for conservatory and greenhouse decoration.—There are few more effective plants than these for flowering in small or moderate sized examples, lasting, as they do, for a considerable time, and coming in at a season when the majority of spring blooming subjects are over. If grown in numbers as they deserve to be, they give variety to the sameness which too great quantities of Fuchsias and Zonal Pelargoniums present. They strike readily in any part of the growing season. There is no better time than the present, if strong shoots that have not formed flowers are now taken off about 6 inches in length, and inserted singly in 3-inch pots, or if the object is to bloom them next year it will be well to put half-a-dozen in 6-inch pots. When well rooted give them a shift, and stand out-of-doors in the full sun. During the summer the growth will get ripened so as to ensure their flowering. Tropæolums of the Tricolorum section should have their shoots kept trained so as to furnish the bottom of the trellis, or whatever support is given them. Seeds of these useful plants should now be sown in heat; they will make nice blooming stock in two years. They may also be propagated from cuttings. Large plants of Calla æthiopica may now be divided and planted out in light rich soil; they should be where their requirements for water are not likely to be overlooked, for, upon being duly supplied with this depends much of their ability to acquire strength,

which will enable them to bloom well the coming winter and spring. For general purposes they are much more effective grown in single crowns and used in numbers, than a few large specimens. Planted out during the summer, lifted and potted in autumn, their growth is much more compact than when confined altogether to pots. Chrysanthemums should now shortly be moved to their flowering pots, stopping the shoots as required to produce numbers, more or less, according to the shape they are to be grown in; one-fifth of manure will not be too much, added to good loam and a moderate amount of sand. Pot firm, and see that they are clear from aphides, as a preventive to which, syringe freely as soon as they have got fairly into growth. *T. Baines.*

Orchids.—Whilst the Odontoglossum-house is now gay with many fine and choice varieties, more especially those of the Alexandræ, Pescatorei and triumphans type, it will also be advisable to have a look forward to those of a different stamp that flower later on in the season. Where a number of plants of Alexandræ are grown, so free and accommodating is it that all the year round there will scarcely be a week pass but what some spikes of this will either be in flower or getting well advanced in bud; this, however, cannot be said of many of the others, and therefore when the growing season of each one commences, it must be treated with care, so that in due time the desired spikes of flowers may be produced. Where a fine variety of O. bictonense has been obtained, it is well worth growing; its tall, upright spikes, and the rich colour of the flowers, form a raceme of very attractive appearance; there are, however, many varieties of this that are so deficient in colour, and the flowers of such small dimensions, as to be really worthless. Plants of O. grande will now be breaking; it will be needful with this and O. insleayi, and the leopardinum variety of this latter, to see that, as the breaks push up and the leaves expand, no water lodges in the heart of the breaks, for though when growing they must have a good supply of water, the soil being very open and loose, it should run quickly away from them, otherwise the stout fleshy roots are very liable to turn black and rot, and when the roots of these are once checked, whether by rotting or by being bruised in any way, they do not start rooting again so readily and freely as many of the smaller rooting species. O. hastilabium is a stately and beautiful one for summer and early autumn. This does not however always do quite satisfactorily with the same treatment as is given to the majority, and if it is placed in the cool end of the Cattleya-house the few extra degrees of heat will help it to form finer bulbs and stouter leaves. The small-growing O. Rossii majus is one that, on account of its long lasting quality, should be obtained, for, flowering as it usually does during the winter months, the blooms will remain in freshness and purity for a period of from eight to ten weeks. This can be grown very nicely in small baskets and hung up on the roof, but when such choice sorts are suspended in such a position it will be more incumbent upon those who have charge of them to see that they are not overlooked in the matter of water and cleaning. The young breaks of this, and, in fact, of many of the others, are liable to be attacked with slow-fly; this increases so rapidly as to cause the tender leaves so much that as soon as any should happen to be seen, the breaks must be carefully sponged, and in doing so hold the plants on their sides, then as the fly gets disturbed they will fall to the ground. Precaution is not taken they will speedily run down the shoots and hide away among the roots and bulbs, and the plants in a day or two will be as bad as ever. At best they will need to be gone over once or twice again, but with a little perseverance they will soon be got rid of. Should any yellow thrips make their appearance in the hearts of any of the plants, puff a little tobacco dust in the centre of the young growth; this they cannot stand, and it will soon clear them away. In a few days, however, when the leaves have come up a bit higher, go over them carefully and sponge the dust clean off. *W. Swan, Fallowfield.*

FRUIT HOUSES.

Vines. — The long-wished-for change from dark gloomy weather to brilliant sunshine has already brought about a great improvement in forcing-houses. Vines especially have made rapid progress, and where the early closing principle has been followed up, firing will have been considerably reduced, notwithstanding the low night temperature which still prevails. After so much hard firing red-spider must be closely watched, and if the inside borders have not been copiously watered it will soon become troublesome, as the syringe in the most skilful hands cannot be used amongst ripe Grapes. Early Grapes now ripe or approaching that stage will require just sufficient artificial heat to keep up a circulation of dry, warm air, and to prevent the temperature from falling below 58° at night. Gradually reduce moisture, but do not discontinue the damping of walls and floors on fine days, and ply the syringe freely to the foliage as the crop is cleared. In old houses the small spinning-spiders are often very troublesome amongst ripe Grapes, and must be prevented from getting on to the bunches, otherwise they will soon disfigure the delicate bloom. Lady Downe's, Kempsey Alicante, and other shy-setting late-keeping kinds should be treated as Muscats until the fruit is set, when the usual routine may be followed. We should hear less frequently of Lady Downe's shrinking after removal from the Vines if they were encouraged forward with a little heat early in the spring. Muscats have set well in a temperature of 90°, also in a cool Hamburgh-house, where root-action was quickened by a bottom-heat of 60°. The Hamburghs may be thinned as soon as they are out of bloom, but Muscats should stand over for a few days to allow the perfectly fertilised berries to take the lead.

Pot Vines which are intended for fruiting next year should now receive the final shift into 12 or 14-inch pots. Use good turfy loam and crushed bones somewhat dry, and let it be warmed before it is placed in contact with the young roots. Shade from bright sunshine, and give but little water until fresh root-action sets in, when short-jointed wood must be secured by full exposure to light near the glass, plenty of air in the fore part of the day, and early closing with sun-heat, a moisture charged with ammonia from fresh horse-dung. *W. Coleman, Enstnor.*

Peaches and Nectarines.—During the period which immediately precedes that of the ripening of development in the fruit of these trees, every precaution should be taken in the way of freeing the foliage, &c., as far as possible of insect pests, because the degree of excellence attainable in the fruit in the main materially depends on the healthful state of the foliage at this time. The most formidable enemy to contend with now will be that almost inextricable foe, the red-spider. If this pest does in the least degree abound now, it should be dislodged before the time arrives when syringing must necessarily be somewhat abated. It often happens that even with a well-directed course of syringing it is regularly observed that this pest, which in general infests the wider and more tender side of the leaves, will, from the effects of syringing, migrate to the upper side, and hereabouts will increase rapidly, and spread unnoticed until severe havoc is made. This is more especially the case in houses where the trellis is near the glass, and the direct action of the syringe is inoperative. If movable lights exist these should be lifted, and a forcible drenching be given from an engine, otherwise the water should be plied rapidly against the trellis from inside the house. This, however, is not so effective. In these fruits colour is at all times considered a desideratum, and in many instances it can be had much more profusely by giving a little timely attention to such fruits as are placed on a wall, under favour, which as the fruit increases in size is naturally inclined by its weigh. to an unfavourable position for the purpose. Those fruits which are so situated, and will admit of being raised "carefully," should be elevated by placing them across the trellis and underneath them a thin pliable piece of lath so that sunshine and air can operate fully and freely about them. As the colouring process is proceeding take advantage of favourable conditions to freely ventilate, and at this time a somewhat drier atmospheric state will be beneficial. Maintain the temperature at night at about 65°, allowing it to open the house at 10 or 70°, and if it can be done diminish the supply of air throughout the day according to existing circumstances, and if these permit leave a chink of air on constantly. Proceed with the thinning of the fruit in late houses and keep all exuberant growths checked; as the lateral should advance strongly above the first fruit; keep the mulching materials constantly moist, and the border containing the roots in the same condition. Liberally ventilate whenever favourable, and avoid keeping the houses intensely close. *G. T. Miles, Wycombe Abbey.*

Melons.—The early Melons are now swelling to a large size, and that excellent variety, Victory of Bath, is the first to show signs of setting. If not already done, the supports should be placed under them at once, as they never swell so finely when their weight is supported entirely by the vines. Small pieces of deal board 6 inches square, suspended by four wires in a sloping position to prevent lodgment of water, best answer the purpose. The extra firing occasioned by the cold, sunless weather having been favourable to the spread of red-spider in houses where a portion of the heat is not obtained by fermenting materials, the cultivator must be constantly on the watch, with the usual remedies for its extermination, as good Melons cannot be expected if the foliage ripens before the fruit. In good hands, Read's patent syringe, with plenty of clean water, will prevent the enemy from making headway. Successions are now setting a profusion of clean healthy fruit, and will require similar treatment to that recommended for the early crops. If the plants are growing in pots they may receive a moderate supply of water as soon as the fruit begins to swell: but if planted out on hills watering should be deferred until they have attained to about the size of Walnuts, when the close stopping and thinning of the laterals may be once more resumed.

Melons in frames must have abundance of light and full exposure to sunshine. Ventilate with caution until we have a change to milder weather: close about half-past two with moisture over the foliage when the fruit begins to swell. Keep up the linings, as Melons worth eating cannot be grown without heat, and use good dry mats for covering at night. Take advantage of a mild day for the final earthing; use stiff, turfy loam thoroughly warmed and ram firmly. Watch for canker at the base of the stem, and apply a mixture of quicklime and sulphur. *W. Coleman, Eastnor.*

KITCHEN GARDEN.

The cold, sunless, and inclement weather of the last few weeks appears to have had a very retarding effect upon vegetation generally, but more particularly upon the young advancing plants of spring-sown crops, which are stagnated to an unusual extent, and not able to grow away out of the reach of ground-vermin. I have not for some years seen the earth so full of worms and slugs, and unless a relentless war is proclaimed against them we must not look for very great success with the tender young crops; since the want of a warmer and more genial atmosphere to stimulate growth more especially exposes them to their ravages. Hence there has seldom occurred a season in which the liberal application of quicklime to all plots of ground in process of preparation for future cropping, is more likely to be beneficial. Surface applications of the same must also be preserved in amongst all growing crops, to which also constant attention must be paid in regard to surface stirring in all departments, which is not only very beneficial to the growth of the crops, by opening the soil to atmospheric influence, but disturbs and assists in the destruction of vermin.

If the early-sown main crops of Parsnips, Carrots, Onions, &c., appear likely to be deficient in quantity, no time should be lost in getting in a compensating later crop. Successional sowings of Peas in trenches with manure, for which such sorts as Ne Plus Ultra, Knight's Tall Marrow, and Culverwell's Prolific Marrow are well suited, should be got in. As this may be called a main sowing, and will come in at a time when there will be a great demand, about double the usual quantity should be sown; and if the system of cropping will admit of very wide spaces between the rows there is no doubt but the same description of produce, particularly if, as they advance in growth, they are kept well watered in dry weather. Another good sowing of Broad Windsor or Early Longpod Beans should be got in; here also the quantity should be increased, as they are getting too late to sow with advantage. Constant attention must be paid to successional sowings of Lettuces and other salad requisites. Advancing crops also will require attention in thinning-out and transplanting, and liberal supplies of water will be necessary to keep them in a growing and succulent state. Ridge Cucumbers and Vegetable Marrows sown in the frame some time back will now be ready to transplant on the ridges, which should be prepared at once, and the plants should be shaded at first, and have the protection of handlights until they are well established, by which means safe to plant out Tomatos against the open walls, for which purpose they should now be under a process of hardening off. Chilies and Capsicums too, will come under the same rule where the supply depends upon open-air culture, but they are much more profitably cultivated under glass. Basil and Sweet Basil should now be hardening off for planting under a south wall. The pricking out of the various seedlings of the Brassica tribe must be followed up as fast as they become large enough; this is preferable to having them so crowded in the seed-bed as to become drawn. The hoe or tormentor should now be at work in dry weather amongst the main crops of Potatos, not only for the prevention of weeds, but also for opening up the soil to the influence of the sun and wind.

The planting out of new beds of Asparagus is by many practical gardeners deferred to this season of the year, when the plants have made a good start; and the practice is a good one, as when the operation is carefully performed the beds will be well furnished throughout, as the plants will grow off at once in a well-prepared soil, and soon become better established than those beds where the roots have been lying in the cold earth for a couple of months. The preparation of the beds will consist of deeply trenching the soil, and incorporating therewith a liberal supply of rich manure; during the dry weather in spring the beds should be frequently forked over or otherwise broken up and pulverised. A moist day should be selected for planting, an operation which should be carried out as quickly as possible when once the plants are lifted, as the roots are very impatient of exposure to drying winds and sun. After planting the beds should be liberally covered over with some rich, well-decayed manure and should receive a slight sprinkling of salt. *John Cox, Redleaf.*

THE
Gardeners' Chronicle.
SATURDAY, MAY 12, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, May 14.—Sale of Imported Orchids at Stevens' Rooms.
Sale of Specimen Stove and Greenhouse Plants at Stevens' Rooms.
TUESDAY, May 15.—Royal Horticultural Society: Meeting of the Fruit and Floral Committees at 11, and Scientific Committee at 1 P.M.
Royal Botanic Society: Summer Exhibition
WEDNESDAY, May 16.—Sale of a Collection of Orchids at Stevens' Rooms.
FRIDAY, May 18.—Royal Manchester Botanical and Horticultural Society's Grand Whitsuntide Exhibition (seven days).

THE town of Hull was one of the first to establish a public garden for the instruction and recreation of its inhabitants, and the HULL BOTANIC GARDEN has long enjoyed a well-earned reputation, to which the labours of its present Curator, Mr. J. C. NIVEN, during many years, has not a little contributed. The old garden has, however, from another point of view, been gradually failing in the fulfilment of its mission, and has, indeed, almost entirely ceased to answer the purposes for which it was established, being almost crowded out by bricks and mortar. From the rapid growth of the town it has become surrounded by houses and submerged in a smoky atmosphere, whilst its position, so long as it occupies its present limited site of six acres or thereabouts, cuts off all hope of its being enlarged, and thus in some measure increasing, or at least regaining, its former usefulness. The time has therefore come, and this has been well urged in the comments of the local press, when the town must either be deprived of a public garden altogether, or else must set about providing a new one better adapted to its present requirements. The proprietors of the present garden have, it appears, determined to wind up the present Company; and the scheme for acquiring a more open and favourable site has been so far advanced that plans have been prepared and negotiations entered upon for the purchase of the ground.

The site selected for the new garden is the best to be found in the neighbourhood. It forms a triangle whose base is the line of the Cemetery, the dense plantations of which will afford ample shelter from the northerly blasts; the other two sides being bounded by the Beverley Railway line on the one hand, and the Hornsea and Withernsea line on the other. Within these limits is contained an area of 56 acres, which, with the exception of a small portion to be sold for villa sites, it is intended to devote to the purposes of the new garden, so that, including the cemetery and the railway lines, there is a space of more than 100 acres open for ever; and should the site, as possibly it may, at some future day become encircled by a widely extending town, it will be invaluable as a gigantic lung, and thus contribute largely to the health and well-being of the inhabitants.

The plan proposed to be adopted, and which we have reproduced at fig. 96, p. 599, has been prepared by Mr. NIVEN, who has evidently grasped his father's mantle, and proved himself a worthy son of the venerable landscape gardener of Dublin, Mr. NINIAN NIVEN. The plan indicates a breadth of conception which is highly creditable to him as a landscape artist. It is thus described by the *Eastern Morning News*:—

"A noble structure of glass, 400 feet long, will form the important feature of the place, and this, raised upon an ample terrace and flanked with smaller houses running north and south, will enclose a quadrangle of nearly 2 acres in extent, which will shut out from the public view all the arrangements for the necessary manipulating processes. A vision of Palms with their graceful foliage, Tree Ferns and glorious Water Lilies—azure, crimson, and white—rises before us as we contemplate the proposed design for this noble structure; and fondly do we hope, and, indeed, we have every faith, that a vision so agreeable will not prove visionary. Fronting this small crystal palace will be an extensive flower garden, arranged in sunken panels, where Flora will doubtless hold an undivided sway. An extensive lawn, nearly the size of the present garden, with an orchestra and refreshment saloon combined, whereon 20,000 or 30,000 people may find ample promenading space, will form a central feature in the garden, and towards the apex of the triangle it is proposed to have a large sheet of water, surrounded by Rhododendrons and spanned by rustic bridges, of sufficient capacity, we apprehend, for boating purposes during the summer, and qualified to form in winter a natural skating rink. Doubtless with the large extent of land available portions will be set apart for archery clubs, lawn tennis, croquet, and various other outdoor games, amongst which a good bowling-green would be a source of amusement, and would soon popularise a game at present little known in the East Riding. Alike, too, as a novelty would be a maze or labyrinth, to which, as shown on the plan, the north-west triangular corner may be devoted, where the seclusion of FAIR ROSAMOND'S bower and the stories of the silken thread may at some future time be realised."

But, besides these provisions for mere amusement and healthful recreation, a goodly extent of ground is to be devoted to botanical purposes. A large collection of hardy plants, arranged in their natural orders, is intended to be introduced, which will afford the student ample and varied illustrations ready to his hand; groups of interesting trees and shrubs will be interspersed through the plantations, adding to the natural beauty of the place a botanical interest as well. It is further proposed to erect a building on the north side of the crystal quadrangle, which will answer the combined purposes of a council-room, lecture-hall, museum, and botanical library.

Most heartily do we wish success to a scheme which will tend to improve and elevate the town, as well as contribute to the healthy recreation of the inhabitants. A horticultural establishment, such as the proposed garden will be, has a very strong claim on the support of not only the inhabitants of the town, but of the entire East Riding of Yorkshire, whose large landed proprietors should willingly lend a helping hand should it be required.

The scheme for the establishment of a new garden was laid before the proprietors of the present garden at their annual meeting on the 2d inst., this being preliminary to a town's meeting being called. The difficulty, which at one time threatened to be a serious one, of getting all the proprietors to acquiesce in the sale of the present garden, has been surmounted, and the large majority of the proprietors have, as we have already mentioned, decided to wind up the present concern, with the object of facilitating the bringing out of the new scheme, which appears to have every prospect of being carried out, as about £6000 capital has been already promised, and there are numerous applications for the building sites.

We gather from the *Hull News*, that the capital of the new company is proposed to be £30,000 in 3000 £10 shares, but seeing that a large revenue will be derived from the sale of that portion of the land devoted to building sites, when such a sale is completed the capital required will not exceed £15,000. These sites, however, will not acquire their full value until the garden has become some little time established. A prospectus of the new corporation will shortly be issued.

—— ABOUT the end of February last we received from Mr. W. J. CROSS, gardener to Lady ASHBURTON, Melchet Court, Romsey, a photograph of a fine example of the showy and useful CŒLOGYNE CRISTATA. The specimen (fig. 95) bore some seventy-five spikes, or about 350 flowers, and measured about 5 feet over. Some ten or twelve years ago the plant was growing in a 6-inch pot, and that it should now occupy one 30 inches in diameter speaks well in Mr. CROSS' favour as a grower. The rustic pot it is seen growing in is mentioned by Mr. CROSS as being externally a good imitation of Elm bark. It was made by Mr. JOHN MATTHEWS.

—— The son of one of our most respected nurserymen has again distinguished himself at the University of London. Mr. JOHN NEVILLE KEYNES, of Pembroke College, Cambridge, has at the M.A. examination secured the medal for Moral Philosophy.

—— On the 2d inst. several of the leading nurserymen and florists of Edinburgh took advantage of the annual visit to Scotland made by Mr. JOHN KEYNES, of Salisbury, to invite the veteran florist to a complimentary supper at the Albert Hotel. The chair was taken by Mr. JOHN DOWNIE, and Mr. DAVID SYME acted as croupier. The Chairman, in proposing the health of Mr. KEYNES, alluded to his long and successful career as an exhibitor, and to the high esteem in which he is held amongst florists, whilst the fact of his being at the present time Mayor of Salisbury proved conclusively that his fellow townsmen were not unmindful of his high character, and of the long services which he has rendered to the town in its municipal government. Mr. DOWNIE concluded by expressing a hope that Mr. KEYNES would be long spared to come among them. Mr. KEYNES replied in suitable terms, and said that he deeply felt the gratifying honour his brother florists had paid to him.

—— We have received for publication the following copy of a letter received by the President of the Royal Horticultural Society from Sir T. M. BIDDULPH, relative to the QUEEN'S VISIT TO THE GARDENS on the 2d inst.:—

"Buckingham Palace, May 2, 1877.

"Dear Lord ABERDARE,—I have been desired by the QUEEN to express to you and to the Council of the Horticultural Society, how much HER MAJESTY admired the magnificent exhibition of flowers and fruit displayed in the gardens to-day, when HER MAJESTY visited them with Princess BEATRICE and the Duchess of EDINBURGH.

"The QUEEN also was much satisfied with the arrangements made for her reception.—I am truly yours,

"T. M. BIDDULPH.

"The Lord ABERDARE, &c."

—— At a special meeting of the Scilly Islands Agricultural Society, held on May 1, at St. Mary's, several prizes were awarded for the best fifty heads of ASPARAGUS. The 1st prize was awarded to Mr. BAMFIELD, of Holy Vale, St. Mary's, whose fifty heads measured 8 inches in length, and weighed 5 lb. 12 oz. Four lots were shown, the united weight of the 200 heads being 22 lb. 8 oz. One of the heads measured $3\frac{3}{8}$ inches round and weighed $3\frac{1}{2}$ oz. Prizes were also awarded for Asparagus at the meeting of the Society held in March. The Asparagus season began in the Scilly Isles in February, when the first cutting from the open air was made. It is now drawing to a close.

—— Mr. THOMAS SHINGLES, lately of Bicton, has been appointed to succeed the late Mr. CRAMB in the management of the gardens at Tortworth Court, Gloucestershire.

—— We observe that the Rev. M. J. BERKELEY, M.A., and Dr. MAXWELL MASTERS, F.R.S., have been re-elected Examiners in Botany and Vegetable Physiology to the University of London.

—— In the Royal Nurseries, Ascot, Messrs. JOHN STANDISH & Co. have a house containing four plants of STEPHANOTIS FLORIBUNDA, on which there are now over 1100 trusses of flowers, some of which have from twenty to thirty flowers in a truss. Such a sight is not often seen, and we are sure Messrs. STANDISH & Co. will be pleased to show it to any one who may care to pay a visit to the nurseries.

—— In all probability a magnificent display of ODONTOGLOSSUM VEXILLARIUM will be on view at Mr. BULL'S nursery next week. No less than about 150 plants will then be in bloom, and the number of flowers on the spikes varies from three to seven. In the matter of colour, too, there are great variations.

—— Mr. JOHN KIRK has been appointed gardener to Lord BOLTON, Bolton Hall, Yorkshire.

—— We have recently had an opportunity of seeing the new ROSE QUEEN OF BEDDERS, which Mr. NOBLE has advertised by means of a coloured plate in our

last number. Judging from the sturdy nature of the stock and the abundant blossoms it is now throwing up it may be considered as likely to prove a good bedder, the flowers now produced as well as those borne late in the season are, as we learn from Mr. NOBLE, of the brilliant crimson tint shown in the plate, which is from a drawing by MRS. DUFFIELD, but in the height of summer the colour takes on more of the purple or rosy hue. For the purpose indicated, namely, flowering in beds, it is no doubt well adapted.

—— The following Orchids are flowering at the present time in Mr. H. G. ELLIOTT's choice collection at Hackney:—Cymbidium eburneum, Phalænopsis amabilis, grandiflora, Lüddemanniana, rosea, Schilleriana, and Mannii, with thirty flowers; Cypripedium barbatum, barbatum biflorum, niveum, and dium caudatum, with twelve flowers, while Saccolabium guttatum, Cattleya Mendelli, and Odontoglossum vexillarium were also conspicuous in this excellent collection. A silver medal was most deservedly awarded.

—— We learn from Messrs. WILLIAM PAUL & SON, Waltham Cross, that their collection of Roses in pots under glass, numbering some hundreds of plants, is now coming into bloom, and promises a fine display of flowers. The proprietors will have much pleasure in showing the plants to any one who may favour the nurseries with a visit.

—— French papers record the death, in his 56th year, and on April 14, of M. AUGUSTE RIVIÈRE, the Superintendent of the Luxembourg Gardens in Paris. The gardens under his charge, and specially asmuch as almost the whole of the prizes are offered by members of the seed trade or friends of Potato culture, and the Royal Aquarium Company. Out of a total of fifty-seven prizes not less than fifty are thus provided for, leaving only the small sum of about nine guineas to be found by the committee. In this respect the support received from the trade has been most encouraging, and shows how cheerfully that support will be given if the object be meritorious, and the promoters worthy of confidence. It is worthy of remark that, out of the large number of trade donors, only two insist upon the condition to close their donations against fellow-members of the trade; and so strong is the objection felt against these conditions, that the committee, strong in the liberal support they have so far received, have resolved to have none but open classes next year. The comparatively small amount of the prizes to be



FIG. 95.—COELOGYNE CRISTATA.

concolor; Lælia cinnabarina, Aerides Warneri, Saccolabium curvifolium; Dendrobium Barberianum (a fine variety), crystallinum, Devonianum, nobile, thyrsiflorum; Cattleya Mossiæ, Odontoglossum vexillarium (several nice spikes), Roezlii, Alexandræ, membranaceum, gloriosum, Pescatorei, triumphans, sceptrum, niveum majus, and Andersonianum, the latter being the finest variety Professor REICHENBACH says he has seen; Masdevallia Harryana, Veitchii, ignea, Peristeria, and Benedicti; Oncidium nubigenum, Krameri, and Papilio; and Sophronites grandiflora.

—— At the late exhibition at South Kensington a group of some forty or fifty fine specimens of Orchids was exhibited by J. G. HEPBURN, Esq., Sidcup Place, Kent (Mr. LOVELAND, gr.), and which we omitted to notice in our last issue. Mr. HEPBURN has but recently entered the horticultural arena, but what plants he has shown hitherto have been in splendid condition, and we believe a brilliant career as an exhibitor is before him. Among the plants staged we noticed a fine specimen of Cypripe- the collections of Orchids and Bromeliads, were particularly noteworthy. M. RIVIÈRE was a man of marked intelligence—one who felt that a plant was a thing to be studied, and not merely grown. In consequence horticultural literature, and the meetings of horticultural societies were enriched by frequent pertinent observations from him. In a letter received from him but a few weeks since, he entered into some detail as to the plan of a memoir that he was drawing up on the Bamboos cultivated in France, and especially those in Algeria.

—— The show of bloom of that almost unrivalled Orchid, LÆLIA MAJALIS, promises to be finer with Messrs. JAMES BACKHOUSE & SON this season than they have ever known. One plant has two blooms from one stalk.

—— The schedule of prizes of the International POTATO EXHIBITION to be held at the ROYAL AQUARIUM, Westminster, in October next, now being issued, is somewhat unique in its character, in- provided by the committee, however, does not render a liberal subscription list any the less necessary, as the expenses incidental to the exhibition are large, and for the past two years have left a considerable deficit that has been provided for by a few members of that body. Only considerations of expense have prevented the carrying out of the proposal to have a good vegetable competition also with the Potatos; and if the prizes and other necessary funds are forthcoming, the committee will be only too pleased to add such competition to their present specific work.

—— The *Florist* has a coloured plate representing the PREMIER PEACH, a fine variety raised a few years since in the Royal Gardens, Frogmore, as the result of a cross between the Grosse Mignonne and Belle-garde. The fruit is large, round, and of even outline, with a slight suture extending generally to the apex; the skin is purplish red, becoming very dark when fully exposed to the sun, and often having spots and blotches of dark red on the shady side and near the base. The flesh is tender, juicy, and melt-

ing, with a delicious flavour, and the flesh parts freely from the stone. It is not subject to mildew, and is generally free from the other ills to which Peach trees are subject.

—— The WHEAT RUST appears to have found its way to California. In a paper read before the San Francisco Microscopical Society (April 5, 1877), Dr. H. W. HARKNESS alluded to the great injury occasioned to the Wheat crop by Erysiphe graminis, D.C. He says:—"The pest, which appears for the first time this spring, termed by the farmers 'white rust,' or 'mildew,' is one which may well excite the fears of the agriculturist. It has already invaded the more mature fields within the limits of four or more of our heaviest grain-producing counties, where at least a half million acres of Wheat are in great peril, some of it already destroyed."

—— We are pleased to hear that the annual Whitsuntide exhibition of the ROYAL MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY, which opens on Friday next, promises to be a good one—probably the finest of the series which has been held.

—— Lovers of NOBLE TREES, and especially of those which have artistic associations, observes the *Athenæum*, will regret to learn that one of the magnificent Elms in front of the Manor House at Chiswick, a tree which POPE and HOGARTH must have known quite well, and which the latter drew in the etching styled "Mr. RANBY's House at Chiswick," was blown down in a late gale. Mr. RANBY was Serjeant-Surgeon to the King; he attended Sir R. WALPOLE in his last illness, and is said to have sat to HOGARTH for the hero of "A Rake's Progress," probably in the marriage-scene. He was much in the confidence of GEORGE II., and attended at the battle of Dettingen; he is often mentioned in memoirs of the time, and was buried in Chelsea Hospital, near CHESELDEN.

—— The *Revue de l'Horticulture Belge* for the present month contains a coloured plate of ABUTILON DARWINII TESSELATUM, a variety with yellow mottled leaves, and red flowers. It is stated that this variety was obtained as a graft hybrid between A. Darwinii and A. Thompsoni, the former having been grafted on the latter.

—— The Swiss Government has made a proposal to the Vine growing countries of Europe to establish an International Congress to devise means of defence and mutual security against the ravages of the PHYLLOXERA.

—— The opening lecture of the BOTANICAL CLASS in the UNIVERSITY OF EDINBURGH was delivered on the 1st inst. by Professor BALFOUR, for the thirty-second time, at the Royal Botanic Garden. Notwithstanding the early hour (8 A.M.) and the frosty morning (27° Fahr.), there was a large attendance, many being scarcely able to find standing room. The lecture hall, which is only seated for about 250, ought to be greatly extended. The enrolled students in 1874 numbered 354; in 1875, 343; and in 1876, 343. The walls of the hall were covered with large water-colour drawings illustrating different forms of vegetation, from the microscopic moving spore, to the giant productions of tropical countries. On the tables were arranged numerous living plants in pots, including many of medicinal and economic value. Amongst them were Winter's Bark, Chocolate, Tea, Coffee, Sugar-cane, Breadfruit, Cow-tree, Banana, Date, Ipecacuan, Pepper, Cochineal-Cactus, Lignum-vitæ, Cassava, Oil Palm, Gum Arabic, Balsam of Peru, Quassia, Socotra Aloe, Camphor, Rice-paper, New Zealand Flax, Indiarubber, Gutta-percha, Blue Gum, Allspice, Sarsaparilla, and a large plant of Coca (Erythroxylon Coca) in fine foliage and flower. There were also on the table flowering plants of Darlingtonia californica, Sarracenia flava, S. purpurea, Bowiæa volubilis, and Rhododendron Edgeworthii, the flowers of which filled the room with a delightful perfume.

—— The last number of the *Bulletin d'Arboriculture* contains a coloured plate of a PEAR called Monchallard, a suitable variety for market purposes, bearing well, and capable of transport without injury. The tree is of vigorous habit, the fruit of medium size, turbinate, the peduncle is long, inserted vertically in a shallow basin. The skin is thin, yellow, dotted with greyish green spots, and slightly flesh-coloured on the sunny side. The flesh is delicate white, melting, sugary, with a slight acid and aromatic flavour. The fruit is ripe in August and September. The Pear is of French origin.

—— MESSRS. GEORGE JACKMAN & SON'S EXHIBITION OF CLEMATIS, which opened on the 2d of this month, is held as usual in the long corridor in the Botanic Gardens, Regent's Park, and comprises a collection of about 250 plants, which are well worthy of inspection, though the collection as a whole is scarcely so advanced in flower as usual, owing to the sunless spring. Among the newer flowers the most noticeable are Mrs. Hope, a handsome, vigorous plant of the lanuginosa type, satiny-mauve in colour, with a slightly darker bar; Maiden's Blush, a large-flowered variety of the patens type, of a delicate blush-white colour, the bar rosy lilac at the base, and of a creamy colour; Robert Hanbury, with bold, well-filled flowers of the lanuginosa group, in colour a bluish-lilac, flushed at the edge with a reddish purple, and having the bar tinted with the same; Duchess of Teck, also of the lanuginosa type, is a pure white six-sepalled flower; when freshly opened it has a faint mauve bar down the centre. Amongst older and better known kinds the following, amongst others, are in good form:—Aureliani, Fair Rosamond, the Queen, the Countess of Lovelace, Lady Caroline Nevill (probably the most striking plant in the collection), Lucie Lemoine, Vesta, and Sensation. The exhibition will be open for another week or two, and will be in better condition next week as a consequence of the improvement in the weather.

—— The annual dinner of the INSTITUTION OF SURVEYORS will take place after the annual general meeting, on Monday, May 28, at the Freemason's Tavern. Members and Associates who propose to be present are requested to intimate their intention to the Secretary.

—— A local paper reports that a CONCERT was recently given AT THE MELCHET PARISH SCHOOL-ROOMS, under the leadership of Mr. W. CROSS, of Melchet Court Gardens. In addition to being a first-class gardener Mr. CROSS is also an excellent musician, and finds time during the winter evenings, not only to cultivate the art of music for his own pleasure, but also conducts a class composed chiefly of his garden young men and servants and *employés* on the estate. In this direction, in an out-of-the-way and somewhat secluded locality, it is found possible to provide for both the head-gardener and his young men a source of recreation and enjoyment of the most elevating kind, from which, by reason of the distance large gardens are generally removed from populous centres, gardeners are too often debarred. All head-gardeners are not musicians, and unfortunately too few cultivate any kind of literary accomplishment; they are, therefore, thrown upon very meagre resources for finding suitable pastime and recreation. It is well to enforce study upon young gardeners to a certain extent, but this is of little use unless their immediate superior is capable of giving them some practical instruction and assistance; but combined exertion to acquire theoretical knowledge on the part of head and assistants would result in a considerable amount of good. One or two evenings per week devoted to literary labours of a studious kind, and an equal portion of time devoted to the acquirement of some useful accomplishment, such as music, drawing, reading aloud, &c., would tend to make the often solitary life of gardeners much more pleasant and endurable than is the case now.

—— According to a statement made to the French Senate, and reported in the *Journal Officiel de la République Française*, the area of VINEYARDS AFFECTED BY PHYLLOXERA now amounts to 200,000 hectares, the total area under Vine culture being calculated at 2,300,000 hectares (a hectare = rather less than 2½ acres). The average value of each hectare of Vines is 6560 francs, though in some cases it is as high as 15,000 francs. The average annual value of the crop throughout France is 1,508,000,000 francs. From these and other statistics which we cannot find room for, it is estimated that if the Vines were totally destroyed there would be a loss of 12 milliards of francs in capital, and of annual revenue of 1 milliard 300 millions of francs. In many cases the Vines are grown by small proprietors, cultivating with their own hands one or two hectares; and the loss of their Vines will, of course, prove to them extremely disastrous. From another source we learn that the produce, which in 1865 amounted to 68,943,000 hectolitres (one hectolitre = about twenty-two gallons), and in 1869 to more than 71,375,000 hectolitres, fell to 35,769,000 hectolitres in 1873. These facts are still more clearly brought out when we estimate the amount of produce in certain departments only. Thus in the departments of the south and south-west the produce in 1869 was 36,162,418 hectolitres, whereas in 1876 in the same departments the produce was only 14,122,101 hectolitres. One consoling fact is that the Phylloxera seems to lose its vitality in proportion as it extends northwards to the centre of France. It seems to propagate itself more rapidly in those vineyards exposed to the south than in those with a north or north-east aspect. Some parts of Burgundy and of the Champagne district are at present quite unaffected. The methods of cure proposed may be grouped under four heads:—1st, the destruction of the infected Vines; 2d, submersion; 3d, the application of insecticides; 4th, the introduction of American Vines. As to the first proposal, it may be remarked that it is only in the second year of their presence on the roots of the Vine that their effects become visible, and hence it is necessary to uproot all the Vines, and not merely those which present visible signs of the attack of the insect. This stamping-out process must be accompanied by a disinfection of the soil of the vineyard and of the adjacent district by means of petroleum, the use of sulpho-carbonate of potash, and other means. Submersion of the Vines for a period of from fifty to sixty days has been very effectual, but unfortunately it is a proceeding which, in most cases, owing to the situation of the ground or the nature of the soil, is quite impracticable. So far as concerns insecticides, sulphide of carbon, sulpho-carbonates, and the removal of the bark, are the only plans worthy of serious consideration. Sulphide of carbon appears to be the most valuable insecticide both as regards its efficiency and convenience of employment. Sulphide of carbon is used in the following manner:—A mixture is made of three-fourths of sulphide of carbon and one-eighth of oil of gas-tar. The dose to be employed per metre is ten grammes, and the liquid must penetrate the soil to the depth of from 30 to 40 centimetres, holes being made of that depth about 30 to 40 centimetres from the foot of each Vine. The operation requires to be effected in April or May, again in June, and again in September or October. The price of the sulphide of carbon is much less than that of the sulpho-carbonates. Of the use of American Vines as Stocks we may speak on another occasion.

LEYDEN.

So many associations cluster round Leyden that it requires a strong sense of the value of space in the *Gardeners' Chronicle* to avoid dilating on some of the botanical worthies, who by their deeds have made the renown of Leyden, especially that great and worthy master Boerhaave. His catalogue contains a history of the garden and a list of 6000 species. The garden it appears was founded so far back at 1577, and its first greenhouse dates from 1599. A very few words must suffice to indicate some of the more important contents of the Botanic Garden. Like most Continental establishments of a like nature, it is ill kept, and visitors from England will miss the neatness and good keeping they are accustomed to at home. This, however, is an affair primarily of money, then of climate and soil. After all, in a botanic garden one looks more at the contents of the garden, and of its suitability for teaching purposes, than at the neatness of its walks, or even the cultivation of the plants.

First, then, in speaking of the plants in the garden, let us pay homage to a tree planted by Linnæus. Only the trunk, or the stump of a trunk, now remains, the tree or shrub having been broken nearly to the ground level by the fall upon it of an heretical Gymnocladus, typifying perhaps the "natural system" which has superseded the artificial classification of Linnæus. Enough, however, remains of the original trunk to enable fresh shoots to be put forth yearly, and in the middle of April a growth of new shoots with fresh green leaves and newly-developed flowers testified to the life which exists in a tree even when it is cut down, and may serve to typify

the undying renown of the great Swede. The tree is Lonicera alpigena, and a spray of it was by the thoughtful kindness of the Professor reverently deposited within the pages of our *Foreign Bradshaw* for safe transmission to England. Next to this the most noteworthy tree is a noble Weeping Beech, the branches of which sweep gracefully downwards to the ground and resting on it for a short space curve again upwards. The area covered by the branches cannot be less than 135 feet in circumference, the trunk itself at 5 feet from the ground being of such a thickness that a man with outstretched arms can barely span it.

experience. Rather we suspect the form and dimensions given to the houses are the outcome of convention and routine, and will not be changed till the taste for horticulture becomes more general among the upper and middle classes than it now is. The walls of the stove-houses are studded with small oblong pieces of stone projecting from the wall, which serve to retain moisture and to afford foothold to the Aroids and other climbing plants. The collection of Aroids, by the way, is worthy of notice, though far from equal to that at Kew. The aërial root of one species (Monstera Selloi) is trained round and round the stove

summer to make room for the Victoria. Around the inner circumference of the building runs a tank divided into numerous compartments, and well adapted for the growth of a great variety of Nymphæas and other aquatics.

In the cool houses and conservatories the plants at this season are so crowded that it is difficult to see them, and it is clear that they have to undergo a pretty severe struggle for existence; whereas the care of the gardener under more propitious circumstances is so to place his plants as to prevent this injurious internecine conflict, but under the circumstances of

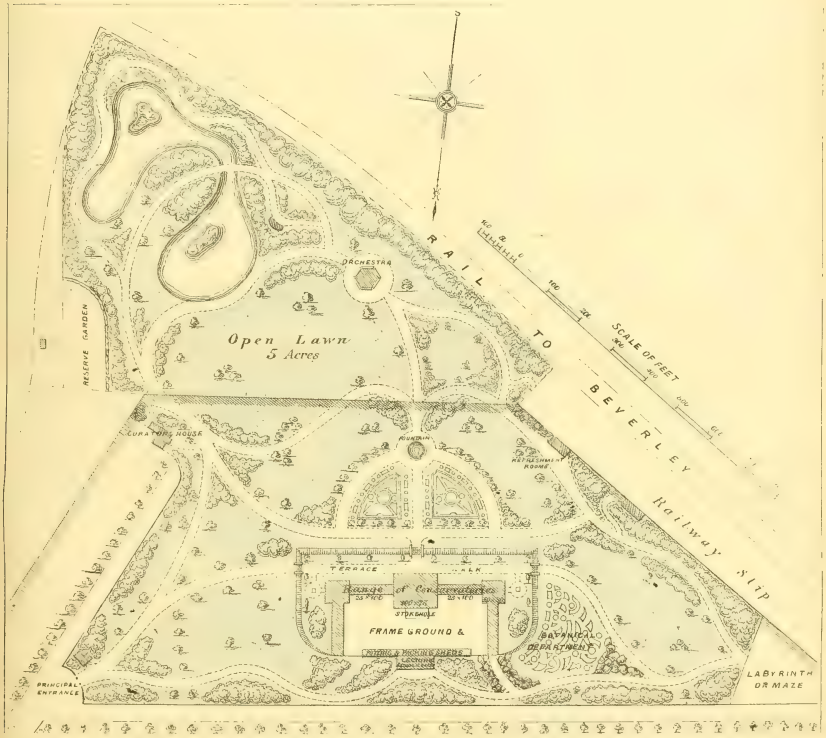


FIG. 96.—PLAN OF THE PROPOSED NEW BOTANIC GARDEN AT HULL.

Other noteworthy trees are fine specimens of Ginkgo biloba, Glyptostrobus pendulus, and Diospyros virginica. Beneath the shade of one of these trees the culture of a fungus, Peziza tuberosa, is effected. The fungus is introduced on the rhizomes of Anemone nemorosa; both thrive for a time, but after a year or so the Anemone dies, leaving the Peziza master of the situation—a barren victory, however, for, having destroyed its host, the guest speedily perishes also.

The glass-houses are numerous, lofty, narrow, and ill adapted for plant growing according to our notions, but suited it may be to a severer winter climate than ours, and to a greater fall of snow than we usually

under the roof rafters for a length of at least 45 metres. The other houses contain the usual assortment of botanic garden plants—Palms, Cycads, Tree Ferns, Pandanads, and the like, including many fine specimens, but none that we saw in our rapid inspection of any special importance in point of development or rarity. Ferns and Lycopodiums are well represented, and among the latter are good illustrations of Lycopodium nummulariifolium and L. Phlegmaria.

The Victoria-house is a circular structure of glass and iron, with a depressed and vaulted roof. The central tank is circular, and in the winter season is occupied by Pandanads and various tropical aquatic or semi-aquatic plants, which are dispossessed in

faulty construction and insufficient house-room the struggle must necessarily go on with severity.

The mode of labelling adopted here is worth notice: the name is written on a piece of paper, and this is inserted into a glass tube the thickness of one's thumb, sealed at one end and drawn out into a point at the other. The pointed end is thrust into the ground or pot. What the average duration of these labels is we could not ascertain, but the first impression is not favourable. It was very interesting to the writer to compare the state of the garden now with its condition as described in these columns in 1850 by the late Mr. Masters, of Canterbury, but as his visit was paid in autumn and mine in early spring when the

leaves were not out, and the house plants too tightly packed in their winter quarters to be well seen, the comparison was not very satisfactory. The Orchids, however, do not appear any better than they were described a quarter of a century ago. *The Rambler.*

Home Correspondence.

The Frosts.—The disastrous frosts of the past week amount nearly to a national calamity, but they will have the effect of stimulating fruit growers to the introduction of schemes for the better protection of fruit. Glasshouses are, of course, the most efficient protectors that can be devised, but they are not within the reach of all. I have, I think, found a method that is within the reach of most persons at a small expense. Having observed that tender plants in pots may be preserved during severe frost by laying them on the ground and covering them with mats or canvas, I potted several Pear trees into No. 2 pots last autumn; they have stood through the winter without protection, and were covered with stout and well-conditioned blossom. When the dour east wind gave notice that a heavy visitation of frost might be expected, the trees were placed in a position to occupy a small compass when laid down. On the evening of Wednesday a dozen trees of the finer sorts of Pears, each capable of bearing three or four dozen fruit, were simply laid down and covered with mats. I am happy to say that the trees have successfully passed through the heavy ordeals of the frost of Wednesday, Thursday, and Friday, the mats being removed during the day, the trees remaining recumbent. After the necessity for protection is passed, which we may fairly hope will arrive before Midsummer, the pots should be plunged in a border over the rim, and the surface of the soil covered with loose manure. Little water will be required, and if the sides of the pots are perforated to allow the emission of roots into the surrounding soil, the trees will be entirely self-supporting, and may remain in the same position until the next inclement spring returns. The plants when required will submit to the excision of the roots outside the pot without injury. A few dozen Pear trees will give a good supply of fine fruit, and with good cultivation will amply reward the cultivator. *T. Francis Rivers, Sawbridgeworth, in the "Times," May* 9.

The Fruit Prospects.—Since writing my notes of last week a week of severe frost has fallen on the fruit crops with crushing severity. Peaches, Nectarines, Apricots, where badly protected, are swept off. The frost ranged from 7° in high localities to 12° in lower. The air has been extremely harsh and dry by day as well as severely cold at night. Many of the early Cherries are also quite black—and the forward Plums look suspicious. Gooseberries in low-lying gardens are destroyed, and the upper fruits on the bushes almost everywhere. Pears, unless the very earliest, seem yet safe, as do Apples probably, though many of them have the appearance as if they had been seared with hot irons on the upper edges. To-day, the 8th, the wind has veered round almost midway between east and south, and the air is much warmer. It has, however, been a trying day for the crippled fruit and frozen trees—sunless and without a cloud. Showers and genial growing weather are now much needed, alike for fruit crops, vegetables, and flowers. Peas have made little progress; Cauliflowers planted out some weeks since have almost disappeared. The Onions hug the ground, and look yellow rather than green; and Parsnips and Carrots seem unable to break ground at all—Potatos are cut off short with them. Roses, which looked splendid until the last few days, have had all their best and forwardest shoots frozen, with a yellowish drooping tinge; in fact, several mornings the young shoots drooped and were as hard as ice. The Myosotis dissitiflora is much later than usual here this season, having just got into full beauty. Every flower is now gone or as black as if a fire had passed over it. Dielytras are cut right down, or bent double. Most of the Pæonies are blackened, and a choice selection of Dean's Improved Primulas and Polyanthus have had most of their colour frozen out of them. Anemones, Tulips, and those flowers endowed with the power of closing at night, have fared best; and the Daisies are looking now about the brightest and most beautiful and least scathed of all the flowers of the garden. *D. T. Fish.*

The Weather in East Anglia.—The month of May has come in amid exceedingly cold weather, in this locality at least, and the thermometer this morning (May 4) indicated 9° of frost, and it is to be feared that the fruit crop has seriously suffered. Apricots as large as marbles are blackened and destroyed, the very few fruits which appear to have escaped are those which happened to be placed between a branch and the surface of the wall. The bloom of Pears, Plums, Gooseberries, &c., is very abundant, but is at present in that stage of advancement when most likely to suffer from a low temperature. Should, however, a tithe of the bloom escape there will be more than enough for a crop. Apples are not sufficiently forward to have sustained injury. Notwithstanding the mild winter we have had, crops in general are backward. Asparagus in the open air was just beginning to come in—and this is just a month later than usual—but every head which had ventured to peep through the soil was last night killed. Potatos were yesterday 4 or 5 inches high, but are now blackened and killed to the surface of the ground. Some fine beds of Dielytra spectabilis were just coming into bloom, but are now a mass of decaying vegetable matter. Such are a few of the casualties of the night of May 3, as experienced here, and it is much to be feared that our case will not be found to be an exceptional one. *P. Grieve, Culford, Bury St. Edmunds.*

Fruit Prospects.—The severe frosts that occurred on the nights of the 4th, 5th, and 6th, have sadly marred the unusually bright prospects this part of the country presented of a most abundant fruit crop. Fortunately for us the cold winds that prevailed more or less strongly up to the time, the surface of the ground had become so thoroughly dry as to modify the effects of such a depression of temperature, or the consequences would have been much more serious. Bad as it is, from the backward state of the Apple blossom through the absence of sun, there is yet hope that they may have escaped, but at present it is impossible to form a correct estimate as to the damage, for even these may fall off in a week or so at the time the embryo fruit should begin to swell. Gooseberries are already doing so, as you may see from the enclosed specimens; and Cherries and Plums must follow, as they already show irregularities of shape resulting from frost-bite. The sharpest night with us was that between the 4th and 5th, when the glass registered 15° of frost, and showed 10° at 6 o'clock in the morning, which is 1° or 2° colder than at any time during the winter. *J. Shephard, Woolverstone.*

Severe Frost.—It may interest you to know that we had last night the severest frost of the year in this locality. The thermometer registered 12°, standing at 20° Fah. This is 2° lower than any of the past winter frosts registered here. *James Salter, Basingfield, Basingstoke, Hants, May* 5.

—— Some of your readers may like to compare notes as to the damage done by the late severe frosts to Lilies growing out-of-doors. The meteorological authority of our district has given me the exact temperatures as follows:—On the 3d inst. the thermometer at 4 feet from the ground, fully exposed, descended to 29°, a situation thermometer on the grass to 21°.75 on the 4th. The corresponding readings were 23°.5 and 19°.75. In the open border, unprotected, L. californicum Humboldtii, Martagon, dalmaticum, Szowitsianum, Browni, pyrenaicum, chalcedonicum, tigrinum, and umbellatum appear to be unhurt; out of very many L. auratum a few seem a little touched, but though I longed for the white parasols with which my friend and neighbour, Mr. McIntosh, shelters his favourites, the great majority seem to be all right. Some of them are from 2 to 3 feet high. I measured one stem 2½ inches in circumference at the base. The outside leaves of L. giganteum are cut badly, but one measuring 1 foot 10 inches in height, and 6½ inches in circumference at the base of stem, though the side leaves are cut, the stem and inner leaves appear to be untouched. Among border plants in bloom, I noticed Primula cortusoides amœna a good deal cut, Anemone palmata and A. Pulsatilla untouched. The more forwards buds of Azalea mollis and Dielytra spectabilis cut; Colchicum speciosum in bud and alpine Auriculas unhurt; Trilliums in the shade unhurt, Astilbe japonica cut hard. A large clump of Cypripedium spectabile had some shoots browned; Adonis vernalis, with its glorious yellow flowers in full beauty on the raft, Lobelia cardinalis and Cypripedium spectabile, with shoots apparently untouched. *George F. Wilson.*

May Day.—It may interest some of your readers to know that May Day is not quite out of fashion in some parts of Old England. Here in Northamptonshire the 1st of May is still a great day with the village children, who instead of making themselves smart with shabby finery, dress up their dolls and arrange them on a framework, cone-shaped, which they designate a garland; when seen, it presents the appearance of a tall cone, 7 feet high, composed of dolls large and small, and flowers, surmounted by a fine Crown Imperial, always supplied by a kind friend, who has a wonderful garden, out of which always comes heaps of flowers on any festive occasion. With this garland about fifty little girls, all neatly dressed in their Sunday best, patrol the village, singing songs, from early morning till 4 P.M., when they assemble for tea in the school-room, now numbering nearly a hundred. The tea is paid for out of the money they collect, and the balance is divided amongst the children. When refreshed and rested they play at games till dark: so in some villages at least May Day is still a bright spot in child-life. *B. T.*

Odontoglossum crispum roseum.—The highest coloured variety of this plant (O. Blantii) we have seen has recently flowered with us. It is not merely "rosy" in tint, but real rose colour, the petals only shading slightly towards white at the edges. The flowers are large, petals and sepals broader than average, and finely blotched with heavy dashes of a rich, warm cinnamon-brown. The margins of the petals are much torn, so as to form quite a fringe. *James Backhouse & Son, York Nurseries, May* 8.

Adiantum gracillimum.—No doubt the cause of A. Minor's plant losing its fronds in the manner described, is through its not having had any rest during the winter. I obtained a half-guinea plant in November, 1875, and stood it at one end of the stove with other Ferns in about the same temperature as A. Minors. I potted it in the following March in a 9-inch pot and again in June in a 12-inch pot, but soon after it began to go in the same way as A. Minor's, but it was still a good size by August, and in November I had it put in a lower temperature and kept it through the winter. At the beginning of March I had it put in the stove, and it is now a grand specimen of healthy fronds over 3 feet in diameter. I would advise A. Minor to turn out his plant if it has been potted six months, and if not rooted to take away carefully any loose soil and re-pot again with good fibrous loam and about one-fourth coarse sand. I grow Adiantum farleyense in all loam and sand, and find it does well in it. *C. Roffill, Tredegar Park.*

Carnation Souvenir de la Malmaison.—If Mr. Johnstone would, through your pages, communicate his *modus operandi* of obtaining such splendid results with this Carnation, he would confer a great boon on very many of us who have to supply flowers at all seasons in unlimited quantities, and who would gladly learn how to produce such a profusion of the above during the dull seasons of the year. *W. C. B.*

The New Cucumber Disease.—It seems needful to restore the adjective when such an accomplished fungologist as Mr. Smith writes to say not fungus but worms. This disease, as I pointed out several times last year—see *Gardeners' Chronicle*, Sept. 2, p. 303—is quite different from the gangrene or gum in the stems, or swelling at the roots, referred to by Mr. Smith. Samples were forwarded to the Editors of the *Gardeners' Chronicle* last August, and from thence I presume to Mr. Berkeley, who gave a description of it in the *Gardeners' Chronicle* of August 26, p. 269, wherein he says that he had never seen the disease in such a virulent form as in the specimens which had just been forwarded. He refers the disease to the fungoid genus Glœosporium, and says it attacks Grapes, Peaches, Melons, Cucumbers, and is probably capable of being transferred from the one fruit to the other, and that it might be of great consequence were it to spread widely. I have forwarded specimens of foliage and an affected fruit to Mr. Smith, and hope he may be good enough to favour the readers of the *Gardeners' Chronicle* with his views concerning it. I shall also try Salus at the roots, and sulphurous acid on the leaves, as recommended by your most courteous correspondent, "R.," whom, as well as Mr. Smith, I heartily thank for their kind attention to my inquiries. I specially thank "R." for his caution about the acid, and would venture to give another to intending purchasers. Most of us are in the habit of testing the potency of plant cleaners by taste or smell. Adopting the latter plan with the sulphurous acid, it proved so volatile and so potent as almost to turn me over on the spot. I shall try it at once, and report its effects on the Glœosporium spores. I fancy a weaker mixture of Salus, with sulphur and soot, have partly arrested the pest. The young shoots, as in the case of the plants last year, seem to put forth special efforts to outgrow it, and continue healthy. Misfortunes reveal as well as prove one's friends. Permit me to return thanks to many who have forwarded seeds from fresh localities as a likely means of getting rid of the disease, and especially to Mr. Coombe, of Tabley House Gardens, Knutsford, for Cucumbers and Melons that have long been grown so successfully and beautifully in that distant part of West Cheshire, far from the trying climate of East Anglia. *D. T. Fish.*

—— Since writing my last note I have had an opportunity of examining the leaves, stems and fruit of the Cucumbers referred to by Mr. Fish. After making a most searching examination I have been unable to detect anything further than I have seen before. The diseased parts

show a few threads and spores of Acremonium, Phoma, Diplodia, Glæosporium and a few imperfect fungi. Whether the Glæosporium is capable or not of producing disease in the first instance is more than I can say, for I have seen little of it, and I have never seen it in sufficient quantity upon Cucumbers to warrant the belief that it is the cause of serious disease. In certain cases it may, however, be otherwise, but I have not had the experience, for no cases with abundant fungi have ever fallen under my observation. A drop of distilled water applied to the decayed fragments of the leaves from Hardwicke soon set swarms of bacteria and monads free. *W. G. S.*

Habrothamnus Newelli.—This is a very decided improvement on Habrothamnus elegans. Being at Repton Hall a day or two ago, Mr. Newell, the raiser, pointed it out to me growing on the back wall of a lean-to plant-house, along with another plant raised at the same time. The two plants in question were the best of a batch of seedlings raised from seed of H. elegans, believed to have been crossed with H. fascicularis, and although considerably resembling both in habit and general appearance H. Newelli, is in every way superior. It is a very free grower and most abundant bloomer, and all who saw it exhibited at the Royal Botanic and Royal Horticultural Societies shows last spring know how much it excels its parents in brilliancy of colour and in the size of its flowers, which are nearly a half larger. The plant growing beside it is good in its way, having flowers almost as large, but lacking its beautiful bright crimson colour. *W. O. S.*

The National Rose Society.—A meeting of the committee of this new Society was held at the Horticultural Club, Adelphi Terrace, on Wednesday last, when further arrangements were entered on, and a goodly number of members enrolled. The whole of the details connected with the show are to be entrusted to Mr. W. Newman, for some time the practical manager of the Crystal Palace flower shows, and afterwards connected with the Alexandra Palace, and I am confident that exhibitors will find their wants carefully attended to. Want of space is the main difficulty, but it must be borne in mind that the committee had no other alternative in carrying out their plans of bringing a Rose show into the very centre of the business part of business London. We would, therefore, strongly urge lovers of the Rose joining it. By so doing they will obtain two admission tickets, giving them the *entrée* for an hour before the public are admitted. *H. H. Dombrain.*

Peach Setting.—Many thanks to Mr. Dodd for his valuable information on the setting of Peaches and Grapes. I am a grower of Peaches can be secured without the aid of the syringe, &c., may I ask its advocates what are its special advantages, for without exact information as to its real effects upon the reproductive organs is it not likely to prove a dangerous instrument in the hands of amateurs and inexperienced gardeners, by which, being anxious to secure a good crop of Peaches, might be tempted to use the syringe in order to make "assurance doubly sure." In reply to Mr. Simpson respecting Mr. Miller's theory and practice in Peach setting, I believe I am quite correct in saying that Mr. Miller did not allow the syringe to be used in the early Peach-houses from the time of the first flowers opening until all the trees were out of flower; whether Mr. Miller has discontinued the use of the syringe prior to this year I am not in a position to say. I am not able to place my hands on the articles Mr. Simpson mentions, but if my memory serves me aright the pith of Mr. Miller's remarks was to the effect, not that he had used the syringe for twenty years, but that he had used it twenty years prior to the time when Mr. Simpson sought to enlighten the horticultural world on the subject, and I cannot call any baneful effects on his crops of Peaches. *Vitis.*

The Royal Horticultural Society.—When you write such excellent leading articles as that of last Saturday you may well dispense with more letters from me. At the same time the fear of many of us is that this success in South Kensington means a new rivet in the fetters of the Society. Sir Charles Strickland fails to see the justice or good sense of my finding fault with the Royal Horticultural Society, so long as not one in ten of the horticultural public belong to or help the Society. How differently may different minds see the same fact! Strangely enough it is in this very fact that I find a great part of my justification. Sir Charles states that something of that which I desire to see was tried at Kew, and failed. I admit that I was but partially aware of this, and can now only express my regret and my surprise at the failure. I may, perhaps, some day find time to investigate this matter; at present I can only say that young gardeners, as a rule, certainly seem to me to desire knowledge not in a less, but in a larger degree than most young men of the same position; and in large gardens I continually hear men, both young and old, regret that nothing wider and more permanent than rule-of-thumb knowledge is within their reach. Meanwhile, let me earnestly beg such influential and able supporters of the Royal Horticultural Society as Sir Charles Strickland not to plead this supposed failure at Kew until a patient inquiry shall prove that the failure was not due rather to the scope and plan of the reform than to its inherent inutility. As to Chiswick, let me repeat that I know fairly well what work is done there, and of how great technical value it is; but I need not go again over the reasons which impel me to ask for something else as well. *T. Clifford-Allbutt, Leeds, May* 8.—P.S. In my last letter, for "reaches," read "makes;" and for "*mcus*," read "*Mens*" *agilc molem.*

—— Probably neither Dr. Clifford-Allbutt nor Sir Charles Strickland are aware that not very long ago the Council of the day did try to bring forward lads of a superior class at Chiswick Gardens. The experiment promised very well, but youths of their age, especially when clever, are rather kittle cattle to manage, so there was a disturbance, and there probably being other pressing matters on hand, the trial was not continued. I for one much regretthis. Two young men whom I remember at Chiswick may often be seen at South Kensington holding good positions which the knowledge of plants and useful introductions gained in the Chiswick Gardens have helped them to get into, and to fill most usefully and creditably. *Geo. F. Wilson.* [The cause of the failure at Chiswick was not so much the "disturbance" alluded to by Mr. Wilson, as "other pressing matters on hand," which prevented the Council of the day from doing little more for the scheme than the issuing of the programme, which was in all respects excellent, and only wanted carrying out in its entirety to have brought about a great success. ED.]

—— Having early with great interest the correspondence respecting the Royal Horticultural Society, I beg to ask if the new feature of introducing Covent Garden produce to the exhibitions has had such effect on the Council and the public, that the former can afford to distribute the medals to the market dealers on the following day, as during the past the gardeners who have so long and so ably supported the Society have had to wait for months, and perhaps for years, before they receive their awards. *An Exhibitor.*

Tulips.—The only Tulip I brought before the Scientific Committee on May 2 was a large and fine form of T. Orphanides, received from the Continent under the name of T. vitellina; T. Eichleri, Hageri, Clusiana fragrans, and a smaller form of Orphanides, were exhibited by Mr. Elwes. *H. Harpur-Crewe, Drayton-Beauchamp Rectory, Tring, May* 7.

Dale Testimonial.—I shall esteem it a great favour if you will permit me to appeal, through your Horse Correspondence, in behalf of the movement lately started for the presentation of a testimonial to Mr. J. Dale, long and honourably known as gardener to the Honourable Society of the Middle Temple. Your readers know that Mr. Dale was one of the earliest growers of specimen Chrysanthemums, and that he employed the Pompons as bedding plants with such success that when the late Mr. Salter prepared his book on the Chrysanthemum he went to Mr. Dale for particulars of the treatment of the plants for massing, and reproduced Mr. Dale's arrangements and colours. But it is less known, and I wish now to make it more known, that my old friend has laboured with zeal in the promotion of floriculture in the metropolis, having no business interest in so doing, but giving of his time and talent freely in aid of the many societies and exhibitions that have of late years risen in all the suburbs of London. Of the value of these societies none can entertain a doubt; they contribute to the healthful enjoyment of life amidst the depressions that prevail in this great city, and are not only antidotes to smoke and darkness and contaminated air, but to the demoralising influences that are typified in the gin-shop and the pawnbroker's sign. Many have laboured to establish a new school of London florists, but none with more steadfastness, more cheerful self-sacrifice, or more practical effect than Mr. Dale. But as the patriot is imperilled in the memory of mankind, so was my friend, having been despoiled of his garden by the "march of improvement," and of his youth by the touch of Time, should now begin to live in the hearts of such as appreciate his labours, and of their attachment proof may now be given by thus subscribing to the testimonial. Our hope is that we may be enabled to make him an elegant present, and in such a way as shall constitute the event a little landmark in the history of London floriculture. Mr. J. S. Hodson, of the Printers' Pension Society, 20, High Holborn, is the secretary, and the writer of this note is appointed treasurer. I am anxious the members of societies that have benefited by Mr. Dale's devotion to their interests should be well aware of this movement, for we shall not keep it long about, and only those who are prompt in subscribing will be sure of the opportunity of doing the graceful thing. *Shirley Hibberd, Bridge House, Stoke Newington, N.*

Orchids in April (Devonshire).—I venture to send you a list of Orchids which I have had in flower during April. Though it does not equal Mr. Sergeant Cox's in number (p. 568), it presents a few species which he has not included. My collection is but a small one. *P. H. Gosse, Sandhurst, Torquay.*

Burlingtonia fragrans
Cattleya quadricolor
" citrina
" Loddigesii
" Skinneri
Cœlogyne ochracea
" corymbosa
Cypripedium barbatum
" venustum
" insigne
" hirsutissimum
Dendrobium nobile, two plants
" cretaceum, two vars.
" Pierardi, two vars.
" crassinode
" thyrsiflorum
" Fytchianum, two plants
" fimbriatum, two plants
" japonicum
" heterocarpum
" eburneum
" lituiflorum
" marmoratum, two plants
" aggregatum
" Farmeri
" Schroderi
" densiflorum
" " var. dinturnum
" Cambridgeanum
" rhodocentrum
" Devonianum
" " var. majus
" albo-sanguineum
" chlorops
" crystallinum, two vars.
" Dayanum
Dendrobium Dalhousianum
" Findleyanum
" crepidatum
" pulchellum
Epidendrum ovulum
" " var. flavum
" ebreneum
" cochleatum, two vars.
" macrochilum castum
" vitellinum majus
" (encyclium) sp.
" crassifolium
Eria dasypus
" sp.
Lælio-pis lilacina
Lycaste Skinneri
Maxdevallia ochthodes
Megaclinium falcatum
Miltonia cuneata
Odontoglossum Alexandræ
" Cervantesii
Oncidium altissimum
" amphiatum majus
" cebolleta
" cucullatum
" Krameriannm
" varic. Rogersii (fine)
" Marshallianum (fine)
Phalænopsis Schilleriana
Rodriguezia secunda
Sacco-labium ampullaceum
Sarcopodium Lobbii
Sobralia macrantha
Trichopilia suavis, three vars.
" coccinea

Orchids in Flower in March, at Forest Farm, Windsor Forest, the residence of — Bowring, Esq. — As your columns are now and then affording us some interesting details of the beautiful flowers in various parts of the kingdom, I may here mention some of the most attractive I saw in bloom in the extensive collection of the above gentleman, during a recent visit to his respected gardener, Mr. Streddon, who with his employer is an ardent admirer of this class, as well as an able cultivator. The collection consists of some 2000 plants, numbering 500 species. The plants are in various stages of growth, including some fine specimens. The following were in flower:—

Ada aurantiaca.
Calanthe Veitchii.—Its long flowering period makes it very attractive.
Cœlogyne pandurata.—This plant had flowered for the second time in seven months.
Cypripediums.—Of these there were twelve varieties in flower, the most noticeable were C. Pearcei and C. Stonei, with nine fine flowers.
Cymbidium eburneum.—This species was remarkably good; the almost pure white flowers, with its unique habit, made it very interesting.
Dendrobiums.—Of these there were ten varieties in flower; conspicuous among them was a fine plant of D. aggregatum majus, producing ten spikes clothed with its showy yellow blossoms.
Lycaste Skinneri, with its rich coloured blooms, proves one of the most desirable of our winter-flowering Orchids.
Mesospinidium sanguineum.—This had produced about ten spikes, well furnished with its beautiful waxy-looking flowers.
Odontoglossum.—Mr. Bowring possesses numerous varieties of this grand class, of which O. Pescatorei was exceedingly good. A plant not the most easily managed, it had about 100 perfect blooms.
Oncidiums.—Of these there were six species in flower —O. serratum with a spike at least 10 feet in length, furnished with a profusion of flowers, rendering it peculiarly interesting.
Phalænopsis.—Of these two species were in flower, P. amabilis being very good.
Zygopetalum crinitum, with variegated flower.
Had time permitted, I could have noticed other objects of interest in the above collection. *J. F. McElroy.*

Trichopilia suavis.—In reply to "T. C. H.'s" inquiry in your last number, I think it is not unusual for Trichopilia suavis to have four flowers on a spike. The small plant which I sent to the Royal Horticultural Society's meeting on April 4, and which was noticed in the *Gardeners' Chronicle*, had six spikes and twenty-three flowers, and I have had another plant this year with the same number of flowers on seven spikes. *J. G. Hepburn, Sidcup Place, Kent.*

Does Ivy Make Walls Damp?—Speaking generally, I should say, No; but indirectly I think it may, under certain circumstances, have a tendency, not to create but to encourage dampness in a building covered with it, even when well kept. When houses are built in wet, ill-drained situations the damp ascends upwards from the subsoil through the foundations, and will often produce a dampness in the walls to a considerable height; and the covering of Ivy

prevents the walls from drying so rapidly as they otherwise would have done—at least, such have been the conclusions I have drawn from several instances that have come under my own observation. Of course, builders say there are ways and means of preventing damp ascending through the foundations; and no doubt there are, but they are often neglected or the work improperly done. *E. Holdaty.*

Abnormal Inflorescence of Dendrobium nobile, &c.—Having noticed your remarks about the abnormal growths of Dendrobiums in a recent issue, and in reply to your inquiry if it is a common occurrence, I herewith send two pieces; and if these are similar [Yes] to what you refer, they frequently occur, and possibly where the plants tend to growth more than to flower they occur most frequently. What might be considered more singular is the flowering of the Calanthe vestita from the apex of the bulb instead of in the normal way, which is from the base. Several such instances in Calanthes have come before me. *Observer.*

Roots in Interior of Turnip. — The enclosed are fragments of roots growing inside a weevil gall in a white Turnip. I have opened many similar galls for years without meeting with any growth of the kind. The gall was unusually large, about an inch over, otherwise just as these Ceutorhynchus pleurostigma galls usually appear, and inside it was almost full of roots. The two main points of growth were about at the two opposite ends of the hollow chamber, three-sixteenths of an inch beneath the outer rind of the root, and the full-grown weevil grub was lying amongst them. *E. A. O.*

Hardy Hybrid Rhododendrons.—The meeting of the Manchester Botanical and Horticultural Society held on April 27 contained one feature of more than ordinary interest, namely, a group of the sweet-scented hybrid Rhododendrons raised by Mr. Isaac Davies, Brook Lane Nursery, Cornskirk, and exhibited as part of a large and interesting group of plants by Samuel Barlow, Esq., J.P., Stakehill House, Chadderton, Manchester. The plants, though small, were laden with blossoms, large, finely formed, pure, and generally deliciously fragrant; they represent the patient, skilful work of years, and as a new race, forming a most welcome contribution to the calendar of acquisitions in the domain of horticulture, good enough to exalt the reputation of the raiser for years to come, valuable for spring work and for making bright and cheerful the interior of greenhouse and conservatory. A few years ago Mr. Davies raised an interesting hybrid Rhododendron, which he named multiflorum, bearing white flowers, and remarkably free of bloom as well as early to flower. This hybrid was crossed with R. Edgworthii, and the results of the cross were seen in the fine new varieties recently exhibited at Manchester. To the newest variety, one named floribundum, the Manchester Council awarded a First-class Certificate of Merit. It is about equal in hardihood to R. multiflorum, flowers large, erect, open, pure white in colour, and with crimped margins; habit compact, flowering freely on small plants, very early, as it blooms in the middle of April without forcing. Other fine varieties were Countess of Derby, having a habit of growth intermediate between the best variety of R. multiflorum and R. Edgworthii; the flowers are large, pure white in colour, the perfume of a remarkable sweetness. Quite tiny plants were laden with the huge blossoms. This is a grand conservatory plant. Countess of Sefton comes of the same parentage, the flowers pure white, and fringed on the margins, and there is a band of pale rosy purple on each side of the centre petal. Skelmersdale has pure white flowers, but more trumpet-shaped than the preceding, the edges smooth, giving an appearance of fine form to the blossoms. It is a most attractive variety. Mrs. James Shawe is another white-flowered variety, also remarkably free. Duchess of Sutherland is very fine indeed, a robust grower, with large, handsomely-formed pure white flowers, beautifully fringed on the margins. It may be remarked that though the flowers of several of the foregoing are white, they are yet quite distinct in character, and differ considerably in form. *R. glaucum* hybridum was also shown. It is a seedling from this species crossed with a hardy large-flowered variety, the habit intermediate between the two parents, the blossoms pale flesh-colour, and very free-blooming and attractive. This is supposed to be quite hardy in character. With us this was R. Gibsoni hybridum, a seedling from R. Gibsoni crossed with R. glaucum, of a bushy habit and very free-blooming, the flowers bell-shaped, mottled on the upper segments of the corolla with light brown. This will stand during the winter in sheltered situations. The seedlings of R. multiflorum are no doubt hardier in character than is generally supposed. There are possibly many places in which they could be safely trusted out-of-doors all the winter. But apart from their value as outdoor decorative plants, they are of such a nice bushy growth, so free blooming, the flowers so bold in appearance and handsome in form, so fragrant and so easily cultivated, as to constitute them an invaluable class of plants for greenhouse decoration, and especially for working out striking effects in conservatories. *R. D.*

Roses under Glass.—I am very much obliged to you and to "R. D." for his explanation of the Rose-house at Gunnersbury. I see the house stands in the corner of the garden, and is not a small one, as I thought. The house is a lean-to, which is not the best for Rose growing. I have about 150 flowering plants established in 10 and 8-inch pots. The plants are a little over a year old, and I cut between fifty and sixty a-week off them. In cutting the flowers I always cut the shoots back to about two eyes, which break again very freely and flower. By so doing I can keep the plants always in nice trim. The ones that have flowered best with me are Souvenir de la Malmaison, one of the best; Mrs. Bosanquet, very free and pretty; Adam, Souvenir d'un Ami, Goubault, Catherine Mermet—the best of these four, which resemble each other; Gloire de Dijon, Archimedes, Belleñeur d'Anjou, Cheshunt Hybrid, Devoniensis, Elise Sauvage, Henry Bennett, small; Madame Camille, one of the very best; Madame Denis, Madame de Tartas, desirable colour; Madame Falcot, Madame Hippolyte Jamin, Madame Jules Margottin, Madame Maurin, Madame Villermoz, Mdlle. Cécile Berthod, Mdlle. Marie Arnaud, first-class; Marcelin Roda, also good; Narcisse, also first-rate; Maréchal Niel, Niphetos, Perle de Lyon, Reine du Portugal, Rubens, Safrano à Fleurs Rouges, nice in bud; Souvenir de David, Souvenir de Paul Néron, Vicomtesse de Cazes, very fine; Lamarque, Madame Caroline Kuster. Rêve d'Or, Triomphe de Rennes, and Sombreuil are three very free growers, but they are not inclined to flower at all with me. I think they would do better as climbers. Among the H.P.'s which have not as yet flowered are Alfred Alonse Damazin, Beauty of Waltham, Boule de Neige, Camille Bernardin, Caroline de Sansal, Charles Lefebvre, Charles Rouillard, Comtesse de Chabrillant, Comtesse d'Oxford, Duke of Edinburgh, Fisher Holmes, François Lacharme, Général Jacqueminot, Madame Charles Verdier, Victor Verdier, Xavier Olibo, and others, and Duchess and Archduke Charles, which are quite worthy of a place, though they are but Chinas. In fact, people thinking of growing Roses in pots should make a diligent study of the Chinas, Bourbons, and Hybrid Bourbons, where they will find a quantity of good Roses. The Roses in question I allude to are at Carolina Park, Granton, near Edinburgh, and can be seen at any time. *W. Paul, Edinburgh.*

Pumpkin Preserve.—The dull sunless weather, accompanied with cold cutting winds, has been anything but favourable for the fruit crops, and bright though the prospects appeared but a short time back, it is greatly to be feared we may again have a season of scarcity, even of the hardiest and most useful, as we certainly shall of Peaches, Nectarines, and Apricots, the latter of which will be greatly missed, on account of the delicious preserve they make. Although by no means equal to this estimable fruit, an excellent substitute may be made from the Mammoth Gourd, and if it were possible to find anything to imitate the Apricot flavour, it might readily pass muster for that fruit, so closely does the colour and consistency resemble it when boiled with sugar for the purpose of jam-making. Unless report is false, the ripe flesh of some of the larger Vegetable Marrows or Pumpkins is studied largely for the purpose of confiture in making marmalades, but be this as it may, certain it is preserve made from them is not to be despised during the winter when other fruits are scarce, and I venture to predict that eventually they will be extensively grown to supply their place at that season. In the north of Scotland Pumpkin preserve has been the principal sweet used in my house, and to it we have formed a strong liking, so much so that we should greatly miss it, and would rather be without almost any other kind of jam usually made from common garden fruit. For using with boiled rice or plain puddings made from that grain it is simply delicious, as it is likewise for tartlets, or indeed for any of the many uses to which preserves are put. When grown for this purpose it is essential that the Pumpkin be fully and perfectly mature, a condition they are almost sure to be in if planted early in a warm sunny situation and left on the plants till the end of September or middle of October. The fruit of the Mammoth Gourd, which is by far the best, assumes a rich warm reddish yellow hue when perfectly ripe, and when cut into is almost as solid as the flesh of a Swede Turnip, to the colour and texture of which it bears a close resemblance. Any one desirous of giving them a trial should at once obtain seed, and sow the same singly in pots of light rich soil, and then stand them in a hotbed frame, to assist them to germinate. They should then be nursed on near the glass till the end of May or beginning of June, shifting them on meantime as they require it so as to get them as strong as possible before turning them out under handlights on any waste bits of ground, or better still, on the rubbish heap, where their gross feeding roots can find plenty of decomposing vegetable matter to lay hold of. Where there are such unsightly objects to hide, or any low objectionable looking buildings to cover, it cannot be better or more profitably carried out than by planting one or two Mammoth Gourds to ramble over, and be allowed to with water during the summer months they will produce several hundredweight of material for making jam, or to cook in tarts with Apples and to use for such-like culinary purposes in which way they may be made to eke out the supply and form a useful and agreeable article of diet. It matters little how or where the top of the plant is trained so long as the roots have a rich moist medium to feed in, and there are many places where such large handsome looking leaves and noble fruit would be quite as ornamental as some of the sub-tropical plants now so extensively used in most gardens. Some I had last season had fruit as large as a man could fairly lift, the heaviest of which weighed 164 lb., and measured over 7 feet round, and when seen growing as these were on elevated positions they have a most striking effect. When ripe they should be cut and stored in a dry and airy cool airy place out of reach of frost, where, if kept dry, they may be preserved sound and good till February or March, provided they are not cut or damaged, as then decay soon sets in. In preparing the fruit for preserving, it should be divided into thick slices for convenience of being peeled, and after that is done and any soft spongy part in which the seed is found embedded cut away, the solid part should be minced up into small pieces about the size of dice and weighed. If wanted to keep long, to every pound of fruit add three-quarters of a pound of lump sugar, and for flavouring divide either an Orange or a Lemon to every 10 lb. of Pumpkin, and boil briskly for an hour keeping it well stirred to prevent it sticking to the bottom of the pan and becoming burnt. When done, the Oranges or Lemons should be taken out, which may be more readily be done if put into small muslin bags before boiling. Essence of Ginger or any other flavouring may be used according to fancy. *S. W.*

Pippin Apples.—Those who are acquainted with Apples know that many of them are called Pippins, but yet may be heedless of the origin of the popular name. However, it may be traced either to the white dots on the fruit, or to the fact of the original trees being raised from pips or seed. The latter alternative is not, however, tenable, because all varieties of Apples have the same origin, yet some of them are not called Pippins—for instance the Russets and Nonpareils; and many, especially of the large kinds, have local names, while others are named after those who have raised them from pips or cobbles. We never hear of seedlings or ungrafted trees being called cobblings, an odd name indeed. Anyway cobble means also a stone or small pebble; and it has occurred to me that perhaps this may be the origin of the term "stone fruit," owing to the cobbles or stones in the hearts. Pippin, however, as applied to Apples, is of ancient use, even as far back as the time of King Henry VIII. Maschale "brought Pippins from over the sea . . . and planted them in Plumstead in Sussex;" while Shakespeare says, "We will eat last year's Pippins of my own grafting." This may be considered fanciful, yet it is pretty conclusive, that pippin is derived from the spots on Apples, and not from their being produced from ungrafted or seedling trees raised from pips. *T. Wighton, Cossey Park.*

Salpiglossis.—Although many annuals produce exceedingly showy flowers, the duration of most of them is so short that they are not of much value for general decorative purposes. There are a few, however, that are almost indispensable for the embellishment of beds and borders, and that possess the double merit of being both attractive and lasting, and foremost in this category must be placed the different varieties of Salpiglossis, all of which are remarkable for the beauty of their many-coloured large Lily-like blooms. Most of them are richly veined and marbled with maroon, magenta, crimson, &c., on cream, buff, or pale yellow grounds, and when seen in large masses the effect is most striking. Chili has yielded us many floral treasures, not the least of which are the above, and as they seed readily and are very sportive in their character, considerable improvement may be looked for by a little careful hybridising and selection. If planted in deep rich soil they branch freely and flower with the greatest profusion, but, like all annuals, they are impatient of excessive drought, and do not bear overcrowding. The best way to treat them is to prepare a bed by trenching it to a good depth, and as the operation proceeds to work in and mix well with the soil some thoroughly decomposed manure, keeping the same sufficiently low down as not to be nearer

the surface than 6 inches or so. After raking th surface fine the seed may be sown thinly in rows at abou 15 inches apart any time after the middle of April, or the plants may be raised under glass in the usual way, with other half-hardy annuals, and planted out when the weather is favourable. Although I have not yet tried them for pots for early spring blooming under glass, I intend to do so; and if they are as accommodating in this way as Stocks, Schizanthus, and Rhodanthes, they would be most most valuable for greenhouses at that season, and impart quite a fresh feature in the decoration of such structures, as their flowers are quite of a different type and character to any others then in use. For this purpose it will be necessary to sow towards the end of August, and to winter the plants on shelves near the glass. *T. S.*

Notices of Books.

Notes for Observations of Injurious Insects. Published by T. P. Newman, 32, Botolph Lane, E.C.

During the last ten years attention has in some degree been directed by the Government Collection of Economic Entomology at Bethnal Green and in other ways to the great annual loss throughout the country from attacks of insects on the common food crops, and where attempts have been made to counteract the injuries much good has been done. But attention needs to be directed more generally to the subject, and in many cases more knowledge is needed before remedies other than experimental can be applied.

With a view to this the pamphlet, which is published by those well qualified to undertake the subject, gives a list of about sixteen insects (chiefly selected as injurious to the crops, but occasionally as coincident with particularly warm seasons), accompanied by short descriptions of the insects, and their method of injury, and by clearly drawn figures, mostly taken from articles in the *Gardeners' Chronicle*, so that the most uninstructed observer can rarely be at a loss either where to look for the subject or in uncertainty whether he has got the insect intended. A short introductory note gives details of the exact points as to number and dates of appearance, any peculiarities in soil, season, or surroundings, such as manure and drainage, which may be supposed to tell on the recurrence of what both to the country and to individual growers may too truly be known as "pests," and requests notes from those who are interested in the subject. For this purpose the pamphlet is accompanied by a columned sheet, for entry of the monthly observations, which are solicited, and all necessary reference is given as to where to apply for further information, and to forward the returns, which, if procurable, would be eminently useful.

It is impossible, without some co-operation of this kind, to meet the subject. Entomologists are not usually acquainted with the practical economic workings. Agriculturists have rarely the opportunity of knowing the life histories of the insects, and if this desirable co-operation could be brought about the digest of the monthly returns which it is intended to form into a report for presentation to the observers would contain a mass of practical information of great practical value.

It is much to be wished the matter may be taken up by those who have opportunities of observation. The pamphlet and sheets for monthly returns may be procured gratuitously on application to the publisher, Mr. Newman, 32, Botolph Lane, London, E.C.

—— The second part of Mr. Elwes' superb monograph of the genus Lilium has appeared, with coloured plates of the following species:—L. giganteum, L. philadelphicum, L. dauricum, L. croceum, L. carniolicum, L. candidum, L. tenuifolium, and L. chalcedonicum. Of the climate in which L. giganteum is native, the author thus speaks from personal experience:—

"In 1870, during my journey in the almost unknown mountains of Sikkim to the frontiers of Tibet, I saw this noble plant growing abundantly in the Lachen Valley, at about 8000 to 9000 feet elevation. There it flourishes in a climate which may be best described by saying that for many weeks it was impossible to dry thoroughly our tents, clothes, or bedding; the rainfall, though by no means equal to that of the Khasia hills, or even the lower valleys of Sikkim, is almost continuous from April to October; and though the mornings are often bright and sunny, a dry afternoon or night is rare. In this moist though not ungenial climate the vegetation is of the richest and most varied description. Nearly all the most beautiful genera of the north temperate zone throughout the world are here represented by one or more species; and in addition to these, many plants belonging to the tropical Malayan flora are abundant . . . The gigantic Lily towers in all its glory above most of the other herbaceous plants, scenting the air for yards around with its sweet perfume in the month of July, and lying buried under the snow from December to March, when it again begins to push forth leaves."

—— Dr. J. C. Brown, whose efforts in promoting the cause of rational forestry and of economic botany have often been noted in these columns, has published in the form of a pamphlet addressed to the Lord Provost of Edinburgh, the office-bearers of the Scottish Arboricultural Society, and "all others whom it may concern," *A Plea for the Creation of a School of Forestry in Connection with the Arboretum at Edinburgh*, noticed in our descriptive Supplement of the Edinburgh Botanic Garden. The plan of study recommended by Dr. Brown ranges over three years, and comprises the study of the natural history of trees, the management of forests according to their varying circumstances and varying requirements, engineering, mechanical philosophy, mathematics, drawing, chemistry, meteorology, geology, conveyancing, minor surgery, &c. In the autumn months tours of observation are recommended in the forests of Britain, France, Germany, &c. Details are given of the existing forest schools in the various countries of Europe, and of the requirements for the Forestry Department of India. Every one at all conversant with the subject is alive to the desirability of establishing such a school, but there is necessarily considerable difference of opinion as to the best method of establishing it. It appears to us that a national school of gardening is required quite as much as one of forestry, and the question arises whether the two could not be combined in a sort of agricultural university, wherein the general principles of the sciences and arts common to all these pursuits could be taught to all the students, while at a subsequent period of their pupilage they might pass into special departments, according to their requirements. Edinburgh would be an excellent site for such a university. In any case we wish Dr. Brown's advocacy every success.

—— The first number of the *Journal of Forestry*, to which we lately alluded, has been published by Messrs. Rider, of Bartholomew Close. It is in large 8vo size, well printed, and as to matter gives excellent promise of success. According to the programme, forestry is to be treated under the following heads—Description, History, Science, Law, Hygiène, Economy, Practice, and, lastly, in its picturesque aspects. There is plenty of scope here for a well-conducted journal. We are glad to see that the new-comer commences by strenuously advocating—as we have done from time to time—the establishment of a proper school of forestry in Great Britain, in order that we may keep pace with other countries, and be enabled to supply a thoroughly well trained body of officers for service in the higher departments of forests at at home, and more especially in India and the colonies. Among other contributions to this number, Mr. R. Hutchison appropriately deals with the subject of what should be done in woods during the summer months, while the Editor contributes a very useful statistical paper on the prices realised for forest produce in different districts of Great Britain during the last winter. No doubt this will be extended in the future, and will constitute a most valuable feature of the publication. Forest work for the month is a good summary of woodcraft for the month, but requires modification in details, so as to adapt it to varying localities. Our experience of first numbers is that, as a rule, they are inferior to those that come after; and if that rule be followed in the present case it may be safely said that the readers of the *Journal of Forestry* will have ample cause for satisfaction that such a journal has been established.

PUBLICATIONS RECEIVED. — The Schools of Forestry in Europe, by John Croumbie Brown, LL.D., a Plea for the Creation of a School of Forestry in connection with the Arboretum at Edinburgh.—Address of the Hon. Marshall P. Wilder at the Annual Meeting of the New England Historic-Genealogical Society.—Gartenflora.—Bullettino Ampelografico.—Bulletino della R. Società Toscana di Orticultura.—Prospetto delle Felci raccotte dal Signor O. Beccari nella Polinisia, &c., fascicole 1, 2.—Monograph of the Genus Lilium, by H. J. Elwes, part 2.—Mrs. Somerville's Physical Geography, seventh edition (Murray). — Mrs. Somerville's Connection of the Physical Sciences, tenth edition (Murray).—Animal Products, by P. L. Simmonds (Chapman & Hall).—Familiar Wild Flowers, part 2, by F. E. Hulme (Cassell).—The Gardener.—The Villa Garden.—Le Moniteur Horticole Belge.—Hamburger Garten Zeitung.—Revue Horticole.—Descriptive Notes on Papuan Plants, by Baron Ferd. Von Mueller.—Annales Agronomiques.—The Natural History Journal. — Botanische Zeitung. — Dictionnaire de Botanique Baillon (Hachette). — The Schools of Forestry in Europe, by J. C. Brown, LL.D. (Oliver & Boyd). — Revue des Principales Publications de Physiologie Végétale en 1876, par MarcMicheli. — Journal de la Société Centrale d'Horticulture de France.—A Lecture on Personal Experiences of English Departmental Government, by Richard Herring (Longmans).—Journal of Botany. —Monatsschrift des Vereines zur Beförderung des Gartenbaues in den K. Preuss. Staaten, &c.—Journal of Forestry. — Notes for Observations on Injurious Insects (T. P. Newman, 32, Botolph Lane, E.C.).—Bulletin d'Arboriculture. — Florist and Pomologist.—Revue de l'Horticulture Belge.—Transactions of the Massachusetts Horticultural Society.—Les Mœurs du Phylloxera de la Vigne, par M. J. E. Planchon (Montpellier, Coulet).—Bulletin de la Société de Viticulture et d'Horticulture de Tarare.

The Villa Garden.

ANNUALS IN THE FLOWER GARDEN.—There are hundreds of persons who can be counted among the lovers of flowers, as fired with some ambition to cultivate a few plants, who every spring and summer fall back upon some of the many annuals found in the seed lists, and make a very pretty display indeed. It is surprising what any one can do with a few annuals when they make a proper selection, prepare the ground for their reception, and tend them while they are growing and coming into bloom.

That there has been a marked decline in the cultivation of annuals cannot be doubted. They are not now nearly so much grown as they used to be, and that, not because they are thought to be less useful and effective than formerly, but because gardening fashions change; the things that are grown in one generation are neglected in another; and the most casual observer cannot fail to notice that, in regard to gardening, as in many other pursuits and observances, people are very much swayed by fashion, and he is thought to be in danger of falling behind the age who does not participate somewhat in what the society of the age deems to be the correct thing.

Thus it has come about that many a small garden that used to be made bright and pleasant with a few annual flowers have become tenanted by other occupants, and Lobelias, Alternantheras, Coleus, Pyrethrums, Mesembryanthemums, &c., have taken the place of the things that, up to the time of the advent of the newer fashion, were deemed suitable and satisfactory. When the soil and situation are suitable, no one will be disposed to quarrel with the employment of some of the newer foliage and flowering plants; but where it is not so—as where a clayey earth abounds, or the garden is on the north side of the house—where it is cold and sunless, and where Coleus and Alternanthera, Lobelia and Mesembryanthemum drag out but a sorry existence, the results are by no means satisfactory, even if during the day the sun occasionally shines on the spot.

A simple and effectual mode of making a little garden look gay during the summer season is by the employment of a few annuals. But the first thing to do is to make a proper selection. There are several pretty dwarf-growing varieties that are indispensable, such as Sweet Alyssum, white; Calandrinia speciosa, rose; Campanula Loreï, blue, and also the white variety; the crimson, white, and lilac Candytuft; Clarkia integripetala Tom Thumb, rose; Convolvulus minor, blue, and the white also; the dwarf blood-red Indian Pink; the white and orange Eschscholtziaæ; Eucharidium grandiflorum, rosy crimson; Gilia tricolor; the double Jacobœas, blush-purple and white; Lupinus nanus; Mignonette; the blue, white, and spotted Nemophilas; dwarf French Poppy; Silene pendula compacta, rose; the red and white Virginian Stock; and the red Saponaria calabrica. From these a selection might be made suitable for small or large gardens. The foregoing, however, are all of dwarf growth, and are best adapted for small gardens, but there are many fine showy

things of taller growth that would have to be used in a large garden.

Supposing a garden has a long border on one side which is open to the sun, say 4 feet or so in width—here is scope for making a pretty display with annuals. Along the back might be planted Sweet Peas, Convolvulus major, Tropæolum aduncum (Canary-flower), and tall Lupines. A few bunches of pea-sticks should be employed for the climbing annuals to attach themselves to. If these could alternate with Dahlias, Chrysanthemums, Foxgloves, Delphiniums, and the taller growing Michaelmas Daisies, the display would be varied and continuous. Then in front of these might come such good things as Malope grandiflora, crimson, and the new rose-coloured variety, which is very pretty; the double white and double yellow Chrysanthemums, the admirable and useful hardy annuals—Coreopsis Drummondii, yellow; C. grandiflora, yellow and dark; and C. nigra speciosa, dark crimson; Erysimum Perofskianum, orange; Godetia, The Bride, white and carmine; and G. Whitneyi, white and crimson; double Larkspur, Oxyura chrysanthemoides, Linum grandiflorum rubrum, Schizanthus pinnatus, and Whitlavia gloxinoides. Then the dwarfer varieties already enumerated would come into the front, with such other plants as would be likely to do well among the annuals. What an interesting garden this would make, and it would also be very instructive.

A very small quantity of seeds of some of these annuals suffices for several sowings, and by means of a little expenditure of attention and labour successional sowings might be made during the summer, thus continuing and prolonging the display. Directly any one batch begins to decay, out with it, and make another sowing: growth soon takes place, and annuals are speedy bloomers.

And this leads up to the matter of preparing the soil for sowing. Annuals are very often disappointing, simply because they are sown under conditions deadly hostile to their well-being. A sower goes forth to sow on some hard piece of ground, caked by drying winds, and burnt by the sun. He simply contents himself by stirring the surface soil ever so slightly, sows the seed, covers it very thinly with a coating of earth, and calls it sowing. What is the result? The seeds lie till a shower of rain falls, then they spring up weakly, grow imperfectly, flower sparingly and disappointingly, and the conclusion reached is—I shall not attempt to grow annuals again. How can annuals be expected to behave themselves well under such circumstances? Simple as they are, they are yet messengers charged with the tenderest messages of love and beauty from the bountiful heart of Nature, and they should be properly received and tended by those to whom they are sent.

The soil for annuals should be as carefully prepared for them as for any other garden crop. It should be deeply dug, crumbled to pieces, and then have mingled with it some rich soil to make it kindly in nature, invigorating and holding; and then the seeds carefully and thinly sown, a little of the fine rich soil laid on the top, and the whole gently pressed down, and sprinkled with water if the weather be dry. The seeds cannot fail to grow if there is any power of vitality in them, and the plants are strong and bushy. And while they are making growth, if the weather continue dry, let it not be thought too much trouble to sprinkle the plants occasionally with water, and protect them as far as possible from the ravages of slugs and such-like. All this nurture is a kind of promising investment; in due time it will be repaid with a welcome harvest of flowers.

Then there is the matter of thinning out the plants. This duty is sadly neglected. Very often a large number of plants in a very small space are left to struggle for existence as best they can, and with a disheartening result; but if they were thinned out to a few of the strongest, there would yet remain enough. A few vigorous plants is far preferable to a number of attenuated ones; the stronger will bloom more abundantly, with a superior excellence, and a surer gratification to the cultivator.

Obituary.

WE deeply regret to announce the sudden death, on April 27, of MR. ALEXANDER CRAMB, gardener to the Earl of Ducie, Tortworth Court, Gloucestershire. Mr. Cramb, whose portrait and autobiography we had the pleasure to publish in our issue for June 5, 1875, had been gardener to the Earl of Ducie for many years, and was held in high esteem by his noble employer, as well as by a large circle of horticultural acquaintances. It had been arranged, we believe, that he was to retire from the management of the gardens at Tortworth at midsummer next; and his friends, were looking forward to his enjoyment of a well-earned pension, when he suddenly died of heart disease in his sixty-eighth year.

—— On May 1, at Wimbledon, JOHN RUSSELL REEVES, F.R.S., F.L.S., of Woodhayes, Wimbledon, and Huntsland, Sussex, formerly in the H.E.I.C.S. in China, aged 73. Mr. Reeves when in China was the means of introducing several fine plants to this country, some of which, such as Reevsia thyrsoidea and Spiræa Reevsii, bear testimony by their names to the good service he rendered to botany and horticulture. Mr. Reeves was, a few years since, a member of the Council of the Royal Horticultural Society, and was always a zealous patron and promoter of horticulture, while his amiable manners and consistent principles procured him the respect of all with whom he came in contact.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, MAY 9, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading reduced to 32° Fahr.	BAROMETER. Departure from Average of 18 years.	TEMPERATURE OF THE AIR. Highest.	TEMPERATURE OF THE AIR. Lowest.	TEMPERATURE OF THE AIR. Range.	TEMPERATURE OF THE AIR. Mean for Day.	TEMPERATURE OF THE AIR. Departure from Average of 18 Years.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 5th Edition. Degree of Humidity. Sat. = 100.	WIND. Average Direction.	WIND. Average Velocity in Miles per Hour.	RAINFALL.
May	In.	In.	°	°	°	°	°	°				In.
3	29·93	+0·17	52·6	31·6	21·0	39·0	−11·4	30·7	92	N.	N.N.E.	0·03
4	29·82	+0·06	59·0	28·3	21·7	37·1	−13·7	31·3	80	N.E.	N.E.	0·03
5	29·67	−0·09	54·0	28·1	25·9	39·7	−11·5	31·2	72	N.E.	N.E.	0·00
6	29·65	−0·10	54·8	32·3	22·5	41·5	−10·1	33·6	74	E.N.E.	E.N.E.	0·00
7	29·60	−0·15	56·3	32·7	23·6	42·5	−9·2	36·7	67	E.N.E.	E.S.E.	0·00
8	29·38	−0·26	69·0	35·4	33·6	52·0	−1·0	38·7	66	E.N.E.	S.E.	0·00
9	29·34	−0·31	67·5	41·0	26·5	54·3	+2·8	41·9	63	S.	S.S.W.	0·03
Mean	29·64	−0·11	59·2	33·4	25·8	44·2	−7·1	35·7	73	E.N.E.		sum 0·09

May 3.—Fine and bright till 11 A.M., overcast and dull till evening, then cloudless. Few drops of rain in afternoon. Cold.
— 4.—A fine day, very cloudy at times. Raw cold.
— 5.—A fine bright day, partially cloudy. Cold.
— 6.—A very fine clear day. Cold wind.
— 7.—A very fine pleasant day, but cool.
— 8.—A brilliantly fine day. Warmer.
— 9.—A fine bright day, warm. Overcast at night. Few drops of rain about 8 P.M.

LONDON: *Barometer.*—During the week ending Saturday, May 5, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.83 inches at the beginning of the week to 30.40 inches by the evening of May 1, decreased to 29.65 inches by the afternoon of the 5th, and was 29.86 inches at the end of the week. The mean reading for the week at sea level was 30.10 inches, being 0.23 inch lower than that of the preceding week, and 0.14 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 54° on the 5th to 48° on May 1, the mean value for the week being 51½°. The lowest temperatures of the air observed by night ranged from 28½° on May 4 to 40½° on April 30; the mean value for the week was 34½°. The mean daily range of temperature in the week was 17°, the greatest range in the day being 25½° on May 5, and the least 11½°, on April 29.

The mean daily temperatures of the air were as follows:—April 29th, 44°.6; 30th, 44°; May 1, 40°; 2d, 42°; 3d, 39°; 4th, 37°.1; 5th, 39°.7; and the departures in defect of their respective averages were: —4°.5, 5°.4, 9°.8, 8°.1, 11°.4, 13°.7, and 11°.5. The mean temperature of the air for the week was 40°.3, being 9°.2 below the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 100° on April 30, 103° on May 4, and 125° on the 5th; on April 29 the reading did not rise above 90°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 27° on May 3 and 4, and 23° on the 5th; the mean of the seven low readings was 31½°.

Wind.—The direction of the wind was N.E., and its strength gentle. The weather during the week was generally dull, dry, and very cold for the season, the sky was mostly cloudy.

Rain fell on Sunday, April 29; the amount measured was 0.22 inch.

ENGLAND: *Temperature.*—The highest temperature of the air was 64° at Portsmouth, at Bradford 50½° was the highest temperature in the week; the mean value from all stations was 54°. The lowest temperatures of the air were 22½° at Cambridge, and 25° at Eccles; at Plymouth 35¼° was the lowest temperature; the mean from all stations was 29¼°. The range of temperature was the least at Liverpool, 18½°, and the greatest at Cambridge, 33⅜°; the mean range of temperature from all stations was 24½°.

The mean of the seven high day temperatures was the highest at Portsmouth, 56½°, and the lowest at Sheffield, 46¾°; the general mean from all stations was 50¼°. The mean of the seven low night temperatures was the lowest at Eccles, 30⅜°, and the highest at Plymouth, 38¼°; the mean value from all stations was 35°. The mean daily range of temperatures was the greatest at Eccles, 20¼°, and the least at Norwich, 11°; the mean daily range of temperature from all stations was 15¼°.

The mean temperature of the air for the week from all stations was 41°, being 3½° lower than the value for the corresponding week in 1876. The highest occurred at Portsmouth, 45¼°, and the lowest at Wolverhampton and Sheffield, both 38¾°.

Rain.—Scarcely any rain fell during the week. At Blackheath a quarter of an inch fell, but at most other places little or no rain was measured. The average fall from all stations was three-hundredths of an inch only.

The weather during the week was dull, cold, and dry, and the sky cloudy. Snow fell at Bradford, Hull, and Sunderland on May 3, 4, and 5.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 55½° at Edinburgh to 50¾° at Aberdeen; the mean value from all stations was 54°. The lowest temperatures of the air ranged from 27° at Perth to 33° at Leith; the general mean from all stations was 30¼°. The mean range of temperature from all stations was 23¾°.

The mean temperature of the air for the week from all stations was 40¾°, being 3½° lower than the value for the corresponding week in 1876. The highest was 42½°, at Greenock, and the lowest 39¼°, at Aberdeen.

Rain.—The amounts of rain measured at Edinburgh, Aberdeen, and Leith were 0·04 inch, 0·08 inch, and 0·06 inch respectively; at Dundee, Greenock, Paisley, and Perth no rain fell; the average fall from all stations was 0·03 inch.

DUBLIN.—The highest temperature of the air was 56½, the lowest 28°, the range 28½°, the mean 44½°, and the fall of rain 0·08 inch.

JAMES GLAISHER.

Law Notes.

A SALESMAN'S DISPUTE.—*Thomas* v. *Carrey.*—This was an action brought by one salesman in Covent Garden against another salesman to recover the sum of £6, under the following circumstances. The plaintiff—or whom Mr. R. Bartlett, solicitor, of Bedford Street, appeared—stated that on the 12th of January last he sold the defendant ten crates of Broccoli, at 9*s.* 6*d.* a crate, and that they were delivered according to order, but only two crates were accepted and the rest returned to the plaintiff, who refused to receive them, and on application being made for payment the defendant refused to pay; hence the present action. The plaintiff corroborated his solicitor's opening, but, in cross-examination by Mr. Lawrence, the defendant's solicitor, admitted having received £47, £52, £28, and other sums subsequently, and not alluding to the present claim.

The solicitor for the defence urged that his client was in no way liable, as the goods were not what he bought. Those he saw were quite fresh, but those received were not fit for human food, being completely rotten. E. Carrey, the defendant, said the plaintiff introduced some Broccoli to him which were very good. Two crates were sent at once, but when the eight arrived, he could not sell them. The price agreed upon was 9*s.* 6*d.* per crate, and the next day he sold two crates to a costermonger for 2*s.* 9*d.* each, as they even were not fit for sale in the market at 12*s.* 6*d.*, which was the market price on the day.

In cross-examination by Mr. Bartlett, the defendant said it was not an unusual thing to buy goods in the market upon the representation of a fellow-salesman, but in the present instance he considered he had been imposed upon, and thought he was justified in

resisting payment. He never had an account, nor was 2*s.* 6*d.* each for the two crates he had, ever charged him. He ordered the goods early in the morning, and they were delivered in the evening during his absence; had he been present he would not have taken them in. H. Stevens, the defendant's carman, said that in the absence of his employer, and seeing the condition of the goods, he refused to accept them, and put them close to the plaint ff's stall in the street.

Thomas Thornycroft was examined, and said he had been for twenty years a salesman in the market; he examined eight of the crates of Broccoli, which he said were only fit for cows, and he should have refused to take them in. This being the case for the defendant—

The learned Judge considered that the defendant had bought the goods in question (as was the custom of the market) upon the faith of the plaintiff's representation, and as the defendant was not present at their delivery, and as they must have become deteriorated in value on the following day, gave judgment in favour of the plaintiff for the amount claimed, with costs.

Answers to Correspondents.

AMATEUR CLASSES AT EXHIBITIONS: *A. B. C.* asks if any one who grows fruit on a large scale almost exclusively for market would be eligible to compete at a local exhibition in the gardeners' or amateurs' classes. He states that at nearly all the exhibitions in his vicinity the classes are under the headings: "Amateurs who keep a gardener," and "Amateurs who do not keep a gardener." [We have no hesitation in replying that such a person as is above described could not exhibit as an amateur.]

BLACK FLY: *A Very Old Subscriber.* Boil 4 oz. of quassia chips in a gallon of soft water ten minutes, and dissolve in it as it cools 4 oz. of soft soap. Stir it up, and syringe the trees twice or three times. The next day wash them with clean water.

BOOKS: *Amateur. Practical Hints on Planting Ornamental Trees*, by Standish and Noble; Bradbury, Agnew & Co.

CEDAR OF LEBANON: *W. Irvine.* The production of perfect seeds by the Cedar of Lebanon is not at all uncommon.

CINERARIAS: *G. Rogers.* The flowers received are wanting in form and substance, as well as in depth of colour. They are a slight improvement on the ordinary run of Cinerarias, but are not to be compared with Mr. James' strain, which exhibits the highest excellence yet obtained in this flower.

CUCUMBER DISEASE: *W. H. C.* We have sent the specimen to Mr. Smith for examination.

DEFECTIVE PINE-APPLE: *Enquirer.* If a large number of plants throw up fruit together in a defective state, like the one sent, the cause of it undoubtedly may be ascribed to the hasty application of extreme temperatures, or to the lack of heat about the plants or at the roots, or at both, at the time the plants are on the point of starting into fruit. At this critical period also the repotting of such plants, particularly during the winter months, will likewise sometimes lead to it, unless very great care is exercised in keeping the heat about them uniform. Young vigorous plants are more susceptible of injury in this way than others. *G. T. M.*

DISCLAIMER.—Messrs. Edwards & Coxwell, seed merchants, 38, Haverstock Hill, and Mr. R. J. Wood, the Bedford and Haverstock Nurseries, Kentish Town, Hill, write to state that they have no connection whatever with the enterprising seedsman whose questionable doings were commented upon at p. 567 of our last issue.

DOUBLE VIOLETS.—Your correspondent should furnish you with the number of the patent. We never heard of a patent being taken out for the production of double Violets far surpassing those of Parma, Nice, and the Mediterranean, and attaining the size of a silver five-franc piece; but as the sea-serpent was heard of the other day, so by parity of reasoning we may expect to see Violets as big as Cauliflowers some day.

ELWES' MONOGRAPH OF LILIES: *A. B.* This splendid work is published by subscription. You should apply to H. J. Elwes, Esq., 6, Tenterden Street, Hanover Square, London, W.

EULALIA JAPONICA: We have received from Messrs. John Laing & Co., Forest Hill, London, some finely marked leaves of the handsome Eulalia, lately figured in our columns.

EVENING PRIMROSE: *J. K.* Œnothera biennis.

GRASS LILIP: *H. W. C.* We are sorry we cannot tell you with certainty why your Tulips have misbehaved themselves, probably because growth has been in some way more favoured than development; but we cannot quite agree with you that they are without beauty, and certainly they have a special interest for the philosophers, as showing how flowers are made.

MUSCATS: *J. B.* The house may run up to 85° in the daytime with sun-heat, but should stand at about 70° at night, with a little air on.

FLORAL CLOCK.—Professor Balfour, in his *Class Book of Botany*, gives the following:—The vigils of plants attracted the attention of Linnæus, and he constructed what he calls a floral clock, in which the hours of the day were indicated by the opening of certain flowers, and which were hence called horological. The following is specimen of such an arrangement of flowers, in which the hours indicate the periods of waking from sleep, it is given by De Candolle* from observations made at Paris:—

	Hours of Waking.
Ipomœa purpurea	2 A.M.
Ipomœa Nil (Fruit de Nuite) and Calystegia sepium	3–4 ,,
Tragopogon, and some other Cichoraceæ, Matricaria suaveolens	4–5 ,,
Papaver rhœadis, and most Cichoraceæ	5 ,,
Echallium Elaterium, Lapsana communis, and some Cichoraceæ, Convolvulus tricolor ..	5–6 ,,
Hypochœris maculata, several species of Solanum, Convolvulus siculus	6 ,,
Species of Sonchus and Hieracium	6–7 ,,
Species of Nymphæa, Nuphar, Lactuca, and Camelina, Prenanthes muralis	7 ,,
Mesembryanthemum barbatum, Specularia Speculum, Cucumis Anguria	7–8 ,,
Anagallis arvensis (scarlet Pimpernel)	8 ,,
Nolana prostrata	8–9 ,,
Calendula arvensis	9 ,,
Arenaria rubra	9–10 ,,
Mesembryanthemum nudiflorum	10–11 ,,
Ornithogalum umbellatum (Lady Eleven o'Clock).	11 ,,
The greater part of the Mesembryaceæ, Passiflora cerulea	12 ,,
Scilla peruviana (at Montpelier), Pyrethrum corymbosum	2 P.M.
Silene noctiflora	5–6 ,,
Œnothera biennis	6 ,,
Mirabilis Jalapa	6–7 ,,
Lychnis vespertina	7 ,,
Cereus grandiflorus, Mesembryanthemum noctiflorum, Œnothera tetraptera and suaveolens..	7–8 ,,

NAMES OF PLANTS: *W. T.* The fruit of Medicago Echinus (fig. 97), a native of the Levant. The plant has been associated in the popular mind with the Passion of Our Lord. On the leaves may be seen the signs of the wounds, while the curved and spiny thorn symbolises the crown of thorns.—*H. P. Kingswear.* We are unable to identify the plant by the single leaf.—*J. Clark.* The seedling Fern appears to be Cyrtomium falcatum.—*G. H. W.* 1 and 3, insufficient; 2, Polystichum capense; 4, Selaginella cuspidata probably, but it is a very imperfect sample; 5, Phlebodium areolatum.—*T. W.* Ruscus racemosus, the Alexandrian Laurel. We could not identify the Amaryllis.—*S.* 1, Saxifraga tridactylites—the three-fingered Saxifrage; 2, next week; 3, Sedum Sieboldi variegatum.—*T. H.* The plants next week. The weevil

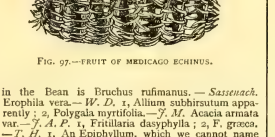


FIG. 97.—FRUIT OF MEDICAGO ECHINUS.

in the Bean is Bruchus rufimanus.—*Saxenach.* Erophila vera.—*W. D.* 1, Allium subhirsutum apparently; 2, Polygala myrtifolia.—*J. M.* Acacia armata var.—*J. A. P.* 1, Fritillaria dasyphylla; 2, F. graeca.—*T. H.* 1, Epiphyllum, which we cannot name from flower alone; 2, Mesembryanthemum spectabile.—*J. V. V.* Eria ornatum and Cymbidium pendulum.—*E. R.* 1, Fuchsia splendens, probably; but why not send good specimens? 2, Agonopsis distachyon.—*B. G. H.* Rhamnus alaternus.—*J. B. Andrews.* Bromus maximus.

NITRATE OF SODA: *Enquirer.* Nitrate of soda 80 to 100 lb. per acre sown in spring. The object of the Chiswick trials was only indirectly practical, the experiments were intended to test the effect of various manures on different plants grown separately, and not in association with others as in ordinary pasture land. Bearing this in mind, and remembering the cautions given, the Chiswick trials, especially the second series, may be relied on.

PHORMIUM COLENSOI VAR.: *James Clelland.* We have not seen this variety in flower, but have no doubt it will be similar in character to the normal type, P. tenax, which is green and white, and somewhat inconspicuous. Neither can we say what time will intervene between the spike showing and the flowers opening. We have no doubt that it might be raised from seed, but most likely the majority of the seedlings would be green.

PLANTS FOR EXHIBITION: *K. Adams.* Six gold and bronze Pelargoniums:—Black Douglas, Maréchal McMahon, Reine Victoria, Chieftain, Mrs. Harrison Weir, Rev. C. F. Peach. Six silver-edged Pelargoniums:—Albion Cliffs, Little Trot, Miss Kingsbury, Flower of Spring, May Queen, Princess Alexandra, Six Zonal Pelargoniums:—Corsair, Ivanhoe, Lady Sheffield, Wellington, Jealousy, White Clipper. Four dark fuchsias:—Lord Falmouth, Model, Lord Elcho, Symmetry. Four light Fuchsias:—Arabella Improved, Marginata, Lustre, Venus de Medici.

SCENTED GRASS HILL: *G. B. B.* The grass you allude to is probably the fragrant Hierochloe borealis; see *Eng. Bot. Suppl.*, t. 2641; also called Hierochloe fragrans and H. odoratus.

SINGLE-HANDED GARDENER: *C. Dyke.* A single-handed gardener is one who has no regular assistance, or has occasional assistance only.

TEA PLANTATION: *M. D.* Write to Mr. Smith, Curator of the Royal Botanic Gardens, Kew.

* De Candolle, *Physiologie Végétale*, ii. 484. See also Linnæus, *Philos. Bot. ed. Vindobon*, 1763, p. 278, and *Vigilie Florum Solarium*, *Phlos. Bot.*, p. 273.

UNFRUITFUL VINES: *John Nicoll.* The over-heavy crop of last year is mainly the cause of this year's unfruitfulness. Vines will not stand set-cropping.

VINES: *L. Y.* It is impossible for us to tell with any certainty what may be the cause of your Vines dying. The roots, we should think, must be in a bad condition. Examine them, and, if necessary, apply fresh soil. The paraffin oil with which you have dressed the stems will kill the buds, and may have done so in this instance.—*W. K. Wigram.* Your Vines are not suffering from any disease; the affection is owing to excessive chills—*i.e.*, very close, warm, atmosphere at one time, succeeded by extreme cold and damp.

VINERY: *Frank Carpenter, Christchurch.* It gives us much pleasure to reply to your queries. We have no doubt that if the roof of your house were at a lower angle, as you suggest, it would not be so subject to burning; the best form of house for your part of the world would be a flat span-roof with the end facing the mid-day sun. The mildew on your neighbour's Vines was not produced by the sun burning the leaves, but rather through their being kept too close and damp and dark afterwards.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspaper should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

CATALOGUES RECEIVED.—Messrs. Dick Radclyffe & Co. (120, High Holborn, London, W.C.), Catalogue of Vegetable and Flower Seeds.—J. Linden (Ghent, Belgium), Illustrated Catalogue of New Plants, &c.—Messrs. Ireland & Thompson (Craigleith Nursery, Comely Bank, Edinburgh), Catalogue of Stove and Greenhouse Plants, Ferns, Palms, Orchids, and List of Bedding Plants.—Messrs. Nanz, Neuner, & Co. (Louisville, Kentucky, U.S.A.), Illustrated Descriptive Catalogue.—Messrs. Carter & Co. (High Holborn, London, W.C.), Catalogue of New and Choice Plants.—Messrs. Boulton & Paul (Rose Lane Works, Norwich), Illustrated Catalogue of Horticultural and General Ironwork.

COMMUNICATIONS RECEIVED.—J. U. (many thanks).—G. D. V.—J. W.—L. Hastley.—C. L.—S.—T. D. M.—Sir W. S. T.—W. H. D.—J. R.—H. W.—C. Burley.—J. C.—E. W. S.—P. S.

Markets.

COVENT GARDEN, May 10.

A good supply, with trade somewhat slack, has caused a decline in most kinds of hothouse fruits, the last few sunny days having had a marked effect upon the quantity arriving in our market. All common outdoor vegetables have advanced considerably, though Asparagus, owing to the large quantities arriving from abroad, is making less than its value. *James Webber, Wholesale Apple Market.*

VEGETABLES.

	s. d.	*s. d.*
Artichokes, per bush.	2 0 – 3 0	Horse Radish, p. bun.	0 3 – 0 4
— Eng. Globe, doz. ..	4 0 – 6 0	Leeks, per bunch	0 2 – 0 4
Asparagus, Fr., bun. 20 o.. ..	6 0 – 0 0	Lettuces, Fr., p. doz. ..	1 0 – 2 0
— English, p. bun.	3 0 – 6 0	— Cos, per doz.	0 0 – 0 0
— Fr., natural, bun. ..	1 6 – 5 0	Mint, green, bunch	0 6 ..
— Giant, per bun...30 o.. ..	0 0 – 0 0	Mushrooms, per pott. ..	1 0 – 2 0
— Sprue, per bun.	0 0 – 0 0	Onions, per bush.	2 0 – 2 6
Beans, French (new), per 100	2 6 – 3 0	— young, per bun. ..	0 6 ..
— French, Long-pod, ½-bushel ..	8 0 ..	Parsley, per bunch	0 2 ..
Beet, per doz.	1 0 ..	Peas, green, per lb. ..	1 0 ..
Cabbages, per doz.	1 0 – 2 0	Radishes, per bunch. ..	0 1 – 0 3
Carrots, per bunch ..	0 7 – 0 10	— Spanish, doz.	1 0 ..
— New Fr., p. bun.	0 6 ..	Salads, per doz.	1 0 ..
Cauliflowers, per doz. ..	2 0 – 6 0	Rhubarb, per bundle ..	1 0 ..
F— French, each	1 6 ..	Salsafy, per bundle ..	1 0 ..
Celery, per bundle	2 0 ..	Scorzalde, per punnet ..	1 0 ..
Chilis, per 100	3 0 ..	Shallots, per lb.	0 6 ..
Cucumbers, each	0 6 ..	Spinach, per bushel ..	2 0 ..
Endive, per doz.	1 0 – 2 0	Tomatos, per doz.	3 0 ..
— Batavian, p. doz. ..	2 0 – 3 0	Turnips, per bundle ..	0 4 – 0 6
Garlic, per lb.	0 0 – 0 0	— new, per bundle ..	2 0 – 3 0
Herbs, per bunch	0 2 – 0 4		
Potatos.—Kent Regents, £5 to £6; Essex Regents, £4 10*s.* to £5; Kidneys, £8 per ton.			

FRUIT.

	s. d.	*s. d.*
Apples, per ½-sieve ..	3 0 – 8 0	Peaches, per doz. ..	0 15 – 2 0
Cobs, per lb.	1 0 – 1 0	Pears, per doz.	1 2 0 ..
Grapes, per lb.	0 9 – 0 15	Pine-apples, per lb. ..	0 0 – 0 0
Lemons, per 100 ..	4 0 – 10 0	Strawberries, p. oz...	0 6 – 1 0
Oranges, per 100 ..	4 0 – 10 0	Figs, green, each ..	1 0 – 2 0

CUT FLOWERS.

	s. d.	*s. d.*
Azaleas, 12 sprays ..	0 6 – 2 0	Mignonette, 12 bun.	4 0 – 9 0
Blue Bells, 12 bunch.	2 0 – 3 0	Myosotis, 12 bunch.	3 0 – 12 0
Bouvardias, 12 bun. ..	4 0 – 6 0	Narcissus, 12 sprays ..	2 0 – 3 0
Camellias, 12 blooms	2 0 – 9 0	Pelargoniums, 12 spr.	1 0 – 2 0
Carnations, per dozen	1 6 – 4 0	— zonal, 12 sprays	0 6 – 1 6
Cowslips, 12 bunch..	1 0 – 6 0	Primroses, per dozen	0 6 – 2 0
Cyclamen, per doz...	0 3 – 0 9	Primula, dbl., p. bun.	1 0 – 3 0
Daffodil, double, 12 bunches	3 0 – 9 0	Roses, indoor, p. doz.	3 0 – 12 0
Eucharis, per doz. ..	6 0 – 12 0	Spiræa, 12 sprays ..	1 6 – 4 0
Euphorbia, 12 sprays	2 0 – 9 0	Stephanotis, 12 spr.	3 0 – 9 0
Gardenia, per doz...	2 0 – 9 0	Tropæolum, 12 bun.	1 0 – 6 0
Heliotropes, 12 spr.	0 6 – 1 0	Tulips, per dozen ..	0 6 – 2 0
Lily of Valley, 12 spr.	0 9 – 3 0	Violets, 12 bun. ..	1 0 – 4 0
		Wallflowers, p. doz.	3 0 – 9 0

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Azaleas, per dozen ..24 0-60 0		Hydrangeas, per doz.12 0-30 0	
Begonias, per doz.. .. 6 0-12 0		Lily of Valley, each 1 6- 3 6	
Bouvardias, do. ..12 0-24 0		Mignonette, per doz. 3 0- 9 0	
Calceolaria 9 0-24 0		Myrtles, do.. .. 3 0- 9 0	
Cineraria, per doz.. .. 6 0-18 0		Palms in variety,each 3 6-21 0	
Clematis 24 0-60 0		Pelargoniums, scarlet,	
Coleus, per dozen .. 3 0- 9 0		per doz. 4 0-12 0	
Cyperus, do.. .. 6 0-12 0		Petunias, per doz. .. 9 0-24 0	
Dracena terminalis 30 0-60 0		Rhodanthe, per doz.10 0- 18 0	
— viridis, per doz. 18 0-24 0		Richardia æthiopica,	
Ferns, in var.,p doz. 6 0-30 0		per doz. 9 0-18 0	
Ficus elastica, each 2 0- 5 0		Roses, per dozen ..24 0 60 0	
Fuchsias, per dozen.. 9 0-18 0		— fairy, per dozen 9 0-18 0	
Genista 9 0-18 0		Spiræa, per doz. ..12 0-30 0	
Heaths, variety, doz.12 0-60 0		Yalotta purpur., doz.12 0-18 0	
Heliotrope, per doz. 6 0-18 0			

SEEDS.

LONDON: *May* 9.—As is usual at this period very little business is just now passing in agricultural seeds. The sowing season is, of course, drawing to a close, and as yet there has sprung up scarcely any speculative buying for holding-over purposes. It has been for some time apparent that a considerable quantity of Clover and Trefoil seeds will remain on hand for next year, the future value of which will depend upon the result of the forthcoming crops. One or two offers have also been received from France of new Trifolium incarnatum. Grass seeds continue to meet a good retail inquiry, and prices for these descriptions show no change. Lucerne and Sainfoin move off freely at last week's currencies. Spring Tares are in fair request at the late advance. The Canary seed trade has during the last few days assumed a quieter appearance; notwithstanding the striking irregularity of to-day's quotations, the late speculative excitement has established a remarkable rise, but whether or no this great and sudden enhancement is justified by genuine scarcity remains to be seen. In English Rape and Linseed the tendency of rates is upwards; the same can also be said of Hemp seed. Blue Peas keep very steady. Of fine white Mustard seed there is some scarcity. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday, rates for Wheat were quoted as on Monday se'nnight, but trade was very slow, and offers of less money were not altogether rejected. Barley and Oats were held for the previous Monday's prices, but where there was any difference it was in favour of the buyer. Malt passed off steadily on former terms. Maize was flat, and quite 2*s.* per quarter cheaper on the week. Beans and Peas were dull, and a very quiet market prevailed for flour.—Business on Wednesday was very quiet, and the tone of the market was certainly not firm. Wheat, Barley, Oats, and especially Maize, were cheaper to sell; and sales in flour, Beans, and Peas could only be effected at rather lower rates.—Average prices of corn for the week ending May 5:—Wheat, 60*s.* 6*d.*; Barley, 40*s.* 5*d.*; Oats, 27*s.* 6*d.* For the corresponding week last year:—Wheat, 45*s.* 2*d.*; Barley, 34*s.* 4*d.*; Oats, 26*s.* 4*d.*

CATTLE.

At the Metropolitan Market on Monday buyers of beasts were very indifferent as to making purchases, seeing that all said here must be slaughtered within the market area. Prices were consequently lower. Trade for sheep was dull and prices lower. Lambs and calves were also lower. Quotations:—Beasts, 4*s.* to 5*s.*, and 5*s.* 2*d.* to 5*s.* 6*d.*; calves, 5*s.* 4*d.* to 6*s.* 4*d.*; sheep, 4*s.* 10*d.* to 5*s.* 2*d.*, and 5*s.* 6*d.* to 6*s.* 2*d.*; lambs, 7*s.* to 8*s.* 2*d.*; and pigs, 4*s.* to 5*s.*—On Thursday, in the beast market, trade was at a standstill, and quotations must be considered nominal. For sheep the demand was slow, prices remaining as on Monday, with the turn in favour of buyers. Trade in calves was very quiet, and lambs sold a little better.

HAY.

The Whitechapel report of Tuesday states that there was a good trade for fodder, and prices were very firm. Prime Clover, 100*s.* to 140*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 132*s.*; inferior, 70*s.* to 85*s.*; and straw, 40*s.* to 58*s.* per load. The supply was fair.—On Thursday there was a fuller supply and a fair demand. Quotations:—Clover, best, 105*s.* to 138*s.*; inferior, 85*s.* to 95*s.*; hay, best, 102*s.* to 132*s.*; inferior, 70*s.* to 85*s.*; and straw, 48*s.* to 58*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 132*s.* to 138*s.*; inferior, 105*s.* to 118*s.*; superior Clover, 132*s.* to 140*s.*; inferior, 110*s.* to 120*s.*; and straw, 58*s.* to 63*s.* per load.

POTATOS.

The Borough and Spitalfields reports of Tuesday state that good Potatos, of which there are moderate supplies, continue in moderate request at previous quotations:—Kent Regents, 95*s.* to 120*s.* per ton; Essex ditto, 85*s.* to 120*s.*; Scotch ditto, 90*s.* to 110*s.*; Victorias, 110*s.* to 160*s.*; Flukes, 140*s.* to 170*s.*—On Thursday there were about the average supplies of English and Scotch on offer, but foreign were not so plentiful as recently, and, with higher prices at the producing markets, prices here have advanced. Quotations:—Victorias, 140*s.* to 160*s.*; Dunbar do., 180*s.* to 200*s.*; York Regents, 120*s.* to 140*s.*; Scotch, 110*s.* to 140*s.*; French round, 80*s.* to 190*s.*; German reds, 90*s.* to 100*s.*; and Belgian kidneys, 110*s.* per ton.—The imports into London last week comprised 58,097 bags from Hamburg, 8745 sacks Colberg, 4097 bags Antwerp, 1450 Harlingen, 950 Ghent, 713 Bremen, 479 Lisbon, 200 sacks Boulogne, 165 St. Valery, 150 Rouen, 72 casks Malta, and 73 sacks Dunkirk.

HORTICULTURAL IRON and WIRE WORKS.



For CONSERVATORIES.
Wirework Baskets.
Wirework Trellis.
Wirework Flower Stands.
Ironwork Flower Stands.
Balloon and other Trainers.

GARDEN.
Wirework Arches.
Wirework Rosaries.
Wirework Summer-houses.
Wirework Screens.
Wirework Hurdle Fencing.
Iron and Wire Espaliers.
Iron Gates.

Water-pipping laid on in Gardens.

Illustrated CATALOGUE of Designs.

R. HOLLIDAY, Iron and Wire Works, 2a, Portobello Terrace, Notting Hill Gate, London, W.

GALVANISED WIRE
PEA TRELLISES,
Used season after season, and neat-looking as useful.



6 feet wide and 3 feet high .. .. 3*s.* each.
6 feet wide and 4 feet high .. .. 4*s.* each.
6 feet wide and 5 feet high .. .. 5*s.* each.

J. B. BROWN & CO.,
90, CANNON STREET, LONDON, E.C.

Established over a Quarter of a Century.

FRANCIS MORTON & Co's (LIMITED) LIVERPOOL NAYLOR STREET CABLE FENCING

Is in use over many thousand miles,
And has been awarded the Medals and highest Commendation of all the leading Agricultural Societies.
It is constructed with
POWERFUL WINDING STRAINING PILLARS, RIGID INTERMEDIATE IRON POSTS, STRONG and DURABLE WIRE CABLE STRANDS, Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

Continuous Bar Iron Fencing,



With bars secured by F. M & Co.'s Patent Self-locking Joints, which effectually prevent the uprights being pushed aside, and are independent of loose pins, wedges, or staples.

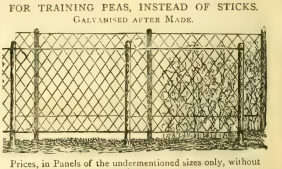
IRON ENTRANCE and FIELD GATES,
IN WROUGHT and CAST IRON,
Designed for the Mansion, Villa, or Farm,
WICKET AND GARDEN GATES,
In Great Variety of Patterns.

Iron Hurdles, Railing, Tree Guards,
FRUIT ESPALIERS, WALL FRUIT TRAINERS, &c.
☞ *Illustrated and Described in F. M. & Co.'s New Catalogue, sent on application.*

LONDON BRANCH:
1, DELAHAY ST., WESTMINSTER, S.W.

E. T. ARCHER'S "FRIGI DOMO."—Patronised by Her Majesty the Queen, for Windsor Castle and Frogmore Gardens, the late Sir. J. Paxton, and the late Professor Lindley, &c.
MADE of PREPARED HAIR and WOOL.
A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for Pits and Forcing Frames.
PROTECTION from COLD WINDS and MORNING FROSTS.
"FRIGI DOMO" Netting, 2 yards wide, 1*s.* 6*d.* per yard.
"FRIGI DOMO" CANVAS.
2 yards wide .. .. 1*s.* 10*d.* per yard run.
3 yards wide .. .. 3*s.* per yard.
4 yards wide .. .. 3*s.* 6*d.* per yard.
ELISHA T. ARCHER, only Maker of "Frigi Domo." Brockley Road, Forest Hill, London, S.E.; and of all Florists and Seedsmen.
NOTICE—REMOVED from 3, CANNON STREET, CITY.

THOMAS'S
IMPROVED PEA TRELLISES,
FOR TRAINING PEAS, INSTEAD OF STICKS.
GALVANISED AFTER MADE.



Prices, in Panels of the undermentioned sizes only, without stakes:—
6 feet wide, 3 feet high .. .. 2*s.* 6*d.* each panel.
6 feet wide, 4 feet high .. .. 3*s.* 6*d.* ,,
6 feet wide, 5 feet high .. .. 4*s.* 6*d.* ,,
The above engraving shows the arrangement of the panels tied to ordinary wood stakes.
Improved Framed Standards for ditto, galvanised, 2s. 6d., 2s. 9d., and 3s. each.

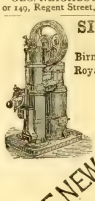
Thomas's Pea and Seed Guards.
NEW PATTERN, GALVANISED,
8*d. per dozen*, 3 *feet lengths.*
Five per cent. discount allowed for prompt cash on Orders amounting to 20*s.* and upwards.
Illustrated and Priced Catalogues of every description of Horticultural Wirework on application.

J. J. THOMAS & CO.,
PADDINGTON WIREWORKS,
282 and 362, EDGWARE ROAD, LONDON, W.

Gather Honey from your Flowers.
NEIGHBOUR'S Celebrated BEEHIVES.
PHILADELPHIA EXHIBITION, 1876.
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Three Silver Prize Medals awarded George Neighbour & Sons. The only English exhibitors who obtained Silver Medals for Beehives.
The IMPROVED COTTAGE BEEHIVE, as originally introduced by G. Neighbour & Sons, working three bell-glasses, is neatly and strongly made of straw; it has three windows in the lower Hive. This Hive will be found to possess many practical advantages, and is more easy of management than any other Beehive that has been introduced.



Price, complete £1 15 0
Stand for ditto 0 10 6
The LIGURIAN or ITALIAN ALP BEE being much in repute, G. N. & Sons supply a Swarm of Bees with genuine Italian Queen, in the Improved Cottage Hive, at £4, Hive included.
An Italian Alp Queen, with full directions for uniting to Black Stocks, 15*s.* each.
ENGLISH BEES.—Stocks and Swarms may be obtained as heretofore.
THE APIARY. By A NEIGHBOUR. 5*s.*, postage 4*d.*
A newly arranged Catalogue of other improved Hives, with Drawings and Prices, sent on receipt of two stamps.
GEO. NEIGHBOUR AND SONS, 127, High Holborn, W.C., or 149, Regent Street, London, W.



SILVER MEDAL,
AWARDED AT
Birmingham Meeting,
Royal Agricultural
Society,
1876.

1876.
HIGHEST HONOR
AT THE
Centennial Exhibition,
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Specially adapted for Pumping in Gentlemens' Houses and Grounds.
No Labor Required.
THE NEW PUMPING ENGINE
HAYWARD TYLER & Co.,
84, WHITECROSS STREET, LONDON.

FOLLOWS & BATE'S NEW PATENT LAWN MOWERS, &c.



New Patent "Roller" Lawn Mower.



New Patent Lawn-Edge Cutter.



Royal Prize Medal Patent "Anglo" American Lawn Mower.

Upwards of 37,000 of these celebrated Machines have been sold during the past few years.

Patronised by Her Most Gracious Majesty the Queen; His Royal Highness the Prince of Wales; His Imperial Majesty the Emperor of Germany; His Imperial Majesty the Emperor of Austria The Imperial Russian Government (for the Agricultural Museum at St. Petersburg); and numbers of the Nobility and Gentry of Great Britain.

Awarded Medal for Merit, Vienna, 1873 (the only Medal given for Lawn Mowers), Large **Silver Medal** (the First Prize) at the Meeting of the Royal Horticultural Society, Birmingham, 1877, and in addition, every First Prize wherever these Machines have been brought into competition in actual trial with other makes.

FOLLOWS AND BATE here abstain from enumerating in detail the various good points "claimed" for other Machines, and content themselves with saying that their Lawn Mowers possess them all, and more also; they therefore solicit the favour of an application for one of their CATALOGUES, with Testimonials, BEFORE PURCHASING.

To be had from all respectable Ironmongers and Seedsmen in the United Kingdom, or from the Patentees and Manufacturers, FOLLOWS & BATE, Manchester.

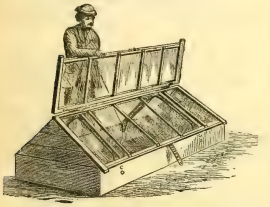
F. & B. are the sole makers of the well-known Patent "CLIMAX" LAWN MOWER, with Back Delivery, from 25s. each; NEW PATENT LAWN-EDGE CUTTER, which entirely supersedes the Shears: PATENT GARDEN PLOUGH, &c.

Machines of any make Repaired or allowed for in Exchange.

BOULTON & PAUL, NORWICH,

HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MAKERS.

No. 60.—PATENT PORTABLE UNIVERSAL PLANT PRESERVER.

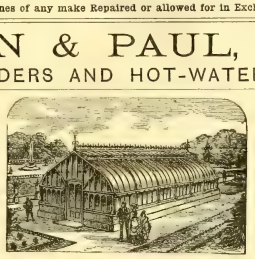


These excellent span-roof frames are made with wood sides, which are bolted iron girders to carry the lights. These lights will turn completely over and lie on the other side while attending to the plants inside. They are very portable; a man can easily remove the small size, two men can carry any size up to 12 feet by 4 feet. The use to which they may be applied is unlimited, as almost any class of plants can be grown in them.

CASH PRICES—CARRIAGE PAID on Orders of 40*s.* and upwards.

Painted 4 times, and glazed with 21-oz. glass.

Length.	Width.	Height of sides.	Height to ridge	£	*s.*	*d.*	Ends per pair.
6 feet	2 feet	9 inches	1 ft. 3 in.	1	5	0	5- extra
12 ,,	,,	,,	,,	2	10	0	5- ,,
6 ,,	3 feet	,,	1 ft. 9 in.	1	15	0	7- ,,
12 ,,	,,	,,	,,	3	5	0	7- ,,
6 ,,	4 feet	,,	2 ft. 0 in.	2	6	0	6 6 ,,
12 ,,	,,	,,	,,	4	4	0	6 6 ,,
12 ,,	5 feet	11 inches	2 ft. 6 in.	5	10	0	10 0 ,,
12 ,,	6 ,,	,,	3 ft. 0 in.	7	0	0	12 0 ,,



Winter Gardens, Conservatories, Greenhouses, Orchard-houses, Vineries, Plant-houses, Forcing-houses, Ferneries, Peach-houses, Cucumber and Melon-houses, Patent Plant Protectors, Forcing Pits and Frames, Melon Frames, &c., constructed of the best materials in Wood and Iron combined, on thoroughly practical and scientific principles, efficiency being our first consideration, while due regard is paid to design and ornament.

Gentlemen waited upon and advised as to the best method of arranging Horticultural Buildings of every description.

Designs prepared, Plans and Estimates furnished, **Architects' Designs** carried out, **Hot-water Apparatus** of all descriptions on the best system erected and guaranteed to work in the most satisfactory manner. Estimates on application.

Boilers.—A great variety of the best Hot-water Boilers and Stop-valves kept in stock. Illustrated Price Lists free on application.

A new **Catalogue** of Horticultural Buildings post-free for 24 penny stamps, the cost of which will be deducted from the amount of first order. Ready March 1, 1877.

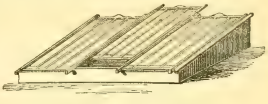
Amateurs' Greenhouses as **Tenants' Fixtures**, Price Lists free on application. Plant Protectors, Ground Vineries, Melon Frames, &c., Price Lists free on application.

Melon Frames and **Forcing Frames.**—The largest stock in the kingdom. Price Lists free on application.

NO. 75.—MELON FRAMES AND FORCING FRAMES.

The Largest Stock in the Kingdom. Ready to be despatched on receipt of Order.

These Frames are made of the best red deal, thoroughly seasoned, and fitted by first-class workmen, 24 inches high at the back, 13 inches high in front; painted three coats of good oil-colour, glazed with best 21-oz. glass, every pane of which is nailed in and bedded in putty, the best method of glazing known, and adopted by the most eminent builders and leading nurserymen (see *The Garden* for January 13, 1877, page 30) Iron handles to each light, and an iron strengtheningbar across. Each light is 6 feet by 4 feet, and 2 inches thick.

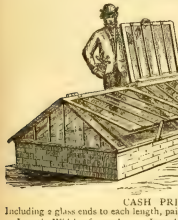


CASH PRICES—CARRIAGE PAID.

	£	*s.*	*d.*
1-light frame, 4 feet by 6 feet	1	17	0
2 ,, ,, 8 ,, 6 ,, ...	3	5	0
3 ,, ,, 12 ,, 6 ,, ...	4	17	6
4 ,, ,, 17 ,, 6 ,, ...	6	7	6
5 ,, ,, 20 ,, 6 ,, ...	7	17	0
6 ,, ,, 24 ,, 6 ,, ...	9	7	6

Breakages seldom occur. Should any glass be broken, we will send sufficient to replace it, carriage free.

No. 64.—PATENT PLANT PRESERVERS, ARRANGED TO BUILD ON BRICK WALLS.



This is the Practical Gardener's and Nurseryman's favourite frame, now largely used for storing the great quantities of bedding plants in winter, and in summer for growing Melons, &c. This is made for building on brickwork, as shown by section of No. 64.

Section No. 64 shows the frame built on brickwork, with a pit sunk low enough for making a dung bed for growing Cucumbers, Melons, &c. This form can be made up to any length required.

Carriage paid to any Railway Station in England, also to Dublin, Edinburgh, and Glasgow.

CASH PRICES—CARRIAGE PAID.

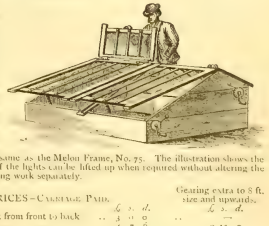
Including 2 glass ends to each length, painted 4 times, glazed with 21-oz. glass. Carriage paid.

Length.	Width.	£	*s.*	*d.*
12 feet	5 feet	5	5	0
18 ,,	,,	7	5	0
24 ,,	,,	9	2	6
30 ,,	,,	11	7	6
36 ,,	,,	13	2	6
42 ,,	,,	15	0	0

Length.	Width.	£	*s.*	*d.*
12 feet	6 feet	6	10	0
18 ,,	,,	9	0	0
24 ,,	,,	11	10	0
30 ,,	,,	14	0	0
36 ,,	,,	16	10	0
42 ,,	,,	19	0	0

Length.	Width.	£	*s.*	*d.*
12 feet	7 feet	8	0	0
18 ,,	,,	11	0	0
24 ,,	,,	14	0	0
30 ,,	,,	17	0	0
36 ,,	,,	20	0	0
42 ,,	,,	23	0	0

No. 74.—NEW THREE-QUARTER SPAN-ROOF GARDEN FRAME.



Our illustration shows a New Frame for growing Cucumbers, Melons, &c., and for storing plants. It is made to give greater height and more convenience than the Melon frame, No. 75. The front is 11 in. high, without the light, 32 in high at the ridge, and 27 in. high at the back. The front lights can be turned back on the lights behind, and back lights turned on to the front lights, giving access to all the plants inside. They are made of the best red deal, sides and ends 1¼ in. thick, 2 in lights; all are painted four times, and glazed with crystal sheet glass, nailed and puttied in, same as the Melon Frame, No. 75. The illustration shows the lights to open with gearing; any of the lights can be lifted up when required without altering the other lights. Back and front gearing work separately.

CASH PRICES—CARRIAGE PAID.

	£	*s.*	*d.*
No. 1 size, 4 feet long, 6 feet from front to back ..	4	0	0
No. 2 ,, 8 ,, 6 ,, ,, ..	4	7	6
No. 3 ,, 12 ,, 6 ,, ,, ..	8	15	0
No. 4 ,, 16 ,, 6 ,, ,, ..	7	2	6
No. 5 ,, 20 ,, 6 ,, ,, ..	8	10	0

Gearing extra to 8 ft. size and upwards, £ *s.* *d.*

No. 2	0	15 0
No. 3	1	2 6
No. 4	1	10 0
No. 5	1	17 6

These frames are the most convenient, best made, and strongest things of the kind that are in use.

See our Exhibits at the Bath and West of England Show, to be held at Bath on June 4, 5, 6, 7 and 8, 1877.

Carriage paid to any Railway Station in England, also to Dublin, Edinburgh, and Glasgow.

Packing Cases are charged, and half of the cost allowed if they are returned in good order, carriage paid, to our Works, within a month of delivery of the frame.

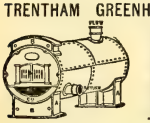
New Illustrated CATALOGUE of Conservatories, Greenhouses, Peach Houses, Forcing Houses, &c., post-free, on receipt of 24 penny stamps, the cost of which will be deducted from the amount of first order.

HENRY ROBINSON, IRONFOUNDER and ENGINEER, Stewkins Foundry, Brettel Lane, Stourbridge.

	2-in.	3-in.	4-in.	
HOT-WATER PIPES,	2s. 1d.	3s. 4d.	4s. 3d.	per 6-ft. length
Ditto ditto ..		4s. 7d.	5s. 10d.	p. 9-ft. length
ELBOWS, No. 12 ..	1s. 1d.	1s. 6d.	2s.	each.
TEES, No. 33 ..	1s. 4d.	2s. 4d.	3s. 3d.	each.
SYPHONS, No. 23 ..	1s. 4d.	2s.	3s.	each.

Price List free on application. Portable Pipes, Gold Medal Boilers, &c.

STEVENS'
TRENTHAM GREENHOUSE BOILER,



After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved. For Illustrations, with full particulars, apply to the Sole Makers,

F. & J. SILVESTER.
HOT-WATER ENGINEERS, &c., &c.,
Castle Hill Works, Newcastle, Staffordshire.

☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

COWAN'S PATENT
COMPENSATING SYSTEM
OF HEATING,

FOR HORTICULTURAL, PUBLIC, AND OTHER BUILDINGS.

The most important discovery for saving the cost of fuel, for steadiness in heating power, and dispensing with night stoking. One Apparatus will do the work of several Boilers, and in some cases produce a profit.

Heating by the Ordinary Systems.

Hothouses, Mansions, Churches, and other Buildings efficiently heated by other approved methods, where the Patent Apparatus cannot be adopted.

A large Stock of the most improved forms of Boilers to select from.

HEAT and LIGHT.

COWAN'S PATENT COMBINED GAS-MAKING and HEATING APPARATUS,

By which Country Mansions and Public Institutions may be heated and lighted, in most cases free of cost.

HORTICULTURAL BUILDING.

All structures specially adapted to the purposes for which they are required, built of the best materials and workmanship, at moderate prices.

Plans and Estimates free. An Illustrated Pamphlet free.

All work done by the Company is guaranteed.

THE
Cowan Patents Company (Limited),
21, WHITEHALL PLACE, LONDON, S.W.,
and The Vineyard, Garston, near Liverpool.

For Sale, a
STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to
HILL AND SMITH, Brierley Hill Ironworks, Dudley.



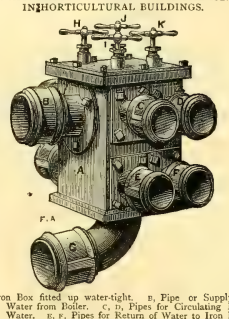
THE
New Patent Garden Pump,
Price 25s. complete
(Packed for Rail, 2s. extra).

This Pump is on an entirely new principle, and for ease of working and portability stands unrivalled.

Illustrated Catalogue of Garden Engines, Pumps and Syringes gratis & post-free.

NYE & CO.,
373, OXFORD STREET, LONDON, W.

CRITCHLEY'S PATENT
HEAT REGULATOR,
AN APPARATUS FOR REGULATING THE HEAT IN HORTICULTURAL BUILDINGS.



A, Iron Box fitted up water-tight. B, Pipe or Supply of Water from Boiler. C, D, Pipes for Circulating Hot-Water. E, F, Pipes for Return of Water to Iron Box. G, Pipe for Returning Water to Boiler. H, I, J, K, Piston-Rods for Opening and Closing Valves.

The advantages of these Regulators are that houses may be kept at different degrees of heat, or the circulation of water and heat entirely stopped in one part and not in others. They may be fitted with as many valves as required, and are particularly adapted for forcing houses where top and bottom heat is used. They may be fixed in any part of the apparatus most suitable for working, without regard to the position of the Boiler.

The following Testimonial has been received :—

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"Gentlemen,—I am happy to inform you, now that the late severe winter is past, that the Hot-Water Apparatus erected by you does its work to my entire satisfaction. As to the two Heat Regulators, which represent thirty valves, I have had ample opportunities of practically proving them, and unhesitatingly admit they are far superior to any other valve; in fact, I think it the greatest improvement that has come out for horticultural purposes.

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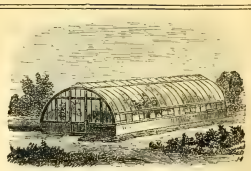
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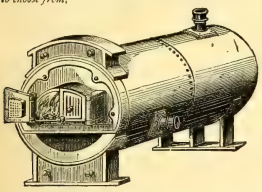
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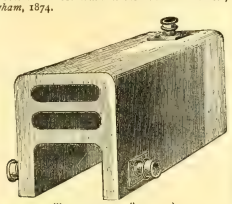
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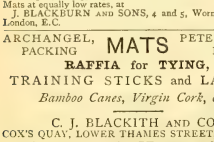
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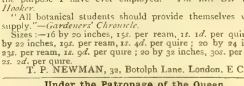
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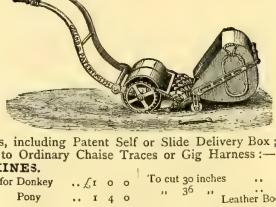
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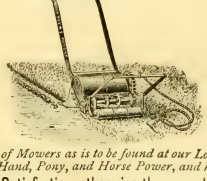
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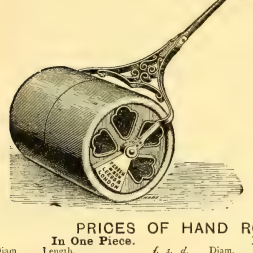
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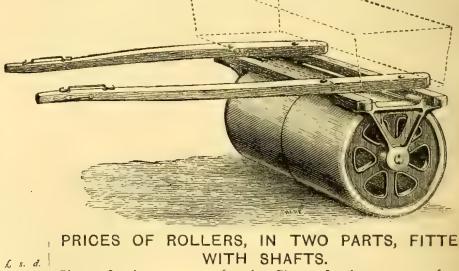
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SUPPLEMENT TO THE GARDENERS' CHRONICLE.

FLOWER GARDENING.

ANY of the most palpable errors and serious mistakes in flower-gardening have arisen from supposing that these two—cultivators and artists—who between them make and furnish the flower garden, must necessarily be combined in the same person. No doubt many cultivators are also men of refined taste, and also of considerable capacity in the designing, laying-out and furnishing of flower gardens—artists may also be found who are accomplished cultivators—but there is no necessary nor natural relation between skill in cultivating plants, and taste in designing, laying-out, or even furnishing gardens; and the sooner the fact is recognised and acted upon the better.

Now if this be true—and it is—neither is taste transmissible by laws of primogeniture or entail, nor is it purchasable by wealth. Money can do almost anything—purchase houses, lands, a seat in Parliament, social status, &c.—but it is powerless to buy a cultured intellect or polished taste; and some of the most absurd and vulgar vagaries ever attempted in flower gardens have been the creation of those whose wealth furnished them with the opportunity of revealing their inherent poverty and vulgarity of mind in the mansion or the garden. It cannot be too often repeated, that there is no royal road to good, true, and beautiful flower-gardening, any more than there is to painting, eloquence, or genius of any sort.

Perhaps the greatest weakness of modern flower-gardening, as of art of all kinds among us, is the want of originality, its chief bane the opposite, that is, servile imitation. Whatever is or has been, is held to be right, and is repeated evermore. Our literature is partly to blame for this. Practice, or what is, is extolled: theory, or what may or should be, is contemned; while originality is strangled with a sneer, and imagination is politely bowed out of the domain of horticulture. And yet the quickening of the latter faculty is one of the most pressing needs of the day to lead horticulture on to higher victories in discovery, in literature, general practice, and especially in improving the designs and furnishing of our flower-gardens. If there is a place for the imagination in scientific inquiry—and there is—there is assuredly a much higher and more important place for the exercise of the same brilliant and creative faculty in the embellishing of our flower-gardens. Unfortunately, too, exactly in the ratio of the decadence of the imagination, is the persistency and invariableness of our imitation. We are, in fact, a nation of imitators. It saturates our habits, clips the wings of our art, and runs riot in our gardens. Imitation robs thought of its freshness, gives tricks of style to our literature, degrades painting into copying, with few exceptions—making all the men and women, the seas, rivers, landscapes, of our island alike, and designing and planting thousands of gardens up and down the country on the same pattern.

Imitation has ever been the bane of British flower gardens. Men run after styles and pursue art in masses, as dogs hunt in packs or sheep feed in flocks. Now and then some strong mind arises and bursts the bonds of uniformity by the force of his brilliant imagination, and for a time his fashion or style prevails. It was so with such great men as Capability Brown, Cultured Repton, Elegant Price, Flowery Nasmyth, Antique Nesfield, Encyclopædic Loudon, and others. Each has broken through to some extent existing styles, and been followed by hosts of imitators. No harm would have come to the art of flower-gardening had the imitators taken the best of each master for the time being, and by the force of their genius and imagination made each master's work contribute to the general improvement of flower-gardening. Imagination, pluming its wings, as it were, on the best works of others, would thus make smooth the coigns of vantage from which to rise higher, and do yet better and more beautiful things with flowers and flower gardens. Instead of this, almost each style, however commonplace, has been extolled as perfect in its turn.

At one time curved lines of beauty were so much in vogue that even the straight lines of square houses were considered highly offensive to the rules of taste. Straight walks, roads, fences, plantations were considered a sin against the laws of culture and of taste. Another revolution of the wheel of capricious fashion turned all the lines of beauty into Dutch canals, and the straightest, shortest line between any two parts was held to be the line at once of mathematical precision and of artistic propriety. Now almost equally great changes have taken place in the furnishing of flower gardens as in the outlines of the walks, beds, or borders.

Mixed Borders.

The mixed style, which included everything from stately trees or shrubs in the centre of large clumps to dwarfs, annuals, alpines, or succulents, hugging the turf at the extreme edges, was the proper thing for many years. The chief art of furnishing resolved itself into a matter of heights, breadths, and consequently distances—by no means such a simple affair as modern flower-gardeners may suppose. For only think of the special knowledge required to master such details concerning the hundreds of species and varieties of plants grown in many of the old flower gardens. This plan also has many merits, and is consequently being revived. It suffered severely from the straining of a few general rules. So inexorably at one time was the rule of the uniformity of stature in each form of bed or border enforced, that the head of a plant or its natural habit, or both, were sacrificed rather than it should prove too high for its place. The most ridiculous efforts were often made to keep others low enough. Stakes were excessive in number, and often enormous in bulk. The isolation of the plants was carried to extremes, as was the intermixture of species and varieties. The garden often became a confused medley, in which there was more timber and bare earth than beautiful plants. All individuality and most of the beauty of many of the plants were utterly destroyed by what may be termed the uniform birch-broom style of training and tying. The result was often monotonous and tiresome in the extreme, and it was often quite refreshing to rush away from the stiff and tame sameness of the flower garden into the more pleasing because more free art of the tangled woods. But there was a grand richness of material in the old style. Were the plants but thrown into groups or families, and early allowed to display their beauty in a natural state and in sufficient breadths to produce a distinct impression—on which the eye and nose could rest with pleasure before passing on to the next group of plants—more pleasure could be got out of the old plants than many of the modern ones.

The eccentricity and irregularity of the form of the old beds and borders also gave an air of quaintness and of freshness to them. The outlines were often so erratic that one might have thought they were formed by a shower of ballast from a balloon scudding before the blast or caught in a whirlwind. This irregularity of boundary lines running apparently where it listed, in defiance of all rules of art and principles of congruity, was often the only touch of Nature that redeemed old flower gardens from the dominance of the most dismal art—the only spark of genius that flashed up from the dying embers of the most dead and lifeless uniformity of furnishing.

Bedding Out.

It is a libel, however, on Nature to call the old mixed or dotting system, in which each herbaceous plant of similar height, whether Golden Rod, Phlox, or what-not, was made as like as possible in size, height, and general outline to its neighbour, the natural style of flower-gardening. As Nature is ever the inspirer and teacher of Art, and Art is ever catholic, she hates narrowness and isolation. There was more of Nature and also of art in the massing and bedding out than in the mixing or dotting style. Nature masses always—dots, isolates, seldom or never; or if she dots at all it is mostly on an already furnished base, as Buttercups and Daisies on the verdant sward—the first example, and still the richest illustration of pincushion flower-gardening. Does any one question that Nature masses her beauties on a large and magnificent scale, let him away to the brown heaths and shaggy woods, and see what grand breadths of light and shade, of grave and gay, she forms of brilliant flowered heaths, golden Brooms and Furze, contrasted with dark Pines, Weeping Willow, or silvern Birches. These are but samples drawn at a venture from Nature's full lesson-book of the science and practice of grouping in masses, or bedding-out flowers and verdure.

It was, however, quite natural that the introducers of the new style should fall into some mistake. The state of art among nations and men, the civilisation of peoples, may be more correctly guaged by their decorations than by almost any other test. The rage for colour is a sure test of want of taste or of a low state of civilisation. Hence the glaring colours of savages, the daubs in the homes of the poor; and it was the glare that destroyed all repose, and consumed, as it were, by its brilliancy the higher-classed beauty in so many flower gardens. The primary colours were used in such excess that each garden became a sort of tricolor, contending over every bed and border. The contrasts were too startling, the harmonies mostly in major keys or high colours; and there was a glaring want of neutral tints and greens to insure rest and suggest repose. All this, however, has been corrected by criticism. The cry that the flower-gardener had caught the blues, the jaundice, or the scarlet fever, had its desired effect. The colours became more subdued, better balanced, more beautifully mixed, blended and toned down into softer, sweeter harmonies, resembling more the melting strains of the lute than a trumpet summons to battle.

In fact there was and still is far too much of the battle spirit in the combats and contests of modern flower gardening. It is a strife for mere numbers rather than for excellency, as if thousands posted in the wrong place in an unskilful manner could cover or hide up the want of either by their mere mass. And then everybody imitated his neighbour's garden, and monotony ran to seed in the gay days of the bedding-out or grouping system of furnishing flower gardens. Each garden everywhere was but a counterpart of every other garden everywhere else. Hosts of observers scoured the country, note-book in hand, to duly chronicle results, and bedding-out systems were taken bodily from your pages, and displayed on hundreds of other gardens, just as a bale of cloth might be purchased from a draper's, and rolled out and served to scores of customers. Or, better illustra-

tion still, garden arrangements were transferred from places for which they were adapted to others for which they were most unsuitable, and from the pages of this journal to the beds of thousands of flower gardens, with as little thought of adaptation as a block of type is conveyed from the composing-room to the machine-room. This endless repetition and servile imitation, making each garden but a double of another, satiated the public taste and caused a rebound from gay to grave in flower gardening.

Subtropical Gardening.

In other words it prepared the way for the next step in advance—leaf or subtropical gardening. This system has the great merit of introducing new and different materials to our flower gardens. It added a new dignity and stature to the plants hitherto used for greens, and provided the elements of a far richer variety of filling and furnishing. The place for subtropical gardens, however, should be in combination with flowering plants, and not separated from them, as has generally been done. New furniture also often requires new rooms. Ladies who are *au fait* at adapting papers, carpets, furniture, ornaments, to the size and character of houses and rooms will understand our meaning. No doubt one of the greatest drawbacks to the effective display of subtropical plants has been and is the planting them in the old beds or borders. Beds or borders of suitable forms and sizes for such plants as Verbenas, Calceolarias, Pelargoniums, &c., are probably altogether unsuitable for Cannas, Solanums, Wigandias, Castoroils, Tobaccos, &c. The effect and grandeur of many of these fine plants are planted down into insignificance by the small circular, elliptical, diamond, square or other shaped beds in which they are planted. These "little goes" with large subjects, so common in our parks and in private gardens, have done a good deal to bring subtropical gardening into ridicule.

It, however, like the bedding-out system, has sufficient vitality to survive all opposition and to be improved by it. Few things add more to the richness of a flower garden than fine-foliage plants in sufficient masses to throw out with better effect the brilliance of the coloured leaves and flowers—distant points losing themselves by distance or changes in the form or level of the ground massed with fine-foliage plants. Stately Cannas, Musas, Palms, Ferns, skirting the sides of pools, lakes, streams, reflecting back their noble foliage from their crystal depths; the sides of valleys, gentle mounds and elevations, shady nooks and corners, warm, snug recesses—these and somewhat similar spots form the most effective places for planting with subtropical plants. The mere height of the plants and massive spread of their fine foliage suggests the propriety of planting them in considerable masses. Neither is it by any means necessary that the masses should all be green. Even among some of the larger subtropical plants, such as Cannas, there is a rich diversity of coloured leaves, which in the various forms of Beet, Coleus, Amaranthus, Coltsfoot, Perilla, Iresine, Cineraria, Centaurea, Alternanthera, &c., furnish an assortment of colours almost as rich and gay as the usual run of flowering plants. As a curious instance of those contradictions in art which are far from numerous, it may be noticed in passing that those who have been the loudest in stern condemnation of an excess of coloured flowers in gardens, have been most prodigal in the introduction of high-coloured foliage. In avoiding Scylla, how many fall into Charybdis!

Subtropical gardening, however, is sure to hold its own, and to improve with practice. It is based on sound principles, and its place and practice are every year becoming better understood. It is not a substitute for flowers, but a rich support and addition to them. Foliage plants should be to flowers what the painter's sky, clouds and background are to the lovely landscape. But a garden of leaves only is something like a picture without a central subject—a novel without a plot—a magazine wholly padding, without a substantial article.

Ribbon Gardening.

In striking contrast to subtropical is that of ribbon gardening. As its name implies, it consists of bands of colour of varying or uniform width, arranged in straight or in waving or curved lines. The colours may be arranged on the principles of harmony or contrast, and the different bands may also be separated from each other by neutral colours, or bands of black, white, or green. One ground-colour may also be used for the groundwork of the ribbon, with one or more striking bands of colour run through it. It is obvious that this method of furnishing flower-gardens affords unusual facilities for the display of coloured leaves and flowers with striking and pleasing effects. The variation alike in the arrangement and the relative truth or mass of the different colours, may be endless. Some prefer only a few simple colours several rows deep, or, in other words, a bold ribbon, with only two or three bands; others, again, elect to have a ribbon with ten or a dozen bands of colour all of one width; others repeat the same colours several times in succession. There is also much scope or variety in the matter of edgings. These may either contrast or harmonise with the chief colour of the ribbon, and generally add greatly to the interest and beauty of the ribbon.

Pattern Beds.

Closely associated with, or rather a branch of ribbon bordering, is the picking-out style. Beds or borders are thus arranged in solid blocks of colours, separated by straight or waving ground-lines of varying width between the blocks. The blocks or masses of this kind may also be varied in form, size, and colouring. A common plan of picking-out ribbon borders is to pick out circles, ellipses, diamonds, or other patterns, and carry a band of one or other colour, from a foot to a yard wide, of low stature, round the picked-out masses. Then, again, on wide borders, straight lines may follow these waving lines in the back and front of border. This disposition forms yet other blocks to fill up the space between the waving and the straight lines, so that this arrangement provides three series of block or masses—curved, waving, or cross-lines, and also a series of straight lines back and front of the ribbon borders.

Single specimens or groups of quite a distinct character of plants form another good variety of the picking-out style. Specimens or groups of Fuchsias, Humeas, Yuccas, Dracænas, Palms, Cannas, &c., among flowering plants, impart much variety and freshness to ribbon borders or large beds arranged on the picking-out style.

A change of lines in parts of beds and borders sometimes almost affords as much variety as a change of plants; it also enables dwarf plants to be used with excellent effect at times in new positions. The entire beds or borders are also often worked out with scrolls or pieces of embroidery, in which elegance of design, and softness and beauty of colour, vie with each other for the mastery. Few modes of furnishing are more beautiful than those which are carried out with taste and judgment, and wherein the amount of each colour, as well as its place, is arranged with care and judgment.

Pincushion beds and borders are also very effective. These consist generally of one ground colour, furnishing the surface thinly with one shade or hue. Verbena venosa and Purple King, Golden Feather Pyrethrum, Lobelia speciosa, and other dwarf varieties, Iresine, Amaranthus melancholicus, the variegated Mesembryanthemum, &c., are favourite plants for groundwork. Over and among these, exactly as pins are stuck into a cushion, other plants, such as Mangles', Lady Plymouth, Flower of Spring, Lady Cullum, or other silver variegated or golden tricolor Pelargoniums, Coleus, Perillas, scarlet Pelargoniums, &c., are set as a contrast to the groundwork. Silvers, planted on blue or purple grounds, are, upon the whole, the most striking and pleasing arrangements in pincushion gardening.

Mosaic Beds.

Almost the latest fashion in flower gardening is the carpet, tapestry, or inlaid style. Various patterns are chosen and filled in with blocks or masses of colour, separated by dividing masses, lines, or broad bands of other colours. Carpet bedding differs chiefly from the pattern-bedding style in the plants being as nearly as may be of one height, so as to represent a textile or woven fabric of uniform texture, or slightly varying in thickness; the more perfectly to imitate the raised parts of Brussels and other carpets. The resemblance is carried further by the use of made or sunk walks, furnished with House-leeks and other succulents laid on edge, to exhibit the thickness of the carpet. Pretty, very pretty, it may be, but carpet bedding can lay but little claim to art. It belongs rather to the work of the playwright than the higher qualities of the actor. It is also like some novels—wonderfully poor in plot, clever delineations of character, or useful lessons of any sort, but groaning beneath piles of upholstery and tinsel grandeur, and rich feasts of wines and viands.

Carpet bedding is rich in colouring, prodigal in its waste of plants, whilst smashing bricks, coloured pebbles, sand, or gravel, or even paints, would form a carpet on the ground as well or better, and relieve the plants from a most unnatural position and suffocating proximity to each other. Plant life and beauty are far too sacred and valuable to be merely worked up into gaudy patterns, like so many hanks of coloured wools. The piling up of succulents in this style of gardening is a reckless waste of plant beauty and little else or less than a prostitution of art, reminding one of the elaborate embellishments of the pastry-cook and confectioner rather than of the simplicity and chasteness of the painter. The true place for succulents is the rockery, to contrast and heighten the grace of Ferns by their quaint stiffness of form and dwarfness of stature. It is surprising that, with the enormous influx of succulents into our gardens, so few of them have found a rockery for themselves, or have been mixed with Ferns, with alpine flowering plants, and such grand subjects as Foxgloves and Snapdragons, and many others that increase the beauty and add to the verdure of Ferns by their glow of colouring. Succulents would be in their proper places in such situations, and would form a link between our more fernery style of flower garden, and the more flowing style and higher art of the so-called wild garden—a contradiction in terms, but a convenient expression, indicating the want of formal training and arrangement, in which the plants and grouping often reach a grace beyond the reach of more formal art.

Necessity for Variety.

The chief charm in flower-gardening is to have a little of all good styles, and as great a variety of plants as practicable. Where there are several gardens or groups of flower-beds, each should be as different from the other in design as possible. Repetition of the same notes is not more tiresome in music than in flower-gardening. The different styles, the variety of plants employed, and their distinctness and freshness of arrangement, should give analogous pleasure to the different lays and notes in music. The transitions need not be too sudden nor severe, but step by step, and through a series of gradations, one may proceed from the trimmest, stiffest art of hard-and-fast geometrical designs and furnishing to land at last in groups of Pampas-grass shooting up against dense masses of Fir trees, Ferns dropping over a waterfall, or Weeping Willows reflecting their exquisite grace from a brook fringed with aquatics.

Next to monotony, the chief weakness of modern flower-gardening is excess of material. Artistic arrangement, floral or leaf beauty, is nothing worth in the estimation of many unless both can be reckoned by thousands and tens of thousands; in fact, it is no exaggeration to assert that many gardens are so crowded with flowers that it is impossible to see their beauty. They are just as if an artist were to value his picture chiefly for the amount of valuable colour he could contrive to daub on to it. It is just so with many gardens. You cannot see the beauty for glare. Gravel and grass are cut down to the narrowest, that more and yet more plants may be crowded into a limited space. Just as a much better landscape may be cut out in many gardens than can be planted in, so the greatest improvement that could be effected in hundreds of flower gardens would arise from turfing down one-half or three-quarters of the flower-beds and borders. Sufficient beauty to satisfy all the requirements of refined taste is quite a different thing to a prodigal display that speedily satiates or suggests vulgarity. Excessive display is always unsatisfactory. Many flower gardens remind one of a lady always arrayed in her richest apparel, and the whole of her jewels—her natural grace and modesty are apt to be lost sight of beneath her excessive ornamentations. It is so in degree with overplanted, over-coloured gardens. Moderation and simplicity are essential principles of landscape art, that should be carefully applied in the decoration of flower gardens. In avoiding overcrowding the opposite end of thin planting should not be indulged in. Some gardens through the very evils of an excessive number of beds and borders never are, but always to be, beautiful. The plants are placed so wide apart that they seldom meet till the end of the season. This poverty of plants is by no means what is meant by a spare use of flowers. Reduce the beds and borders as much as

good taste may require, and do it with a bold and firm hand, but let those that remain be well and fully furnished. To have them otherwise is like hanging an unfinished picture on the most prominent place on the wall. Works of art should be fully finished or furnished, or put out of sight. Exactly the same rule applies to gardens. Better a bed a yard across, well filled and prettily arranged, than a score of beds that never grow into full beauty until the frost has them in its grasp. No doubt gardens must grow into beauty, but careful planting and skilful preparation hasten the process and bring out the artist's ideal as speedily as may be. It may also be useful to remind some that though plants are among the highest and most beautiful works of art, they need vulgar food to make them grow into beauty and sweetness, and that, however tasteful the arrangement and good the material, the result will be a partial or complete failure unless the plants are duly prepared for their places, and the place duly cultivated and enriched for the plants. To avoid blots and blanks in the flower garden culture and manure are both needed.

Modern flower-gardening, too, has also become a thing of permanent beauty. It is not a mere flash of spring, summer, or autumn beauty, as of yore, but rather a succession of panoramas passing through the seasons with stately grace, dignity, and beauty. Early spring plants and bulbs garland the young year with freshness and fragrance the most charming and sweet. Summer has its garniture of later flowering plants and its brilliant glow of annuals. These again are succeeded by the more elaborate and durable, though hardly more beautiful, arrangements for autumn. And winter, stern and cold, has its garden of shrubs and Christmas Roses, Golden Aconites, &c. All this succession of flower-gardening involves an amount of taste, care, and labour altogether unknown and unthought of a few years ago. The garden artist and furnisher has to paint four pictures a-year instead of one. His imagination, genius, taste, are ever on the rack, and he is fortunate indeed if he can please himself and gratify others by enwreathing the flower-garden with verdure, enriching it with beauty, and filling it with fragrance from January to December. *F.*

CARPET BEDDING.

Although a system of recent introduction, carpet bedding has nevertheless taken a firm hold upon those who have to furnish our flower gardens and parks, and certainly when the plants composing these carpet beds are well chosen for their decided colouring and lasting properties, there is no kind of bedding more pleasing and effective. It also educates the gardener's eye in providing true geometric figures wherewith to display his colours, for although carpet bedding is most attractive and fascinating when faultlessly carried out, nothing is more open to objection when the figures are inaccurate.

Geometry is truth, and all figures in carpet bedding must be truthfully delineated, or the result will be a miserable failure. Hence the desirability that every one, before introducing this style of decorative gardening, should thoroughly master his designs on paper before he attempts to reproduce them with coloured plants upon his beds. They must be laid out and planted to correct lines, and kept to them afterwards, to be effective; and we would here suggest that in commencing this practice simple forms should be preferred to the more elaborate ones. They are much easier to produce, and quite as effective, and these latter kinds may be introduced hereafter when the system is better understood by the operator if it be deemed desirable to do so. There are many people, no doubt, who will remember the surprise and admiration caused by the novel and effective bed in Battersea Park produced by planting the centre with Coleus Verschaffeltii, and the margin with Centaurea candidissima. This bed, seen in the after-part of the day, with the sun lighting up the brilliant colouring of the Coleus, and its quiet silvery edging, has left an impression on our memory never to be forgotten. This may, we think, be considered one of our earliest and most successful attempts at carpet bedding; and although we now prefer more intricate plans and much shorter pile to our carpets, still we do not forget our first surprise, and beds now filled with similar plants will not fail to arrest the attention of all spectators of good taste, although they may be immediately surrounded by their more elaborate successors. The patterns that may be worked out upon this system are almost endless, and not only geometric designs, but even the imitation of forms and colours of insects has been attempted, with tolerable success and very questionable taste. The coloured spots on the wings of a butterfly are much too intricate and beautiful ever to get them properly delineated with plants: a few colours worked into a pretty simple pattern will always be preferable.

Plants made Use Of.

At the earlier period to which we referred the materials for this kind of ornamentation were very scanty, for although they were all around us they had never been utilised, as the demand for them had not yet come. One scarcely dreamt of using such plants as Sempervivums, Echeverias, Sedums, Cerastiums, and a long list of other hardy or half-hardy plants which figure so largely in our present compositions, and which were seldom found previously except on cottage roofs, stone walls, or in our neglected herbaceous borders. The most important hardy plant in carpet-bedding is doubtless the Pyrethrum Golden Feather. It is easy to produce, effective in composition, and lasting in its properties; it may be kept to the most rigid forms, is decided in colour, and well covers the ground. These we consider to be indispensable qualities in first-class carpet-bedding plants. It will come true from seed, and if this is sown early in March in a cold frame, or even in the open ground, it will produce good plants by the time it is required to plant out. Its normal form, the Pyrethrum Parthenium, is a British plant, and is almost as common in gardens of all grades as the Dandelion, and is as difficult to eradicate. Its excellent offspring also possesses this tenacious quality, and by letting a few old plants seed in the herbaceous border a good stock of young plants will appear the following spring.

The numerous varieties of Alternanthera, although, of course, tender plants, possess all the good qualities requisite for carpet-bedding; they are readily increased by cuttings taken in spring from the old plants, and struck in dung heat under a cap-glass, or in the Cucumber frames. The plants want heat in winter, or they will damp off. Alternantheras are found in China, India, Central America, and the adjacent islands. When introduced, ten or twelve years ago, they were carefully cultivated in stoves, and were considered far too tender for open-air cultivation in England; after-experience has, however, proved them to be amongst the most useful plants for our carpet-beds, and it will be seen by referring to the lists accompanying the designs given with this Supplement how largely these plants figure in their composition and how well adapted they are for producing the most perfect effects. In forming carpet beds the ground should be thoroughly covered, and the plants chosen should be of uniform growth or such as will bear reducing to this state without impairing their beauty; they should also be of decided colours, and we should prefer them confined to foliage plants only, as being more constant and durable than flowering plants. If ever Nature should be so sportive as to give a blue leaf equal to our yellows and reds, there would scarcely be a necessity for using flowers at all: at present, however, we must have blue, and the dwarf Lobelias seem to be the most fitting for the purpose—although we know to our sorrow that they often fail us just at the time we want them most, and their places have to be filled with the best material at hand, which not infrequently mars the beauty of the design for a considerable period, if not for the remaining part of the season. Succulent plants of such kinds as Pachyphyton bracteosum, Echeveria metallica, and some of the smaller kinds of Aloes, may be introduced into the beds, and with excellent effect. The ground, however, under them should be quite covered with a neat growing plant, such as Sedum glaucum, S. acre, or Antennaria tomentosa. Any reliable plant, however flat its growth (so that its foliage is dense and its colour suitable), will answer the purpose—hardy plants being in all cases preferable, as they will generally grow better in shady situations than tender ones. We have, however, seen the toothed moss, Selaginella denticulata, used for such purposes with excellent effect, but this has been where the beds have been well drained with some rough material, such as stones or bricks, and raised from 9 inches to 1 foot above the surrounding surface. Many tender plants will grow and thrive under such circumstances that will scarcely exist if planted in the ordinary way. The drainage being perfect, no stagnant water can possibly find a lodgment, and consequently the soil is rendered warm and healthy.

In the beds so much admired at Cleveland House, Clapham Park, last season, the central portion of the circular bed was carpeted with Sedum glaucum, and dotted over with Nertera depressa, and this was spoken of in the highest terms of praise by all who saw it. A woodcut of this bed was given in the *Gardeners' Chronicle* of December 2, 1876, p. 717, to which we would refer our readers if they wish to see the whole of the arrangement.

Position of the Beds.

In placing carpet beds upon the lawn great care should be taken in choosing the proper place for them, so that the surroundings enhance rather than detract from their beauty. They should be placed in warm nooks well backed up with some of the leafy kinds of subtropical plants or with shrubbery borders if the shrubs be rich in colour and with healthy foliage, always bearing in mind that they should be open to the south, with a point to east and west, so as to secure as long a period of sunshine as possible. This is indispensable to bringing out the bright colours of the plants. The contrary effect will be produced if a damp shady spot be chosen. We have often seen them placed on a gentle slope, the lower part of the bed being raised so as to bring the surface level with a surrounding of subtropical plants, and the effect has been excellent. In such positions bright colours only should be used. When planted on a level surface and quite out in the open, the grey and white colours will contrast favourably with the green grass, and the colours of the plants in juxtaposition will be heightened by the presence of the white. These beds may also be introduced with advantage into geometrical flower gardens, care being taken to plant the beds only in the designs which bear a strict comparison to each other, so that when viewed from an elevation, as from the upper windows of the house, there shall be no incongruity in the arrangement. We often find in such gardens a series of circular or other beds of equal form, and these we would advise should be used for the purpose. If the garden takes the form of a square, circular beds are often placed at the corners, and sometimes a second series of beds is introduced, partaking more or less of the form of an oval in their arrangements, and these also may be used for carpet-bedding plants.

If the general plan is of an oval shape on a square piece of ground, then the spandril beds at the four corners may be used for carpet-bedding plants, and a central bed may be planted with foliage plants, which will serve to improve the general effect. If more beds are desired, a series of long narrow borders on all sides to form a kind of framework to the garden may be introduced, and the centre bed may in this case be planted with foliage plants, always bearing in mind that in this style of arrangement we are working out a pattern which must be properly and regularly balanced, or the result will be disappointing. The latter management also must be good. Care must be taken in the arrangement of the other borders in the flower garden, so as to have corresponding beds of colour with a uniform style of growth. This being attained, there need be no fear of the final effect of such an arrangement, which will be pleasing and satisfactory.

We have now pointed out where we think these beds may be placed to advantage, but a visit to our parks and some of the private gardens around London during the summer and autumn will well repay all who are interested in this subject, and enable them to judge for themselves what will be best for them to imitate and what to avoid in regard to fixing upon unsuitable positions, &c. They will also be able to study, with a view to imitate, those combinations of colours which are most suited to their taste, and will learn better how to arrange them from actual sight than from description.

Preparation of the Beds.

In preparing the beds for the plants a good rich light friable loam, with an admixture of peat soil and a small quantity of manure, will be found the most suitable, but any light and tolerably rich soil will do for them. The bottom should be well broken up or trenched about 18 inches deep, and about 6 inches of good soil kept upon the surface. Where the ground is low, or naturally damp and stiff, the bottom

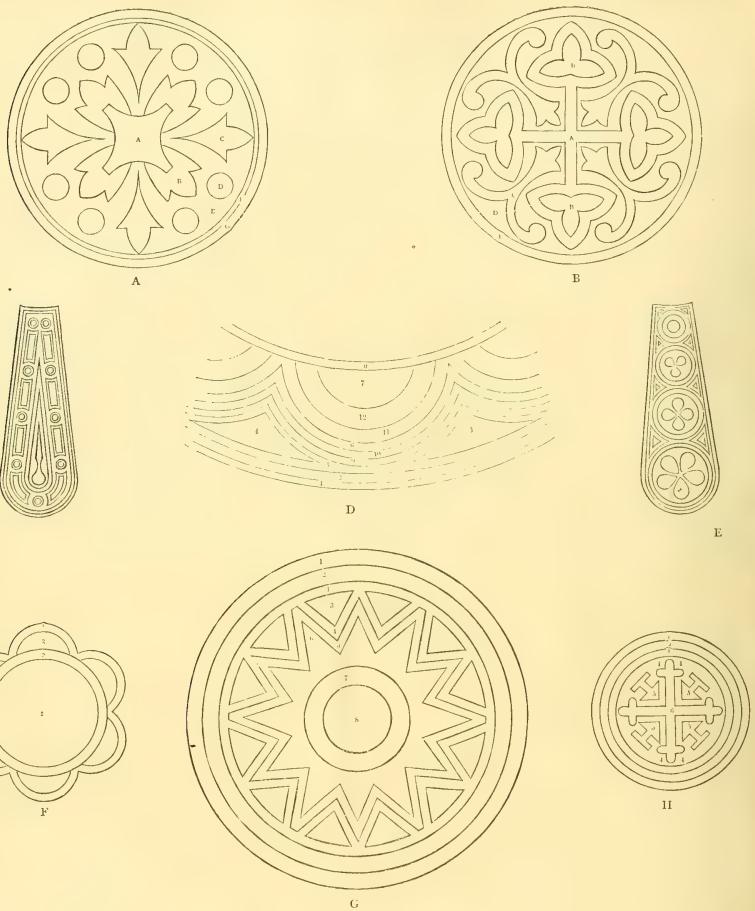


Fig. 1.—Designs for carpet beds.

should be taken out, and filled up to a depth of 9 inches, with broken bricks or rough stones, a drain-pipe being also carried through to take away all superfluous moisture. Upon this a layer of turf should be placed, turned sward downwards, or any other rough material that may be at hand, may be used to prevent the soil from working down amongst the stones, and thereby choking up the drainage. This being done, the soil may be put on, which in this case should be fully a foot deep. The bed should then receive a good watering, which should be repeated three or four times in order to get the whole thoroughly settled. As soon as this is accomplished, and the bed is sufficiently dry and firm, and the surface carefully levelled, it will be ready to receive the design, which we will suppose has been already prepared upon paper. If the bed is too wide to reach across conveniently, a broad plank or planks should be put over it with the ends supported on boxes, or other convenient rests, just sufficient to clear the surface, and from which the gardener will mark out the design and put in his plants. By this means he will avoid treading on the soil, or otherwise interfering with his plan. For making up the sides of the beds a little clayey loam mixed with cow-manure is often used, and this will generally hold together during the season, and prevent the edgings of the bed giving way in watering or during a long continuance of rainy weather. Moreover, it is quite a common practice of late to plant the edging with Sempervivums or Echeverias, or such-like plants, and this soil appears to suit them very well. Certainly they very much improve the appearance of the beds, but where used for this purpose on level grass they should be kept back a sufficient distance not to come in contact with the mowing-machine, for this would at once destroy their neat rosette-like appearance, and also show a painful want of care on the part of the workman.

Illustrative Designs.

Having said so much generally about the system, the position of the beds, and the mode of preparation, we will now make a few remarks upon the several designs given in our coloured plate, and accompanying this article.

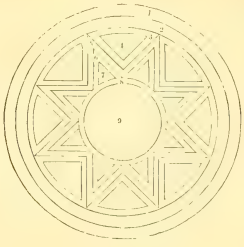
A (fig. 1) is selected from many beds which appeared in the Crystal Palace grounds during the summer of 1875, and we feel sure these designs must have sorely tried the brains and the patience too of the producer, Mr. Thomson, for they were numerous and very intricate, and not only geometric but, as we have



Garden Plans—Carpet Bedding



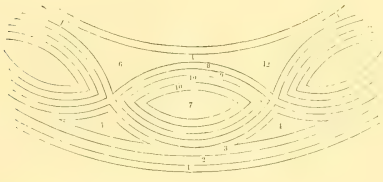
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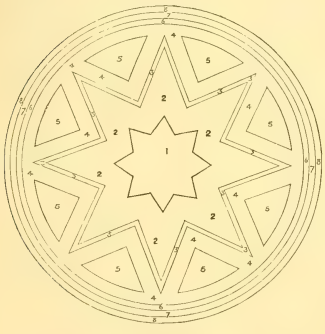
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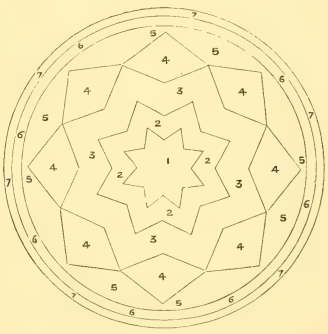
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O

FIG. 2.—DESIGNS FOR CARPET BEDS.

said, insect forms were brought into requisition to gratify the various tastes of the many visitors who flock to that favourite resort. The design is a pleasing one, but we think its effect would have been enhanced if the central part of the E beds had been lengthened, and the small circles left out. Their form does not harmonise with the other parts, and they strike one as being an afterthought, and put in to supply the deficiency of the middle figure. This bed was one of a large number arranged on the sloping grass which surrounds the rosery, and could be seen to eminent advantage from the rosery walk, which was raised about 2 feet above it. The Mesembryanthemum cordifolium variegatum formed a very pretty groundwork to the various colours, and the whole had a very pleasing effect. The plants were arranged in the following order:—A and C, Lobelia Blue King; B, Coleus; D, Alternanthera versicolor; E, Mesembryanthemum cordifolium variegatum; F, one row of Alternanthera magnifica; and G, Echeveria secunda glauca.

B (fig. 1) is another example of these beds. The pattern is very intricate, and requires good keeping to preserve all its outlines. It was composed wholly of foliage plants, which perhaps rendered it less difficult than if there had been a mixture of flowering plants. The apple-green colour of the Tagetes signata pumila foliage harmonised well with the Golden Feather Pyrethrum, and there was a charm also in the novel use to which it was applied and the singular fitness of its prettily divided foliage for such a purpose. It is one of the few annuals that grow and keep healthy until destroyed by frost, and we think it is worthy of being more extensively used in carpet bedding. The arrangement in this bed was—A, groundwork of Pyrethrum Golden Feather, and D, Alternanthera amabilis latifolia; B, Tagetes signata pumila; C, Ivy-leaved Pelargonium Duke of Edinburgh; and F, Echeveria secunda glauca.

The bed C (fig. 1) is one which was carried out at Cleveland House, Clapham Park, in 1874, and consists of a central dagger-shaped mass of Alternanthera versicolor, in a setting of Pyrethrum, outside which is a single row of Alternanthera amabilis. Then follow a series of oblong panels, alternating with circular beds; the oblong panels are planted with a centre of Echeveria secunda glauca bordered by Alternanthera paronychioides. The circles consist of a centre of

Pyrethrum encircled by Alternanthera amœna. The setting round these beds consists of Mesembryanthemum cordifolium variegatum, and the whole is surrounded by two bands—the inner of Alternanthera amœna, the outer of A. paronychioides.

D (fig. 1) is one of many examples carried out by Mr. McIntyre in Victoria Park, and it is also represented in the lower half of the central circle in our coloured plate in the shape of a broad margin to a bank of shrubs. We rather question the policy of putting in so many lines of colour, and think a bolder effect would have been produced by increasing their breadth and lessening their number. We also think that if the half circles had been pink instead of white they would have been more effective, *i.e.*, by moving the Pelargonium Christine (D 10) to the top, and the Centaurea (D 7) lower down. Still we much doubt if the mixing of foliage and flowers is desirable, as the latter are almost certain to fail before the former, and then the effect as a whole is marred and spoiled; but no doubt the difficulty of procuring sufficient colours in the leaf plants has led to this practice, to which also has contributed the anxiety felt in making every combination distinct. The plants in this bed were arranged in the following order :—1, Stellaria graminea aurea; 2, Lobelia pumila grandiflora : 3, Echeveria secunda glauca ; 4, Alternanthera amœna spectabilis ; 5, A. magnifica ; 6, Coleus Verschaffeltii ; 7, Centaurea candidissima ; 8, Ageratum mexicanum ; 9, Pelargonium Flower of Spring; 10, P. Christine ; 11, P. Crystal Palace Gem ; 12, P. Waltham Seedling. Scale : 8 feet to 1 inch.

E (fig. 1) is another of the Cleveland House designs, and consists of four circular masses with triangular patches in between, and each enclosing from one to five radiating egg-shaped masses which are thus planted :—The central plots consist of—1, Pyrethrum in a setting of Alternanthera magnifica, encircled by Mesembryanthemum cordifolium variegatum, and that again by Alternanthera paronychioides major. The triangles consist of a centre of Sempervivum calcareum bordered by Echeveria secunda glauca. The whole is bordered by two bands—the inner of Alternanthera paronychioides major, and the outer of Pyrethrum. These designs (C and E) will serve to show what an infinite number of forms may be used even in a single bed. We prefer C to E, as the arrangement is better adapted to a long bed, and tends to make the bed longer in appearance, while E has the opposite effect ; but as they appeared in the summer of 1874, they were much admired, and very deservedly so.

F (fig. 1) is another bed from Victoria Park, and the central portion being filled with Coleus Verschaffeltii, was no doubt very effective, but we think the general effect would have been better had the white margin been broader and the Cerastium Biebersteinii been used instead of C. tomentosum (F 2), and an outside circle substituted for the segments. We have no doubt, however, that in this age, when we are always seeking after something new, the inventive faculties are sorely taxed. The following is the arrangement of colours employed : — 1, Coleus Verschaffeltii ; 2, Cerastium tomentosum ; 3, Lobelia pumila grandiflora ; 4, Mesembryanthemum cordifolium variegatum.

G (fig. 1) is also one of the forms taken from Victoria Park in the summer of 1874. The plants used in this composition are all good, and the arrangement of the colours excellent. We should, however, have left out No. 5, and increased the breadth of No. 4, and we think this would have improved the general appearance of the design. It was filled with the following plants :—1, Echeveria secunda glauca ; 2, Alternanthera magnifica ; 3, A. amœna ; 4, Golden Feather ; 5, Echeveria secunda glauca ; 6, Alternanthera amœna spectabilis ; 7, Golden Feather ; 8, Coleus Verschaffeltii.

H (fig. 1) is also from a design produced in Victoria Park, and occupies the centre of our coloured plan. It is quaint in shape, but the figures fit in well, and altogether make an attractive bed. We think, however, that a darker colour for the central cross would have been preferable, and we should have placed Alternanthera amœna spectabilis there, and the Cerastium in No. 4. This, of course, would have necessitated a slight alteration of colour in the margin, by reversing the positions of Nos. 2 and 3. The red colour would have thus thrown up the central portion, and made it appear more to advantage by being surrounded with the white of the Cerastium. The plants used in this bed were the following :—1, Echeveria secunda glauca ; 2, Alternanthera paronychioides major ; 3, Mesembryanthemum cordifolium variegatum ; 4, Alternanthera amœna spectabilis ; 5, Golden Feather ; 6, Cerastium tomentosum.

I (fig. 2), which is also given in the coloured plate, is a design taken from Battersea Park, and was planted by Mr. Roger in the following manner : —F, Yucca filamentosa variegata, encircled by Cacalia tomentosa, carpeted with Sedum anglicum ; E, Alternanthera paronychioides major ; D, A. versicolor ; C, A. amœna ; B, Leucophytum Brownei ; A, Sempervivum montanum. This was one of the most chaste and satisfactory beds we saw during the whole season. The several breadths and the arrangement of the colours were excellent ; it was not too large, and the forms composing the design were simple and effective.

J (fig. 2) is from Victoria Park, and is also shown in our coloured plate. We confess our preference for the wavy lines, which we think better adapted in every way for the display of colour than the angular ones, but no doubt each plan has its admirers. We consider the central part of this rather too large, and we think that two lines of colour would have produced a better display in the angles than the larger number ; the marginal ring around the centre would also have been better a little wider. The plants used were, proceeding from without inwards :—1, Echeveria secunda glauca ; 2, Stellaria graminea aurea ; 3, Alternanthera amœna major ; 4, Pyrethrum Golden Feather ; 5, Lobelia pumila magnifica ; 6, Mesembryanthemum cordifolium variegatum ; 7, Alternanthera paronychioides major ; 8, Echeveria secunda glauca ; 9, Coleus Verschaffeltii.

K (fig. 2) is another form taken from Battersea Park, and which looked very effective. It was placed near the margin of the walk, and its bright colours and novel arrangement were very pleasing. We think, however, if the margin had been a little broader it would have been in better proportion. The small bands of blue uniting the circles, and the round tufts of colour on either side of the bands were novel, and looked well. This is also represented in our coloured plate. It was planted with the following plants :—1, 2, and 3, Tricolor Pelargoniums carpeted with Viola cornuta, and Bronze Pelargoniums carpeted with V. cornuta alba ; 4, Lobelia Blue King ; 5, pairs of succulent plants ; 6, Thymus aureus variegatus. The last-named plant does not retain its bright vegetation long enough, so that it would be better to substitute Mesembryanthemum cordifolium variegatum.

L (fig. 2) is a portion of our large coloured drawing, and is taken from a design produced in Victoria Park, and, like fig. 1, forms part of a margin to a large bank of shrubs. This, we think, is much more suitable for the purpose than D, as all the figures may be considered perfect, and it would look equally well if carried out in a straight line. We are, however, inclined to think that in this pattern a bolder effect would have been produced if the number of the colours had been less and the bands increased in breadth ; and by doing this perhaps the flowering plants might have been dispensed with. It was planted with the following :—1, Echeveria secunda glauca ; 2, Mesembryanthemum cordifolium ; 3, Pyrethrum Golden Feather ; 4, Lobelia pumila grandiflora ; 5, L. pumila magnifica ; 6, Pelargonium Vesuvius ; 7, Coleus Verschaffeltii ; 8, Pelargonium Flower of Spring ; 9, P. Christine ; 10, P. Vesuvius ; 11, P. Crystal Palace Gem ; 12, P. Madame Rudersdorff ; 13, P. Christine. Scale : 8 feet to 1 inch.

M (fig. 2), also taken from Victoria Park, will be easily recognised by all who saw it there. It may be called, for want of a better name, the Hour-Glass bed. This bed was very well arranged. The plants employed were the following, and they were placed in the order given, commencing at the outside margin :—1, Echeveria secunda glauca, followed inwards by lines of Alternanthera amœna, A. paronychioides major, Cerastium tomentosum, Golden Feather, and, 6, Alternanthera amœna spectablis ; 7, Mesembryanthemum cordifolium variegatum, edged with Echeveria secunda glauca.

(fig. 2) was produced in Battersea Park in the summer of 1870, and before the system had become so common as it is now ; it was filled entirely with leaf plants, and may be called in every sense of the word a carpet bed. The patches of colour were broad and effective, and the arrangement was in every way satisfactory. This is a simple pattern, and one we would commend to young beginners, as it as easy to produce as it is pleasing when finished. It is, we think, as an angular pattern a very desirable one, although we must again state our preference for the circular form of design. It was filled as follows :—1, Golden Feather ; 2, Alternanthera amœna; 3, Santolina incana ; 4, Alternanthera paronychioides ; 5, A. magnifica ; 6, Golden Feather ; 7, Alternanthera amœna ; 8, Echeveria secunda glauca.

O (fig. 2) is another design taken from Battersea Park, and is one of the most curious and tortuous of the whole. To view this pattern properly it should be placed considerably below the eye, as in looking across the bed the lines are very conflicting. It was furnished, however, with good plants, and no doubt looked well, as both plants and colours were lasting. At that time the beds were smaller, and the use of flowering plants was not so prevalent in carpet bedding as it is now. The following list will indicate the manner of planting :—1, Santolina lavandulæfolia ; 2, Alternanthera magnifica ; 3, Golden Feather ; 4, Alternanthera amœna ; 5, Santolina incana ; 6, Alternanthera amœna ; 7, Echeveria secunda glauca.

LIST OF PLANTS USED IN CARPET BEDDING.

Whites.

Artemisia argentea
Centaurea candidissima
" ragusina compacta
Cerastium tomentosum
" Biebersteinii
Cineraria maritima
Gnaphalium lanatum
Leucophytum Brownei
Lobelia Duchess of Edinburgh
Poa trivialis argentea elegans
Salvia argentea
Santolina chamæcyparissus
Senecio argenteus
Stachys lanata

Yellows.

Balm, golden variegated
Coprosma Baueriana variegata
Euonymus flavescens
Lysimachia aurea
Mesembryanthemum cordifolium variegatum
Pyrethrum Golden Feather
Sedum acre variegatum
" Faluria variegatum
Stellaria graminea aurea
Thymus citriodorus aureus
" Golden Fleece

Orange-Red.

Alternanthera amabilis
" " latifolia
" paronychioides major
Nertera depressa (berries)

Blue.

Lobelia Blue Gem
" pumila azurea
" " grandiflora
" magnifica

Crimson.

Amaranthus melancholicus ruber
Coleus Verschaffeltii
Iresine Herbstii

Carmine and Rose.

Alternanthera amœna
" " spectabilis
" magnifica
Lobelia Omen

Purple.

Ajuga reptans rubra
Echeveria atropurpurea
Iresine Lindeni
Perilla nankinensis

Green.

Cerastium arvense
Tagetes signata pumila
Sedums in variety
Sempervivums in variety

Grey.

Antennaria tomentosa
Cotyledon pulverulenta
Echeveria secunda glauca
Pachyphytum bracteatum
Sedum glaucum
Veronica incana

Green and Yellow.

Arabis alpina variegata
Aubrietia deltoides variegata
Balm, golden variegated
Chrysanthemum Sensation
Euonymus radicans variegatus
Funkia japonica variegata
Mentha arvina variegata
Veronica Andersoni

George Eyles.

AN APPEAL FOR SYMPATHY.

I'm a gentleman-help ! to the rescue, kind friends,
I have nothing in Nature to do ;
I never was able to make both the ends
Of my income to meet, it is true.
My character's good, tho' I'm bound to confess,
In the stocks I have oft " put my foot ;"
I've lost " in the pound," like an ignorant ass,
And come out with nothing to boot.

Now, gladly a gardener's place I would take,
I'm rapidly running to seed ;
I flatter myself I'm a pretty good rake,
And a pretty good judge of a weed ;
In moist'ning my clay I am very well known,
Indeed I have done it with tears ;
My "diggin's" still voted the neatest in town,
And I've (h)owed for my living for years !

For a keeper well fitted, so give it a name,
All fish comes in well to my net !
I can shoot like a bird, know each move of the game,
And rather enjoy heavy wet.
I've experience of bailiffs, to my great distress,
My knowledge of cattle's a drover's,
And if my *game-books* sometimes get in a mess,
I can make it all up at the *covers*.

As a coachman or groom I would offer to live,
I know what should be in the stable ;
A capital bargain I always can *drive*,
Or wait (for my dinner) at table.
I'll run you a horse ; or if wanted within—
Such a versatile mind I have got—
If your *chef* cannot properly make up his "tin,"
I can cook sums, or " put on the pot."

So ere you condemn this my movement, I beg
You will give me a chance to exist ;
Don't think though *in need that I look a "broke leg"*
Or light-fingered, 'cause of my fist !
I want to do something, and quickly, in hopes
I'd enlist, pick up cinders, burn help,
Go out for a sailor—I "know all the ropes"—
My cry now is, gentlemen—Help !

The Tattler.

HOW TO RESTORE FADED BUNCHES OF LILAC OR FADED ROSES.—Plunge the cut ends of the flower-stalks into boiling water, or char the cut end of the stalk in the flame of a candle.

GARDENING FOR AMATEURS.

IT must be expected that in all matters there should be occasional difficulties, sometimes great, sometimes mere mists vanishing before a gleam of sunshine, and of the latter sort are many of those besetting ladies' gardening and that of amateurs generally.

What is needed is usually a slight knowledge of the principles of vegetable growth, rather than a study in detail of the operations in that "good book of gardening" perpetually asked for, but which is by no means so helpful as might be supposed, for, when with infinite labour and difficulty, all specified necessaries have been collected together, the success of the plant supplied with them is apt to be as great as it would be if the lady amateur inserted one of her own children in the soup instead of setting him to drink it, and for a similar reason—it is starved.

Plants as well as animals must be fed, and the disappointments met with arise usually from a want of knowledge of how the food is to be taken in and assimilated.

If what, to speak familiarly, we may call the mouths in the roots, the lungs in the leaves, and the veins in the twigs are choked or destroyed, the sufferer must succumb. The "gardening book" without the principles of growth being understood is of little comparative value, the botanical treatise without a practical application is often wearisome, but by taking some of the chief points in amateurs' gardening, with the reasons of their success and



FIG 3.—FEEDING ROOTS.

failure, some aid may be given. The lady's cultivated taste is invaluable in the flower garden, and anything which may make the task more tempting to her in the lighter parts, such as removing favourite plants, pruning and budding, sowing seeds, or storing roots and bulbs, is a benefit to all.

THE NUTRITION OF PLANTS.

In the first case—that is, in the special points to be thought of in moving plants—we may begin at the very beginning of applied botany, for we have to do with the root, that is, with what is the chief food supplier. Plants, being living and growing bodies, must have the material which they are made of—the food, that is, by which they are nourished from somewhere outside themselves. Great part of this food is sucked in as moisture by the roots, some part is supplied as air or gas by the leaves, and in the leaves also the change is wrought of the moisture or sap into what is requisite to feed the plant, but this process we can refer to presently. The first step of absorption is necessary before we go on to assimilation.

WHAT THE ROOT DOES.

The root is usually distinguishable from the stem by growing downwards, avoiding the light, and not having buds, and its double office is to hold the plant firmly in its place and to gather up food. Sometimes, as in Turnips and Beet, the food is stored for future use, but commonly the root is made up of a great mass of fibres getting smaller and smaller at each forking down to the tips. The thick part of the root, with its bark-like outside, has nothing to do with collecting food, it is only the youngest parts, the finest fibrils or hairs at the extremity of the newest growths, which have the power of drinking in the moisture laden with what is to be assimilated into food.

By way of illustrating these matters we may refer to fig. 3, which shows a mass of root-fibres from a well-rooted cutting. A plant with such a mass of feeders will move well. Compare this with fig 4, showing an old stump with a few woody twisted roots, all wood, and with little or no fibre. A plant pulled up or dug up with such roots is not likely to thrive when replanted. Fig. 5 shows the tip of a young root-thread very highly magnified. It will be



FIG. 4.—HOLD-FAST ROOTS.

seen that there is a central mass of fibres (*b*), surrounded by a thick layer of cells or bladders, all more or less permeable to fluids. The extreme tip is covered with a little cap of dry cells (*a*), which do not absorb fluids, and which act as a protecting covering to the tip of the root beneath them, preserving the growing point from injury as it thrusts itself into the soil. In many cases the young root-fibres have an additional means of imbibing liquid food in the shape of very minute hairs (fig. 6), which by their extreme fineness can penetrate between very small chinks, and insinuate themselves between the particles of the soil, if only there be a

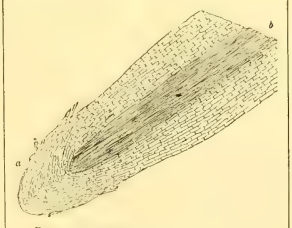


FIG. 5.—SLICE OF ROOT-FIBRE, HIGHLY MAGNIFIED.

little moisture to tempt them. A perfect fringe of these fine hairs may often be seen when the roots have got into something they like, as the gardeners say.

For these reasons a plant should be moved with a good ball of earth, so that the fibres may be kept safe from injury, for if the small fibres are broken off the plant suffers, if a large proportion of the root is broken off it dies, and in the simple principle that the mouths must be preserved which feed the plant lies the safeguard against one large class of difficulties.

NATURE OF THE FOOD.

Another consideration is the food imbibed. The plant has but little power of choice. What is given is drawn through the thin coats of the minute cells of which the fibrils are formed, much as moisture goes through a bladder, and whether it suits the plant or not it goes through the cell-coats just the same. If the plant has a large quantity of salt, or anything poisonous to it, put where it can melt and be drawn in, it will be poisoned; and if it has what agrees with it, and helps to build up the cells of which it is composed, it thrives: and the reason for choosing particular soils or manure is because they contain the things of which the plant is in great part composed.

Potash, soda, lime, phosphorus, and other kinds of mineral food are dissolved out of the earth. The bad smells of the manure heap show the presence of gases, which in the earth are taken up by water, and so drunk in by the plant; and because if the plant keeps taking food from the ground it needs to have its supplies replaced as much as a tethered animal, therefore we give manure or fresh soil, or move it to an unexhausted spot. For this reason it is good to dig in vegetable refuse, and so restore to the soil what the plant took out, and to have a small supply of two or three different kinds of food (so to call the different kinds of soil most frequently needed) at hand. Most plants of common garden growth find in common garden soil all that they need, but some like (that is to say, are partly composed of) lime, silica, or other matters, and will as little thrive without their proper food as a lion on vegetable diet, or a sheep on a piece of meat.

The plant must have a sufficiency of proper food, but also it should not have too much, especially of manure, or a rank and bloated growth will follow, probably with little blossom in proportion to the leaves.

If the soil is too dry the plant is starved, because the food must be absorbed in moist form. Again, a

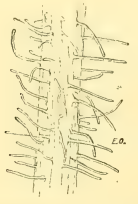


FIG. 6.—ROOT-FIBRE, WITH ROOT-HAIRS MAGNIFIED.

plant in a pot is often starved, because the earth is exhausted, and the water can soak no food out; and yet, again, manure must be decayed to be of use as food, or (though a little may be washed off the long straw) the crop it is intended to feed will be grown and dead before it has softened into a soluble condition.

HOW THE ROOT GROWS.

When the plant is in a natural state, the method of growth of the roots provide it with all necessary supplies. The rootlets, as has been said, lengthen at the extremities, and creep through all the little crevices and passages they can find, constantly taking new mouths to new food. In the soil of the garden subject to artificial difficulties, this is the reason why we keep the roots from being trampled on, and fork the borders to keep the soil open and free. Therefore also it is not good, except in particular cases, to use sifted earth, for it clogs hardly together, and therefore we often put brick rubbish and rough lumpy vegetable mould, or morsels of turf, that there may be sufficient passages for the roots; and here also is the reason of one of the most frequent disappointments to the amateur in moving plants. Some special plant is admired in a neighbour's garden, and a specimen is kindly bestowed; but who would offer a plant all loose earth? So, accordingly, before it is papered up, the remnants of a ball are smoothed, and kneaded, and patted, till it is as tough as a ball of dough, and the root-fibres are tightly fixed in the mass.

When a plant is to be moved it should be raised with as much earth as will come with it, so as to preserve all the fibres as much as possible, and if it has to go through any treatment that hardens the

outside of the ball, this should be carefully loosened, so that the fibres may be freed and laid round it when set in its new position, so as to have a fair course before them. With moderate care ordinary flowering plants with fibrous roots may be usually moved successfully at any time, excepting in the depth of winter, when the roots are nearly dormant, and might probably decay at the broken tips instead of making good the injury, or in great heat when the young growths require more moisture than the suddenly diminished fibrils could afford. Also they should not be moved when on the point of blossoming, for all the forces of the plant are directed to this as the main object of its life, and, if the supply of food is then cut off, so will be the proper development of the flowers.

The great principle to be learnt here is that the root-fibres are the mouths of the plant; if these are destroyed or food is withheld, or they are prevented from reaching food, the plant dies of starvation; if instead of proper nourishment fluid that is unsuitable is imbibed, the plant is stinted or poisoned, and if too much is given it will be correspondingly unhealthy in its growth.

For those who are inclined to pursue the subject in its details, there is every opportunity in the botanical books now-a-days to be procured with all necessary information condensed into short form, and given in clear language. Here it is only proposed to give a few of the simplest principles involving the common causes of success and failure. On another occasion we shall hope to have something to say as to the uses of leaves. *O.*

MY GARDENING EXPERIENCES.

By Mr. Mulberry Gillyflower.

How I came to love flowers and gardening is a question I sometimes put to myself, and thousands of persons are constantly putting the same question to themselves, and finding considerable difficulty in answering it. The liking for flowers and the desire to cultivate them very often come suddenly to men and women both, just as a cold does, or a rise in the price of coals, the announcement of a dissolution of Parliament, or the first notes of the cuckoo in April. A regard that, for what is known to the contrary, may have lain slumbering for years in the human heart, wakens up in a twinkling; and a strong desire being born, its gratification must be ministered to. It is by a species of sudden conversion that numbers of men and women become gardeners—without a previous thought that any part of their nature could find an answering sympathy in that direction. Men are no more born gardeners than they are born with the possession of other acquired tastes; such as a love of display, the desire to contribute to a gardening paper, to become a town councillor or mayor, &c. Some get into the charmed circle early in life, others in middle age, some not till the leaves of their tree of life are turning sere and yellow by reason of advancing age. To all such, young and old, gardening becomes a real, satisfying, delightful pleasure.

My desire to be a gardener sprung up in me when I assumed the duties and responsibilities of a householder, and took possession of a residence with a small garden back and front. The out-going tenant left me some shrubs, a few trees, some fruit trees also, and the flower and kitchen garden as bare of vegetable life as the asphalted roadway in Cheapside. I don't know what my predecessor had grown in the flower garden, but it looked, when I took possession, as if it had been made the recreation ground of some fowls. So hard and stoney in appearance was it that it might have been employed as a threshing-floor, or the trial ground of a traction-engine. Ornamental gardening was clearly at a discount at Cheapside Villa.

I thought I would make this howling wilderness to smile (figuratively, of course), and, purchasing a spade, set about the task of digging it. After such a winter—which abundantly realised the remark of the poet, "the rain it raineth every day"—and the effects of drying east winds, coupled with the fact that the soil was of a clayey character, its state may be imagined. But *Labor omnia vincit* was my motto. I took my spade in hand, and commenced to operate on the dust of the earth. I shall never forget the hours during which I endeavoured to insinuate a downward motion to the spade, and so make it a clearing influence. The stubborn earth would not yield, and I soon found myself entertaining the conviction of the unjust steward, "I cannot dig." As Artemus Ward remarked, "It was not my forty."

A stout labourer armed with a pickaxe soon accomplished the task, and I had the satisfaction of seeing before me a surface of baked clay, like the fragments of a rock. By dint of much hammering and beating, these were at last reduced to something like powder, and made workable. But ere anything could be planted it was necessary something should be added to the soil to make it fit for the growth of plants and seeds. Acting on the advice of my labourer, I obtained some mortar rubbish from a house in course of demolition, some sand or gritty matter and dung, and the whole added together and well mixed ultimately gave me a mould of a satisactory character.

Knowing but little of shrubs, I consulted a nurseryman, and he has supplied a few Laurels, Aucuba japonica, variegated Hollies, Lilac, Berberis Darwinii, Syringa, Guelder Rose, and some standard and dwarf Roses. These were carefully planted by my labourer, and against the walls of the house have been placed a Ceanothus, Gloire de Dijon Rose, Clematis Jackmanni, Pyrus japonica, and the red-berried Pyracantha. Some of my friends strongly recommended rockwork, with a little fountain set off with shells: others were for laying the flower-garden wholly with turf, leaving no space for plants and flowers; but I am now glad I took other advice, and look out upon what has been done with considerable satisfaction. All that is required is warm weather and mild rains to assist in establishing the plants in the soil, and encouraging them to put forth growth.

I deduce one lesson from what has been done, that is, not to trust to the wishes or plans of persons inexperienced in gardening, as to the best way to lay out a plot, or the proper things to plant. Had I done this, disappointment and failure would have followed. I left myself in the hands of a nurseryman accustomed to the work, but ascertaining his ideas, and then, when these commended themselves to my common-sense notions, commissioned him to carry them into effect. As I personally superintended the progress of the planting, I got some useful suggestions as to how to do the right thing in the proper way. If there is no nurseryman one can consult, there is generally some capable gardener to be met with, whose knowledge and experience can scarcely fail to benefit the enquirer. There is nothing like beginning well; the subsequent work, if rightly executed, is all the more satisfactory in consequence.

VILLA GARDENERS' BOOKS.

Hardy Plants for Little Front Gardens. By S. Stackhouse. London: Frederick Warne & Co. Price 1*s.* Pp. 120.

This is a very useful little volume, intended for the possessors of tiny front gardens, of which gardens (as the author rightly observes) there exist "miles and miles" in the neighbourhood of the metropolis. The book contains useful hints, in plain and simple language, for the culture of numerous common but favourite plants, advice as to the economising of space, for covering unsightly walls and fences, and for raising rockwork, &c. For those who wish to pursue the study of plants still further the names of many books are mentioned, and the volume is interspersed with appropriate quotations from the works of various authors. We can recommend this unpretending book to the numerous possessors of tiny gardens, the pleasure derived from the cultivation of such being wholly disproportioned to the size of the "piece of ground."

The New Practical Window Gardener; *being Practical Directions for the Cultivation of Flowering and Foliage Plants in Windows and Glazed Cases, &c.* By John R. Mollison. Illustrated. Groombridge & Sons. Pp. 204.

Another volume devoted to window gardening, a branch of horticulture happily greatly on the increase amongst the dwellers in towns, who, until they try, have no idea of the numbers of plants that will live and thrive in rooms and in a town atmosphere. The glazed case introduced by the late Mr. N. B. Ward still further serves to increase the facility of plant growing where many of the conditions are unfavourable, and for the management of these Mr. Mollison gives us plain and practical directions. A misprint, which might lead to some confusion, occurs on p. 70, where "callus" is twice spoken of as "calice." The botanical details indeed require revision throughout, while some of the woodcuts would have been better omitted, *e.g.*, that on p. 90, albeit the little book contains a great deal of just the sort of information which window gardeners want.

Artistic Amusements, *including Colouring Photographs, Diaphanie, Chrome Printing, Transparency Painting, &c. Bazaar* Office, 32, Wellington Street, Strand, W.C. Price 1*s.* Pp. 48.

The title of this little *brochure* aptly describes its contents. Ladies who devote themselves to artistic pursuits, and labour for "bazaars," devoted to the promotion of some philanthropic object, will find numerous hints in this small volume. Painting on china, "Queen shell-work," and a variety of what we may perhaps be excused for terming "fancy-work," are herein described, and quick brains and clever fingers will appreciate the directions which are lucidly given.

Artistic Decorations for Ball-Rooms, Halls, Passages, Dinner and Supper Tables. Illustrated. Price 1*s.* Pp. 80. *Bazaar* Office, 32, Wellington Street, Strand, W.C.

A little handbook devoted to the arrangement of flowers, full of useful hints for those who fill their houses, rooms, or windows with the most exquisite of ornaments. Bouquets, buttonholes, small vases for brackets, and the like, are not forgotten. Directions are given for wiring Roses, Camellias, and other flowers, and numerous useful hints as to the blending of tints and the selection of appropriate flowers for different occasions are supplied.

The Miniature Fruit Garden. By Thomas Rivers. Price 3*s. 6d.* Pp. 182. Longmans, Green & Co.

We have to announce the appearance of the eighteenth edition of this little book, a fact which is sufficient to show the very high esteem in which it is held by the class of Villa Gardeners for whom it is intended. But little is added in the present edition, the publication of which is superintended by Mr. T. F. Rivers, the son of the veteran author. It is almost needless to commend the book to the special attention of amateur gardeners and cottagers, while those who grow for market on a large scale may also find some valuable hints.

The Natural History Journal. Conducted by the Societies in Friends' Schools. Price 4*d.* Pp. 55. York: Willian Sessions, 15, Low Ousegate.

This is a monthly periodical, published in the hope of increasing the love of natural history, which is very often inherent in boys and girls, and which will, it is to be hoped, tend to direct their energies in a less cruel direction than it frequently takes now. This evil propensity arises less from natural cruelty of disposition than from utter thoughtlessness and ignorance. The little publication contains notes respecting birds' eggs, a remarkable case of perception in a dog, hints for botanical observation, for which small prizes are to be given, and other matters. There is one thing, however, we must protest against, and that is, the destruction of unlucky Coleoptera by plunging them into boiling water. Surely immersion for some time in chloroform would be equally efficacious, and more merciful.

Garden Recipes. Edited by Charles W. Quin. London: Macmillan & Co. Pp. 158.

A book devoted chiefly to directions for destroying the many pests which disturb the life of the gardener, such as the Apple maggot, crickets, millipedes, rats and mice, ants, &c. Liquid manures are also treated of, and the preservation of flowers, the making of skeleton leaves, the cure of insect's stings and a variety of other subjects all of more or less interest to horticulturists. If we are not mistaken these recipes were originally published in *The Garden*, a fact which should have been noticed in the preface, we think; nevertheless, the book is likely to be a useful one for Villa Gardeners, as it is not only arranged alphabetically but has an index as well.

The Window Observatory, &c. By H. King, Capt. R.N. London: Crosby, Lockwood & Co.

There is a palpable connection between horticulture and the sun, but that with the stars is not so obvious. The author's object in this little book, in advocating the general use of the transit instrument in private houses, is not only to point out simple means for obtaining the correct time, but to lead the way to a most interesting pursuit; and it may be predicted that if one more enjoyment be added to those of a country life, neither greenhouse, shrubbery, nor perennial border will suffer in consequence. Captain King has accomplished his task so simply that no one need be alarmed at the formidable ideas connected with transit instruments.

LONDON: BRADBURY, AGNEW, & CO., PRINTERS, WHITEFRIARS.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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THE GARDENERS' CHRONICLE

VOLUME for JULY to DECEMBER, 1876.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ALEXANDRA PALACE.—The GREAT ROSE SHOW will be held on SATURDAY, June 23, and SATURDAY, June 30. Schedules and all particulars may be obtained on application to JOHN A. MCKENZIE.

1 and 2, Great Winchester Street Buildings, London, E.C.

GRAND FLOWER SHOW will be held by the Orleans House Club, Twickenham, on FRIDAY and SATURDAY, May 25 and 26. The Show will be under the entire superintendence of Mr. Thomas R. Rollison. Schedules and full particulars can be had of WILLIAM ROLLISSON and SONS, The Nurseries, Tooting, S.W.

Captain H. WOMBWELL, Manager and Secretary.

Offices, 14, Waterloo Place, S.W.

TORBAY HORTICULTURAL SOCIETY, Torquay, JUNE 28.

SUMMER SHOW of PLANTS, FRUIT, VEGETABLES, &c., Prizes ONE HUNDRED POUNDS; and a Grand ROSE SHOW, Prizes upwards of SIXTY POUNDS, and Five Silver Cups. For 72 varieties, one truss each, 1st Prize Cup, value £8; 2d prize, £5; 3d prize, £2. For 12 Tea and Noisette Roses, one truss each (Amateurs), 1st prize, presented by Messrs. Curtis, Sandford & Co., Cup, value five guineas. Entries close Thursday, June 21. Schedules, &c. ready.

W. FAVE TUCKER, Capt., Hon. Sec. T. H. S.

Braddon Tor, Torquay.

Tea Roses.

CENTENARY SHOW of the BATH and WEST of ENGLAND SOCIETY and SOUTHERN COUNTIES ASSOCIATION, JUNE 4.

TWO TEN-GUINEA CUPS will be offered for TWELVE CUT BLOOMS of TEA ROSES, one for Amateurs, one for Nurserymen. A SWEEPSTAKES will be formed, each Exhibitor to pay TEN SHILLINGS on entry, the proceeds to be divided between the 2d and 3d Prize-takers. Six days' notice of intention to enter should be given to the Hon. and Rev. J. T. BOSCAWEN, Lamorran, Probus, Cornwall, of whom further information may be obtained.

CHERTSEY and DISTRICT HORTICULTURAL SOCIETY.

The TWELFTH GRAND ANNUAL SHOW will take place at The Hollies, Weybridge, on THURSDAY, June 21. Schedules and every information of

Chertsey, May. THOS J. RAWLINGS, Sec.

LINNEAN SOCIETY, Burlington House, Piccadilly, May 15.

The ANNIVERSARY MEETING of this Society will be held here, on THURSDAY, the 24th of this month, at 3 o'Clock precisely, for the ELECTION of a COUNCIL and OFFICERS for the ensuing year.

FREDERICK CURREY, Secretary.

BEDDING PLANTS for Sale.—A capital assortment of Bedding Plants, including Geraniums of sorts, Calceolarias, Veronicas, Echeverias, &c. May be viewed by applying, on the premises, to

WILLIAM HOWE, Gardener to Augustus Smith, Esq., Park Hill, Streatham Common, Surrey, S.W.

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WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, 10s. per 100: or from store-pots, 8s. per 100, 75s. per 1000, package included. Terms Cash.

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To the Trade.—Pelargoniums, Show and Fancy.

JAMES GARAWAY and CO. offer leading sorts, their selection, good plants in 48-pots, to flower in May, at 30s. and 60s. per 100.

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FOR SALE, 20,000 GERANIUMS—6000 in 48's and 14,000 in 60's—comprising Vesuvius, Madame Vaucher, Mrs. Pollock, Christine, Flower of Spring, Crystal Palace Gem, &c.

E. B. TRUTTERFIELD, Baker Street Nursery, Enfield, Middlesex.

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WILLIAM BADMAN offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, at 12s. per 100; or turned out of pots, 10s. per 100. Good rooted Cuttings, 6s. per 100, 50s. per 1000, package included. Terms Cash.

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Verbenas, Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other mixed sorts, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, package included. Cash to accompany all orders.

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PADMAN'S "LOBELIA EBOR," universally acknowledged to be the best out, post-free on receipt of stamps, 2s. 6d. per dozen, free to rail, 15s. per 100, £6 10s. per 1000. Send direct, when you are sure of getting it true. Providence Nursery, Boston Spa, near Tadcaster.

FIFTY THOUSAND BEDDING PLANTS in variety for Sale, at Wholesale and Retail prices; all grown in separate pots, and in excellent condition. CATALOGUES on application.

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MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises as above, on WEDNESDAY, May 23, at 12 o'Clock, by order of Mr. Page (successor to Mr. M. Cleall), 50,000 GREENHOUSE and BEDDING PLANTS, in rich assortment and beautifully grown, including 25,000 choice Geraniums (all of which are wintered plants), 5000 Lobelias, 4000 Calceolarias, Fuchsias, Pelargoniums, Ferns, Roses, &c., ready for immediate effect.

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MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Exotic Nursery, Tooting, S.W., on TUESDAY, May 29, at 12 o'Clock, by order of Mr. R. Parker, a quantity of EXTRA STOCK of STOVE and GREENHOUSE PLANTS, the whole of which are in a healthy and thriving condition, comprising Anthuriums, Aralias, Epiphyllums, Stephanotis, Yuccas, Phormiums, a quantity of choice Orchids, including Vanda coerulea, Saccolabiums, Aerides, Calanthes, Cattleyas, Dendrobiums, and Odontoglossums: Exotic Ferns, selected Palms, likewise a fine assortment of Succulent and Hardy Herbaceous Plants, Clematis, &c.

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Edmonton, N.

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Lot 1.—All that valuable piece of FREEHOLD LAND, about 4a. 2r. 30p. opposite an important building frontage of 730 feet to the Speke Road, with the modern Detached Brick-built DWELLING HOUSE standing thereon, together with Thirty GREENHOUSES; also the commodious GARDENERS' BOTHIES, STABLING, COACH-HOUSE, and other offices likewise the entire Collection of Established VINES; and all other Stock planted out.

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The property may now be viewed any day prior to the Sale. Particulars, Plans, and a Lithograph of Sale may be obtained fourteen days previous to the Sale, on the Premises, of Messrs. WHITLEY AND MADDOCK, Solicitors, 6, Water Street, Liverpool; of Messrs. COLE AND CO., Solicitors, Victoria Street, Westminster, London, S.W.; and of the Auctioneers and Estate Agents, 98, Gracechurch Street, London, E.C.; and Leytonstone, Essex, E.

Garston, near Liverpool.

CLEARANCE SALE of the whole of the Valuable Stock of STOVE and GREENHOUSE, and BEDDING PLANTS, UTENSILS-IN-TRADE, &c.

MESSRS. PROTHEROE AND MORRIS are directed to SELL by AUCTION, without reserve, on the Premises, The Garston Vineyard, Garston, near Liverpool, on WEDNESDAY, June 6, and following day, by Order of the Cowan Patents Company (Limited), who are resolved to dispose of the Freehold Estate, and to confine their future operations at their London Establishment, the Entire Stock of STOVE and GREENHOUSE PLANTS, comprising handsome Palms, Gardenias, Cycads, Eucharis, Anthuriums, &c., 500 Orchids in variety, a quantity of Choice Exotic Ferns, 50 very large Specimen Camellias, 500 fine Azalea indica, 20,000 Mixed-named Bedding Plants, including 12,000 Geraniums, 2000 Fruiting and other Vines, 500 Tea and other Roses in pots; also a CART-HORSE, Two Covered Spring VANS, Capital DOG-CART, LIGHT SPRING CART, Glazed Sashes, IRON ROLLER, FLOWER-POTS, and other Sundry articles connected with the Trade.

Catalogues may be obtained fourteen days prior to the Sale, on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, London, E.C., and Leytonstone, Essex.

Highly Important Sale of Choice Imported and ESTABLISHED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 23, at half-past 12 o'Clock precisely, a large quantity of Imported and ESTABLISHED ORCHIDS, comprising 1500 Dendrobium Bensoniæ, many of them of unusual size; 300 D. Wardianum, many hundreds of fine plants of the lovely and hitherto rare D. luteolum, fine plants of Aerides Lobbii or Veitchii, producing branched flower-spikes 2½ feet in length; masses of Cypripedium Boxallii, Cymbidium giganteum Lowianum, Dendrobium suavissimum, D. Devonianum, fine established plants of Phalænopsis Schilleriana, P. Luddemanniana, Odontoglossum cirrhosum, O. pulchellum, O. Halli, Oncidium Lowianum, and a specimen plant of Odontoglossum vexillarium, with four flower-spikes and twenty-seven leaves.

On view the morning of Sale, and Catalogues had.

Important Notice of a great Clearance Sale of NURSERY STOCK.

MR. J. C. STEVENS has received instructions from Messrs. Lee, to offer for SALE by AUCTION, on the Premises, Hammersmith Nurseries, Hammersmith, W., on WEDNESDAY, June 6, and following days, at half-past 12 o'Clock precisely each day, the entire stock of STOVE and GREENHOUSE PLANTS, consisting of fine Ferns on tall stems, including Dicksonias, Alsophilas, Cyatheas, and Gleichenias; Palms, amongst which are some nice pieces of Geichenias, Dicksonia squarrosa and fibrosa; some beautiful specimen Todea superba, Angiopteris erecta, and others; useful Orchids, such as Aerides, Saccolabiums, Dendrobes, Cœlogynes, Cypripedium, Cattleyas, Lycastes, Lælias, Oncidiums, Vandas, and others; Eucharis amazonica, fine examples of Pandanus, Dracænas, Codiæums, Cocos, Dracænas, and others; some choice Palms, including the best kinds of Phœnix, Chamærops, Corypta, Areads, and some nice examples of the beautiful Cocos Weddelliana; fine specimens of Cycas revoluta, and other choice Stove Plants. In Greenhouse Plants are some nice pieces of Epacris, Pimeleas, Eriostemon, Dracophyllum, Aphelexis, and others; also some healthy home-grown Camellias and specimen Azalea indica, with the usual collection of the best kinds of Exotic, in fine health, and every variety of Stove and Greenhouse Plants. Also the GREENHOUSES and PITS, with BOILERS and HOT-WATER PIPES complete.

On view the day prior and morning of Sale, and Catalogues had.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from R. Hepburn, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, June 6 and 7, at half-past 12 o'Clock precisely each day, the entire Collection of ESTABLISHED ORCHIDS formed by him at Sidcup Place, and Sold in consequence of change of residence, comprising fine plants and many that have been most successfully exhibited.

On view two mornings of Sale, and Catalogues had.

Wills' New Hybrid Dracænas.

MR. J. C. STEVENS has received instructions from Mr. Wills to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 12, at half-past 12 o'Clock precisely, the entire Stock of about Twenty-four of the very finest of the above magnificent Hybrid DRACÆNAS, raised by Mr. F. Bause, at the Milford Nurseries, Surrey. Another Lot will be determined to give the Trade an opportunity of purchasing the above magnificent plants.

On view the morning of Sale, and Catalogues had.

Hammersmith, W.

In the Fulham Road, and opposite the Convent of the Good Shepherd, near the Broadway, Metropolitan, South-Western, and District Railways.

TO GENTLEMEN, NURSERYMEN, FLORISTS, and OTHERS.—CLEARANCE SALE.

MR. J. A. SMITH, having received instructions from Mr. Hewitt, will SELL by AUCTION, on the Premises, The Nursery, Fulham Road, W., on MONDAY, May 21, at 12 o'Clock precisely, about 35,000 PLANTS, in pots, comprising 15,000 Geraniums, in first-rate condition, comprising about 13,000 Geraniums, including Princess of Wales, Grand Duchess Cravewni, Miss Hertzog, Lucie Corbett, Mrs. Pollock, Lady Plymouth, Model, Flower of Spring, Bijou, Madame Vaucher, Christine, Madame Hardy, Rose Rendatler, Madame Mezard, Le Hegante, Lucius, Vesuvius, and many other choice varieties; 2000 Calceolarias, Golden Gem and aurea; 5000 Mesembryanthemums, Heliotrope, Ageratum, Alternanthera, Iresine, 4000 Lobelias, Blue Gown, speciosa, pumila: thousands of Pelargoniums; and others of the very best varieties, splendid growth, and in prime condition.

The whole will be on view the day prior and morning of Sale, and Catalogues may be obtained at the Nursery, and at Mr. J. A. SMITH'S Auction and Estate Offices, 58, King Street East, Hammersmith, W.

Important Sale of High-class Show Plants of Rare and new varieties, the florists and foliage growth in a state of perfection for Stove and Greenhouse, numbering remarkably fine Specimen PALMS, TREE FERNS, including the original named plant, Cyathea Barkeri, 7 feet high by 6 feet of Spread, a few fine Pot ARGYRITHUMS, the Duchess of Bedford, and many other choice sorts.

MESSRS. ARTINGSTALL AND HIND beg to announce that they have received instructions to submit a PUBLIC COMPETITION, on MONDAY, May 28, commencing at 11 o'Clock in the morning, at the Horticultural Society's Gardens, Old Trafford, near Manchester, a COLLECTION of SHOW PLANTS, which will be exhibited in Manchester several days prior to the Sale.

Catalogues can be obtained on application, and will be issued in a few days to intending purchasers, by post, or on application to the Auctioneers, 51, Princess Street, Manchester.

Islington, N.

IMPORTANT SALE of about 90,000 BEDDING PLANTS, and 1500 ORCHIDS.

MR. W. F. BOFF will SELL by AUCTION, without the slightest reserve, on the Premises, the Northampton Park Nursery, Douglas Road North, Islington, N., on THURSDAY, May 31, at 12 o'Clock precisely a fine and well-grown assortment of about 90,000 BEDDING PLANTS, comprising about 10,000 Vesuvius, Madame Vaucher, Master Christine, &c.; 1000 Mrs. Pollock, Rose Verbenas, 5000 Calceolarias, &c.; also about 200 choice ORCHIDS.

On view day prior to Sale. Catalogues on the Premises, and of the Auctioneer, 203, Upper Street, Islington, N.

FOR SALE, a good FLORIST and SEEDSMAN'S BUSINESS, with Small Nursery and Jobbing Connection. Apply, 2, Swiss Terrace, St. John's Wood, N.W.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION, for the Relief of Decayed Farmers, their Widows and Orphans.

Patron: HER MAJESTY THE QUEEN.

President: HIS GRACE THE DUKE OF RICHMOND AND GORDON.

Allowances to Pensioners.

Married	..	..	..	..	£40 per annum.
Male	..	..	..	..	£26 ,,
Widows and Unmarried Orphan Daughters					£20 ,,

Every information to be had of the SECRETARY, by whom Subscriptions and Donations will be thankfully received.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.

THE SEVENTEENTH ANNIVERSARY FESTIVAL, in aid of the Funds of the Institution, will take place at Willis's Rooms, on WEDNESDAY, June 6, at 6 o'Clock.

The Right Hon. the EARL OF NORTHBROOK in the chair.

Dinner Tickets, £1?., application for which should be made to the SECRETARY, not later than June 4.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.

THE ANNUAL GENERAL MEETING will be held at Willis's Rooms, St. James's, on WEDNESDAY, June 20, at 11 o'clock precisely; and the ELECTION OF PENSIONERS will take place on the same day, at 11.30 o'Clock.

All subscriptions shall be deemed payable on January 1 in each year; and no Contributor shall vote in respect of an Annual Subscription while the same is in arrear.

Offices of the Institution—26, Charles Street, St. James's, London, S.W.

Dahlias.

CHARLES TURNER can now supply strong Plants of all the classes, also the following New Varieties offered for the first time, viz.:—Artiste, Burgundy, Black Prince, Chris Dale, Chris Brighton, Lewis, Elsa, Figaro, Mrs. Urquhart, The Rover and Vivian Grey.

The New Spring CATALOGUE, containing full descriptions of above and all the most popular plants, may be had free on application.

The Royal Nurseries, Slough.

SPECIAL OFFER TO THE TRADE.

DELPHINIUM, nudicaule, 25s. per dozen, 25s. per 100.
MYOSOTIS, alpestris nana, fl. albo, 5s. per dozen, 25s. per 100.
,, alpestris nana, fl. cœruleo, 5s. per dozen, 25s. per 100.
PRIMULA, Sieboldii, mixed, 5s. per dozen, 25s. per 100.
,, spectabilis, 8s. per dozen, 40s. per 100.
All grown in pots.

A. M. C. Jongkindt Coninck begs to call attention to the beautiful dwarf white and blue alpine FORGET-ME-NOT, which does not exceed 4 inches, and is equally well adapted for Rockwork as for Carpet Bedding.

A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle.

RODGER, MCCLELLAND AND CO. have still a fine extra strong plants of
HYDRANGEA PANICULATA GRANDIFLORA, 1½ to 3 feet high, 12s. to 18s. per dozen.
CLEMATIS JACKMANI, 24s. per dozen.
,, PRINCE OF WALES, 9s. per dozen.
TROPÆOLUM SPECIOSUM, beautiful hardy climber, 6d. to 9d. per dozen.
MUHLENBECKIA COMPLEXA, one of the most elegant of hardy climbing plants (like Maidenhair Fern), 6d. to 9d. per dozen.
64, Hill Street, Newry.

Cheap Bedding Plants.

H. J. HARDY has much pleasure in offering fine and healthy autumn-struck plants of the following :—

GERANIUMS, Vesuvius, Master Christine, Jean Sisley, Triumphant, Madame Vaucher, and other best Bedding sorts, at 8s. per 100; 1000 and upwards from single pots.
CALCEOLARIA FLORIBUNDA AUREA, 5s. per 100 from store.
Package free and carriage paid for 20s. worth. Terms Cash.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.
Please note alteration of Address.

Cheap Plants—Special Offer.

WILLIAM BADMAN offers the following cheap Plants :—
VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 10s. per 100 or 1s. 6d. per dozen; well-rooted Cuttings, 5s. per 100, 50s. per 1000; twelve choice named sorts, 2s. per 100.
CALCEOLARIA, Golden Gem and aurea floribunda, good plants from store, 1s. per dozen, 5s. per 100, 1s. 6d. per dozen.
LOBELIA, speciosa, Bluestone, pumila grandiflora, good strong plants from thumb pots, 10s. per 100, 1s. 6d. per dozen; from single pots, 15s. per 100, 2s. per dozen Emperor William Lobelia, good plants, 12s. per 100; rooted cuttings, 5s. per 100.
PELARGONIUMS, Vesuvius, finest scarlet, from stores, 8s. per 100, 75s. per 1000; Jean Sisley, 10s. per 100; Madame Vaucher, Crystal Palace Gem, Master Christine, 12s. per 100; Mrs. W. Paul and Bluebell, fine pink, 12s. per 100; all from single pots, and at 2s. 6d. per dozen.
TRICOLOR PELARGONIUMS, Mrs. Pollock, 20s. per 100, 2s. 6d. per dozen; Flower of Spring and Prince Silverwings, 12s. per 100, 2s. per dozen.
GOLD-LEAF PELARGONIUMS, Crystal Palace Gem, strong, from single pots, 12s. per 100, 2s. per dozen; May Queen (tunes), fine silver variegated, 12s. per 100, 2s. per dozen.
CRIMSON PELARGONIUM, Waltham Seedling, good bedder, 10s. per 100, 1s. 6d. per dozen.
HELIOTROPE, finest dark, good plants, 10s. per 100, 1s. 6d. per dozen; rooted cuttings, 6s. per 100.
AGERATUM, Imperial Dwarf, blue, fine bedding plants, from single pots, 10s. per 100, 1s. 6d. per dozen; rooted cuttings, 5s. per 100, 50s. per 1000.
IRESINE LINDENI, best crimson-leaf bedding plant, strong stuff, 10s. per 100, 1s. 6d. per dozen; from stores, 6s. p. 100.
CENTAUREA CANDIDISSIMA, fine silver-leaf, 3s. per dozen, 20s. per 100.
Package included. Terms cash.
Cemetery Nursery, Gravesend, S.E.

Bedding Plants! Bedding Plants!

FAND A. SMITH beg to offer the following, • in strong healthy plants, in single pots, suitable for immediate effect :—Geraniums, Verbenas, Petunias, Centaureas, Campanula fragilis, Dahlias, Lobelias, Pyrethrums, Phloxes, Mesembryanthemum cordifolium, Cuphœas, &c. Price LIST on application. Orders of 20s. and upwards delivered free within a radius of 5 miles from St. Paul's.

The Nurseries, West Dulwich, S.E.

NEW PELARGONIUM, "Leamington Lassie," semi-double Pink. First-class Certificate from Royal Horticultural Society, 1876.

This Pelargonium formed the coloured supplement of the *Garden* for April 28, 1877. Extract from *Garden* :—"Leamington Lassie' is a Pelargonium that takes a very high if not the highest rank, in the section to which it belongs. For decorative purposes it stands almost unrivalled, blooming as it does freely in midwinter the winter. . . . *Croucy Cadford.*"

Prices :—Good strong Plants, 5*s.* each, £2 2*s.* per dozen; larger plants for present blooming, 7*s.* 6*d.* each. Usual Trade discounts.

Notice to the Trade.—Special quotations for the following varieties of PELARGONIUMS :—Queen Victoria, Captain Raikes, Prince of Wales, La Ville de Caen, &c.

JOHN PARSONS AND CO., Ranelagh Gardens, Leamington.

Verbenas for the Million.

SIBDE can now supply, for cash, strong, • healthy, spring-struck Verbenas, free from disease of any kind, at 6*s.* per 100 ; well-hardened, extra good plants, 8*s.* per 100. Royal Purple, Scarlet, White, Pink, and many other shades of colour. All true to name, and package free.

CALCEOLARIAS, autos floribunda, and other varieties, good strong plants, 8*s.* per 100, 60*s.* per 1000.

HELIOTROPE, light and dark, 6*s.* per 100.

COLEUS VERSCHAFFELTII, 10*s.* per 100.

IRESINE LINDENI, 8*s.* per 100.

GERANIUMS, Crystal Palace Gem, good plants, established in pots, 10*s.* per 100. Cash with order to

S. BIDE, Alma Nursery, Farnham, Surrey.

Presented (by post) on application,

NEW CATALOGUE for 1877.

MESSRS. CLIBRAN AND SON will here grave pleasure in sending their PRICED DESCRIPTIVE LIST for this Spring, free by post on application. Their stock of Florist Flowers, Bedding and Soft-wooded Plants generally are surpassed by few if any, either in extent or quality, all the newest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to Purchasers is that none of the plants offered are taken from a warm propagating-house, but are sent off, but are all carefully hardened and most of them potted off singly, and are thereby fitted to travel either by rail or post without the slightest injury. A great proportion of the autumn-struck plants, and many of the undermentioned can be sent by post :—

Abutilons, in variety, 3*s.* 6*d.* per dozen.

Achimenes, in variety, 3*s.* per dozen.

Ageratum, in variety, 8*s.* per 100, 2*s.* per dozen.

Begonias, tuberous, 6*s.* and 9*s.* per dozen.

,, non-tuberous, 4*s.* per doz.

Caladiums, 12*s.* per dozen.

Calceolarias, Golden Gem, &c., 6*s.* per dozen.

Camellias, 30*s.* and 42*s.* per dozen.

Carnations and Picotees, 12 plants, 6*s.* ; 12 pairs, 10*s.* 6*d.*

Carnations, tree, in variety, 9*s.* per dozen.

Centaurea ragusina, 3*s.* per dozen.

Chrysanthemums, near 10,000 now ready, 20*s.* per 100, 3*s.* per dozen.

Cinerarias, 9*s.* per 100, 6*s.* per dozen.

,, to name, 9*s.* per dozen.

Clematis, in variety, 60*s.* per 100, 9*s.* per dozen.

Coleus, in variety, 30*s.* per 100, 3*s.* per dozen.

Cyclamens, in variety, 6*s.* and 9*s.* per dozen.

Dactylis elegantissima, 5*s.* per 100, 1*s.* per dozen.

Dahlias, 25*s.* per 100, 4*s.* per dozen.

Delphiniums, splendid sorts, 9*s.* to 12*s.* per dozen.

Epiphyllum, 9*s.* to 18*s.* per dozen.

Ferns, stove and greenhouse, 9*s.* to 18*s.* per dozen.

Fuchsias, 20*s.* per 100, 3*s.* per dozen.

Gardenia florida, 6*s.* to 12*s.* per dozen

Greenhouse Plants, 9*s.* to 18*s.* per dozen.

Geranium, Tricolor, 3*s.* 6*d.* per dozen.

,, Bicolor, 20*s.* per 100, 3*s.* per dozen

,, Silver-edged, 3*s.* 6*d.* per dozen.

,, Double, 20*s.* per 100, 3*s.* per dozen.

,, Zonals, for bedding, 15*s.* per 100, 3*s.* per dozen.

,, Zonals, for pot culture, 3*s.* to 6*s.* per dozen.

Gladiolus, to name, 6*s.* to 9*s.* per dozen.

,, splendid seedlings, 20*s.* per 100, 3*s.* per dozen.

,, Brenchleyensis, 6*s.* per 100, 1*s.* per dozen.

Helianthemums, 2*s.* 6*d.* per dozen.

Herbaceous Plants, 20*s.* per 100, 1*s.* per dozen.

Heliotrope, in variety, 2*s.* 6*d.* per dozen.

Hepatica, 4*s.* per dozen.

The Oldfield Nurseries, Altrincham.

ROYAL BOTANIC SOCIETY,

FIRST SUMMER EXHIBITION, May 16.

AWARDS OF PRIZES.

12 STOVE and GREENHOUSE PLANTS. (Nurserymen.)

1st, Messrs. Jackson & Son, Kingston.

2d, Mr. B. S. Williams, Holloway, N.

3d, Mr. J. Peed, Norwood, S.E.

10 STOVE and GREENHOUSE PLANTS. (Amateurs.)

1st, Mr. W. Chapman, Gr. to J. Spode, Esq., Rugeley.

2d, Mr. B. Peed, Gr. to Mrs. Tredwell, Norwood, S.E.

3d, Mr. E. Tudgey, Gr. to J. F. G. Williams, Esq., Worcester.

Extra, Mr. G. Wheeler, Gr. to Sir F. H. Goldsmid, Bart.

6 STOVE and GREENHOUSE PLANTS. (Amateurs.)

1st, Mr. E. Tudgey, Gr. to J. F. G. Williams, Esq.

2d, Mr. W. Chapman,

Equal 3d, { Mr. G. Legg, Gr. to S. A. Ralli, Esq., Cleveland House, Clapham, S.W.

{ Mr. Jas. Child, Gr. to Mrs. Torr, Ewell.

6 STOVE and GREENHOUSE PLANTS. (Nurserymen.)

1st, Messrs. Jackson & Son. | Extra, Mr. J. Peed, Norwood.

2d, Mr. B. S. Williams.

6 EXOTIC ORCHIDS. (Amateurs.)

1st, Mr. William Denning, Gr. to Lord Londesborough.

2d, Mr. James Child.

3d, Mr. F. Newman, Gr. to W. H. Michael, Esq., Highgate

Extra, Mr. H. Heaning, Gr. to F. A. Philbrick, Esq., Avenue Road

6 EXOTIC ORCHIDS. (Nurserymen.)

1st, Mr. B. S. Williams. | 2d, Messrs. Jackson & Son.

6 ROSES in Pots. (Open.)

1st, Mr. Charles Turner. | 2d, Mr. Cranston.

3d, Messrs. Paul & Son, Cheshunt.

3d, Mr. J. W. Moorman, Gr. to the Misses Christy, Kingston.

Extra, Mr. Turner.

2d, Mr. Turner.

3d, Messrs. Paul & Son, Cheshunt.

6 ROSES in Pots. (Nurserymen.)

1st, Mr. Turner. | 2d, Messrs. Paul & Son.

6 NEW ROSES, 1875—1876. (Nurserymen.)

1st, Mr. Turner.

6 AZALEAS. (Amateurs.)

1st, Mr. A. Ratty, Gr. to R. Thornton, Esq., Sydenham.

2d, Mr. James Child, Gr. to Mrs. Torr.

3d, Mr. G. Wheeler.

6 AZALEAS. (Nurserymen.)

1st, Mr. C. Turner.

12 AZALEAS, in 12-inch pots. (Open.)

1st, Mr. C. Turner. | 2d, Mr. A. Ratty.

6 AZALEAS, in 12-inch pots. (Amateurs.)

1st, Mr. A. Ratty. | 3d, Mr. J. Child.

3d, Mr. G. Wheeler.

6 HEATHS, in 12-inch pots. (Amateurs.)

1st, Mr. G. Legg. | 3d Mr. G. Wheeler.

2d, Mr. B. Peed.

6 HEATHS, in 12-inch Pots. (Nurserymen.)

1st, Messrs. Jackson & Son.

6 HEATHS. (Amateurs.)

1st, Mr. G. Legg. | 3d, Mr. E. Tudgey.

2d, Mr. B. Peed.

9 PELARGONIUMS. (Open.)

1st, Mr. James. | 2d, Mr. W. F. Watson, Esq., Isleworth.

6 PELARGONIUMS. (Amateurs.)

1st, Mr. James.

6 PELARGONIUMS. (Nurserymen.)

1st, Mr. C. Turner.

6 Old-fashioned HARDY PLANTS, in Flower. (Open.)

1st, Mr. W. Roberts, Gr., Peterborough House, Fulham, S.W.

9 CALCEOLARIAS. (Open.)

1st, Mr. James.

3d, Mr. H. Coppin, Rose Nursery, Croydon.

6 EXOTIC FERNS. (Amateurs.)

1st, Mr. E. Tudgey. | 2d, Mr. G. Wheeler.

6 EXOTIC FERNS. (Nurserymen.)

1st, Mr. B. S. Williams. | 2d, Mr. John Ley, Croydon.

6 FINE-FOLIAGE PLANTS. (Amateurs.)

1st, Mr. G. Legg.

2d, Mr. E. Tudgey.

3d, Mr. F. Hill, Gr. to H. Taylor, Esq., Avenue Road.

6 FINE-FOLIAGE PLANTS. (Nurserymen.)

1st, Mr. B. S. Williams. | 2d, Mr. John Ley.

GROUP of AGAVES, CYCADS, and YUCCAS. (Open.)

1st, Mr. John Ley. | 2d, Mr. B. S. Williams.

MISCELLANEOUS.

Extra Prizes were awarded to the following :—

Messrs. Veitch & Sons, for a Group of Rhododendrons and Azaleas, and a Collection of Pot Roses.

Mr. B. S. Williams, for a Group of Plants.

Messrs. William Paul & Son, Waltham Cross, or Pot Roses, and for Cut Roses.

Mr. Charles Noble, Bagshot, for a Collection of Azaleas, and for Collections of Tulips and Auriculas.

Messrs. W. Cutbush & Son, for Collection of Rhododendrons and Azaleas.

Messrs. Ivery & Son, Dorking, for Collection of Azaleas.

Messrs. J. Laing & Son, Forest Hill, S.E., for Collection of Plants.

Mr. Charles Noble, Bagshot, for Collection of Clematis.

Mr. H. Heaning, Gr. to F. A. Philbrick, Esq., for Collection of Orchids.

Mr. R. Parker, Tooting, for Collection of Herbaceous Plants.

Mr. W. Chapman, Gr. to Mr. Chapman, Croydon, for Silver Tricolor Pelargoniums.

Mr. J. Ley, Nurseryman, Croydon, for Group of Plants.

Mr. Mayo, Nurseryman, Oxford, for Cut Roses, Maréchal Niel.

BOTANICAL CERTIFICATES.

Messrs. Veitch & Son, for Anthurium Brownii. Dracæna Robinsoniana, Cocos weddelliana, Pandanus pygmæus, and Hydrangea Thomas Hogg.

Messrs. Paul & Son, Norwich, for Adiantum Capillus-Veneris corymbiferum.

Messrs. E. G. Henderson & Son, for Blandfordia flaminea Hort.

Mr. B. S. Williams, for Croton'Andreanum, Dracæna terminalis alba, Aralia filicifolia, Adiantum Williamsii, and Microlepia hirsutiuscula.

Messrs. Hugh Low & Co., for Dendrobium suavissimum.

Mr. B. S. Williams, for Lomaria discolor bipinnatabda.

Messrs. Jackman & Sons, for Japanese Azalea Rolhsonii.

FLORICULTURAL CERTIFICATES.

Messrs. Paul & Son, Cheshunt, for Rose Emily Laxton.

Mr. J. Kingsley, Southampton, for Petunia, Mount Beauty.

Mr. Charles Turner, Fancy Pelargonium, Miss Godard.

Messrs. Jackman & Sons, for Clematises, Lady Egmont and Florence.

Mr. Noble, Bagshot, for Clematises, Margaret Dunbar, Xerxes, and Mdlle. Torriani.

Messrs. E. G. Henderson & Son, for Mimulus pardinus florepleno.

STOVE PLANTS.—A Gentleman wishes to dispose of the following, being too large for his establishment, all thoroughly clean and healthy :—

Croton variegatum and interruptum, Maranta zebrina and Regalia, Hibiscus Cooperi, Allamanda Shotti and Williamsii, Pandanus javanicus variegatus, Medinilla magnifica, Blechnum corcovadense, Adiantum farleyense, Davallia Mooreana.

Apply to JOHN DAVIS, Gardener to T. O. Nel, Esq, Beechdale, Eltham Road, Lee, S.E.

Two Hundred Thousand

CARPET and Other BEDDING PLANTS.

—Including Alternantheras amœna, amœna spectabilis, magnifica, paronychioides, and all other varieties ; Antennaria tomentosa, Arenaria balearica, Lobelia Emperor William, Mentha pulegium gibraltaricum, Sagina procumbens, from stores, at 8*s.* per 100, 70*s.* per 1000. Coleus Verschaffelii, Kleinia repens, Leucophyton Brownei, 12*s.* per 100, 80*s.* per 1000.

Also a large stock of all kinds of Plants that are suitable for Subtropical and Carpet Beddings.

CATALOGUES now ready, free on application. Orders executed in strict rotation. Terms cash, package included.

WILLIAM MILES, West Brighton Nursery, Cliftonville, Sussex.

N.B.—Designs for Carpet Beds and Contracts for Planting same in any part of the country.

BEDDING PLANTS, BEDDING PLANTS.—Zonal and Nosegay GERANIUMS, 2*s.* 6*d.* and 3*s.* per dozen, 18*s.* and 20*s.* per 100 ; Bicolor do., 3*s.* and 3*s.* 6*d.* per dozen, 22*s.* and 25*s.* per 100 ; Silver-edged do., 3*s.* and 3*s.* 6*d.* per dozen, 22*s.* and 25*s.* per 100 ; Golden Tricolor do., 3*s.* and 3*s.* 6*d.* per dozen, 25*s.* and 28*s.* per 100. GERANIUMS, SILVERIAS, VERBENAS, IRESINES, HELIOTROPES, ECHEVERIAS, MESEMBRYANTHEMUMS, fol. var., Bedding PANSIES, VIOLAS, SALVIAS, 1*s.* 6*d.* and 2*s.* per dozen, 12*s.* and 15*s.* per 100. Trailing to size. DAHLIAS, 3*s.* 6*d.* per dozen, 24*s.* per 100. FUCHSIAS, CHRYSANTHEMUMS, and COLEUS, 3*s.* per dozen, 20*s.* per 100. Golden PYRETHRUMS and best SEDUMS, for carpet bedding, 1*s.* per dozen, 6*s.* per 100. Tuberous BEGONIAS, boliviensis, Sedeni Victoria, and magnifica, for bedding, 6*s.* per dozen.

CATALOGUES on application.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. Is perfectly hardy, and the plants improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12*s.* per dozen ; extra strong plants, 2 years old, 18*s.* per dozen. Other sorts of Clematis. Climbers in great variety. Descriptive LIST on application.

RICHARD SMITH, Nurseryman, Worcester.

DAHLIAS, DAHLIAS, DAHLIAS.—2000 of the finest varieties, 4*s.*, 6*s.*, 9*s.*, and 12*s.* per dozen.

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ROSES, 500, in pots, well established, 12*s.*, 18*s.*, and 24*s.* per dozen.

GERANIUM, Wonderful (Smith's), 9*s.* per dozen, strong plants.

An immense stock of STOVE and GREENHOUSE PLANTS of all the leading varieties.

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Pelargoniums, Dahlias, Verbenas, Calceolarias, FUCHSIAS, AND OTHER PLANTS.

WOOD AND INGRAM beg to offer the following, perfectly clean, strong, and healthy, thoroughly established in single pots :—

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FUCHSIAS, in great variety, to name, 4*s.* to 8*s.* per dozen.

VERBENAS, Scarlet, Purple, White, and Pink (free from disease), extra fine plants, 12*s.* per 100.

,, in great variety, to name, *from store pots*, 5*s.* per 100, 1*s.* per dozen.

DAHLIAS, Show, Fancy, and Bedding, finest named varieties, 4*s.* per dozen ; 25*s.* per 100.

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,, Silver Tricolor, Charming Bride, 3*s.* 6*d.* per dozen : Lass o' Gowrie, 4*s.* per dozen ; Princess Beatrice, 3*s.* 6*d.* per doz. other choice varieties, 4*s.* per dozen.

,, Bronze and Gold, Dragon, 3*s.* per dozen ; Perilla, 3*s.* per dozen : Rob Roy, 4*s.* per dozen.

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,, Crystal Palace Gem, 2*s.* 6*d.* per dozen, 18*s.* 100.

,, Single Zonals, Bayard, Charley Casbon, Ianthe, Clipper, Jean Sisley, Lucius, Master Christine, Stella, Lady C. Grosvenor, Vesuvius, and many other fine varieties, 2*s.* 6*d.* per dozen, 18*s.* per 100 : *extra fine plants*, in 5-inch pots, for window decorations, 6*s.* per dozen.

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AGERATUM, Countess of Stair and Imperial Dwarf; CINERARIA, maritima and m. candidissima ; IRESINE, Lindeni and Herbsti ; LEUCOPHYTON, Brownei ; LOBELIAS, in variety ; MESEMBRYANTHEMUM, c. roseum, c. tricolor ; PETUNIAS, 2*s.* per doz., 14*s.* per 100.

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CLEMATIS, best varieties, to name, 12*s.* 6*d.* to 2*s.* 6*d.* each.

LOPHOSPERMUM SCANDENS, 6*s.* per dozen.

MAURANDYA BARCLAYANA, 6*s.* per dozen.

HERBACEOUS and ALPINE PLANTS in great variety, 6*s.* per dozen.

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IRELAND AND THOMSON have pleasure in intimating that their CATALOGUE of STOVE and GREENHOUSE PLANTS, FERNS, PALMS, ORCHIDS, &c., is now ready, and will be forwarded post-free on application.

ADIANTUM FLEMINGII.—A sport from A. concinnum, and is in every respect much superior to the species that produced it. Its dense, compact, semi-erect habit, with the dark green colour of the fronds, which in their young state are of a beautiful brownish purple tint, constitute it a most decided acquisition for exhibition purposes, and is almost without an equal as a table Fern. Price 10s. 6d. and 21s. each.

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I. & T. desire to call attention to the following splendid novelties:—

LOBELIA, St. Martin's Blue, new bronzed-leaved, price 12s. per dozen, £4 per 100.

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GERANIUM, Marchioness of Huntley, new bronze, price 18s. per dozen.

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I. & T. are now sending out the above. Orders will be executed in rotation.

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With the New Dahlias,

JOHN KEYNES

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J. K. trusts his long experience and care will be sufficient guarantee for the quality and character of this splendid variety. It was raised by Mr. Wm. Dodds. A great truss of flower, splendid bedder, lively majenta colour, quite a new shade from any other. Has been the admiration of all in the beds at Salisbury.

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Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18s. to 30s. per dozen.

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Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or £5 per 100.

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The finest English and Ghent varieties, splendidly budded, £5 to £7 10s. per 100, or 18s. per dozen.

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SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15s. to 18s. per dozen.
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NEW FRENCH ROSES of 1877, 30s. per dozen.
HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36s. to 42s. per dozen.

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NEW ENGLISH-RAISED SEEDLING ROSES.

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(THESE NURSERIES ESTABLISHED IN 1806),

Have great pleasure in announcing as a continuation of the series of English Roses raised or sent out by them since 1860, inclusive of LORD CLYDE (Paul & Son), DUKE OF EDINBURGH (Paul & Son), CHESHUNT HYBRID (Paul & Son), ANNIE LAXTON (Laxton), DUKE OF CONNAUGHT (Paul & Son), &c., &c., and containing never a bad one in the lot,

TWO NEW ENGLISH SEEDLING ROSES.

H.P. **EMILY LAXTON (Laxton)**, a large full flower with globular, pointed bud, opening into large globular flower. In the way of Monsieur Noman, but of a rich cherry-rose, deeper and fuller than that kind, and with strong vigorous habit, making a grand pillar Rose.

First-class Certificate Royal Horticultural Society; First-class Certificate at the Leeds and Crystal Palace Rose Shows, and 1st Prize at Exeter for twenty-four of any one kind.

H.P. **MARCHIONESS OF EXETER (Laxton)**, clear, rose-flushed, light cherry-rose, large, finely built-up flower, very sweet, and of strong vigorous growth; a larger more double Annie Laxton, yet perfectly distinct from that kind.

Plants in pots of the above, ready early in June, 7s. 6d. each, 14s. the two varieties; Blooming Plants, in 24-pots, 10s. 6d. each, 20s. the two varieties.

The two kinds described above have been proved two seasons at Cheshunt, and can be recommended as continuing the race begun by this raiser with H.P. Annie Laxton.

PAUL & SON,

THE OLD NURSERIES, CHESHUNT, N.

(These Nurseries Established 1806.)

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THE LARGEST AND BEST STOCK IN EUROPE.

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MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

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Strong Plants, 42s. per 100; 25s. per 50; 15s. per 25; 9s. per dozen.

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April, 1877.

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"THE BRIDE."

JOHN PERKINS & SON

Have much pleasure in offering the above Novelty as the best pure White Lobelia ever sent out.

It is free flowering, very dwarf habit, and we can with perfect confidence recommend it.

PRICE PER DOZEN, 9s USUAL DISCOUNT TO THE TRADE.

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MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 23, at half-past 12 o'Clock precisely, a large quantity of Imported and Established ORCHIDS, comprising 1500 DENDROBIUM BENSONIÆ, many of them of unusual size; 300 DENDROBIUM WARDIANUM; many hundreds of fine plants of the lovely and hitherto rare DENDROBIUM LUTEOLUM; fine plants of AERIDES LOBBII or VEITCHII, producing branched flower-spikes 2½ feet in length; masses of CYPRIPEDIUM BOXALLI, CYMBIDIUM GIGANTEUM LOWIANUM, DENDROBIUM SUAVISSIMUM, D. DEVONIANUM; fine established plants of PHALÆNOPSIS SCHILLERIANA, P. LUDEMANNIANA, ODONTOGLOSSUM CIRRHOSUM, in quantity, O. HALLI, ONCIDIUM VARICOSUM, and a specimen plant of ODONTOGLOSSUM VEXILLARIUM, with four flower-spikes and twenty-seven leaves.

On view the morning of Sale, and Catalogues had.

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THE NORWICH NURSERIES,

Are now executing orders for their TWO NEW ROSES, raised at their Nurseries, and described and announced below. They have been thoroughly tested here before being sent out, and can be recommended with confidence as really distinct novelties.

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Very large flowers of a deep rose colour, the backs of the petals a delicate silvery pink, of exquisite shape and very fragrant. It is very free-flowering, and of vigorous climbing habit, making shoots 6 feet to 8 feet long in one season. Figured in *The Garden*, March 18, 1876.

"Your Rose Catherine Bell is both *belle et grande*."—Rev. Canon Reynolds Hole.

Good Flowering Plants, in Pots, 10s. 6d. *each.*

COLOURED PLATES, ONE SHILLING EACH.

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Bright salmon-rose, tea-scented flowers, with shell-like petals, a most distinct and novel shade of colour among Tea Roses. It will form a charming companion to Madame Falcot, and will be as extensively cultivated as that variety when well known. In flower from May to November. Figured in the *Floral Magazine.*

Good Flowering Plants, in Pots, 7s. 6d. *each.*

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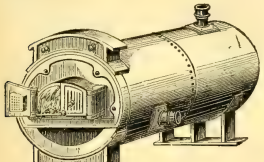
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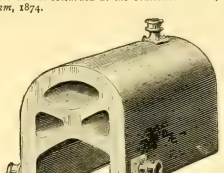
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Intimates that at present he has about 150 plants of ODONTOGLOSSUM VEXILLARIUM in bud and flower, presenting a *coup d'œil* of this magnificent plant never before seen in Europe, and he will be happy to show the group to any one favouring him with a visit.

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May 2, 1877.

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Messrs. J. Veitch & Sons, Chelsea, S.W., for Group of Orchids. Large Gold Banksian.

Messrs. J. Veitch & Sons, Chelsea, S.W., for Group of Rhododendrons, Azaleas, &c. Small Gold Banksian.

Mr. J. Wills, South Kensington, S.W., for Draczenas. Gold Medal. [Gold Medal.

Mr. J. Wills, South Kensington, S.W., for Group of Plants.

Mr. B. S. Williams, Upper Holloway, N.W., for Group of Plants. Small Gold Banksian.

Mr. W. Bull, Chelsea, S.W., for Group of Cycadaceous Plants, Small Gold Banksian.

W. B. Kellock, Esq., Stamford Hill, for Agave Schidigera princeps. Small Silver-gilt Banksian.

Messrs. G. Jackman & Son, Woking, for Group of Clematises. Large Silver-gilt Banksian.

Messrs. H. Lane & Son, Great Berkhampstead, for Groups of Roses and Rhododendrons. Large Silver-gilt Banksian.

Mr. J. H. Levy, Croydon, for Group of Palms, Ferns, &c. Small Silver-gilt Banksian.

Messrs. Standish & Noble, Tooting, for Group of Azaleas. Large Silver-gilt Banksian.

Sir T. Lawrence, Bart., M.P., Dorking (Mr. J. C. Spyers, Gr.), for Group of Orchids. Silver-gilt Flora.

Messrs. Barr & Sugden, Covent Garden, W.C., or Collection of Daffodils. Large Silver-gilt Banksian.

Messrs. J. & J. Harpur, Edmonton, for Group of Plants. Small Silver-gilt Banksian.

Mr. J. Reeves, Acton, for Group of Plants. Silver-gilt Flora.

Mr. J. Wills, Acton, for Mignonette. Small Silver Banksian.

Mr. C. Burley, Brentford, for Table Decoration. Silver Banksian.

Messrs. Webber & Co., Covent Garden, S.W., for Collection of Fruit. Silver-gilt Knightian.

Messrs. Paul & Son, Cheshunt, for Group of Roses in Pots. Silver Flora.

Messrs. W. Cutbush & Son, Highgate, N., for Group of Plants. Small Silver Banksian.

J. G. Hepburn, Esq. (Mr. Loveland, Gr.), Kent, for Group of Orchids. Small Silver Banksian.

R. Thornton, Esq. (Mr. Keay, Gr.), Sydenham, for Group of Azaleas. Small Silver Banksian.

Mr. S. Ford, Ealing, for E. F. Hubbard, Esq., for Collection of Apples and Pears, and Cut Blooms of Rose Marechal Niel. Small Silver Banksian. [Flora.

Mr. J. Jennings, S.E., for Group of Plants. Silver Flora.

Messrs. Osborn & Sons, Fulham, S.W., for Group of Plants. Small Silver Banksian.

Messrs. J. Standish & Co., Ascot, for Group of Plants. Large Silver Banksian.

Mr. C. Turner, Slough, for Group of Auriculas, Azaleas, &c. Small Silver Banksian.

Mr. J. Burley, Bayswater, W., for Group of Foliaged Plants. Small Silver Banksian.

Messrs. James Carter & Co., High Holborn, W.C., or Group of Plants. Small Silver Banksian.

Messrs. C. Lee & Son, Hammersmith, W., for Group of Plants. Small Silver Banksian.

Messrs. G. Beckwith & Son, Tottenham, for Group of Pelargoniums. Silver Flora.

Messrs. Hawkins & Bennett, Twickenham, W., for Group of Pelargoniums. Silver-gilt Flora.

Mr. T. C. Bygrave, Clapham, S.W., for Group of Plants. Small Silver Banksian.

Mr. J. Seabrook, Enfield, for Group of Plants. Small Silver Banksian.

Mr. J. Sweet, Leyton, for Group of Plants. Silver-gilt Flora.

Mr. R. Smith, Ealing, for Group of Plants. Small Silver-gilt Banksian.

Messrs. H. & G. Wright, Lee, for Group of Plants. Small Silver-gilt Banksian.

Mr. J. Bromwich, Buckingham Palace Road, S.W., for Bouquets. Small Silver Banksian. [Banksian.

Mr. C. W. Buck, Covent Garden, for Bouquets. Small Silver

Mr. J. Aldous, South Kensington, W., for Table Decorations. Small Silver Banksian.

Messrs. J. H. Pounce & Sons, Hendon, for Table Decorations. Small Silver Banksian.

Messrs. W. Wood, Farmley & Co., Knightsbridge, W., for Table Decorations. Small Silver Banksian.

W. Terry, Esq. (Mr. W. P. Roberts, Gr.), Fulham, S.W., for Group of Perns. Small Silver Banksian.

W. Terry, Esq. (Mr. W. P. Roberts, Gr.), Fulham, S.W., for Bouquets. Bronze Medal.

S. Cumings, Esq. (Mr. A. Ayling, Gr.), Hornsey, N., for Group of Orchids. Bronze Flora.

Messrs. Cranmer & Kensal New Town, N.W., for Miniature Succulents. Large Bronze Banksian.

Mr. R. Dean, Ealing, for Group of Hardy Plants. Large Bronze Banksian.

J. W. Miles, Esq. (Mr. W. Perry, Gr.), Bristol, for Group of Orchids. Small Bronze Banksian.

Mr. G. Brand, Winchmore Hill, N., for Group of Pelargoniums. Small Bronze Banksian.

Mr. T. Pearce, Kent, for Group of Plants. Bronze Flora.

Mr. G. Poulton, Edmonton, Group of Spiræas. Bronze Flora.

Mr. T. Pestridge, Brentford, for Group of Pelargoniums. Bronze Banksian.

Messrs. J. H. Pounce & Sons, for Group of Plants. Bronze Banksian. [Banksian.

Mr. R. Cooper, Edmonton, for Group of Plants. Bronze

Mr. J. Puttick, Acton, for Group of Plants. Bronze Banksian.

Mr. J. Bromwich, for Fern Cases. Bronze Banksian.

Mr. G. Smith, Bayswater, W., for Bouquets. Bronze Banksian. [Banksian.

Miss S. Moyes, Pimlico, S.W., for Bouquets. Bronze

Messrs. W. Wood, Farmley & Co., for Bouquets. Bronze Banksian. [Banksian.

Mr. W. Stone, Covent Garden, W.C., for Bouquets. Bronze

Mr. P. Ladds, Bexley Heath, for Group of Plants. Bronze Banksian.

H. J. Atkinson, Esq., Acton (Mr. Hudson, Gr.), for Table Decorations. Bronze Banksian.

Mr. W. Young, Camden Town, N.W., for Table Decorations. Bronze Banksian.

Mr. W. Poupart, Twickenham, S.W., for Collection of Vegetables. Bronze Banksian.

Messrs. J. & M. Poupart, Twickenham, S.W., for Collection of Vegetables. Bronze Banksian.

Rev. J. K. Watson, Guernsey, for Collection of Grapes. Bronze Banksian.

Mr. J. Smith, Kingsland Road, N.E., for English and Foreign Salad. Bronze Banksian.



ADDITIONAL

NEW AND RARE PLANTS

For 1877,

OFFERED FOR SALE BY

Messrs. JAMES VEITCH & SONS.

ACALYPHA MUSAICA.

An erect-growing species, much branched and well furnished with handsomely coloured foliage.

The leaves are large, obcordate in shape, sharply pointed, and with the edges deeply serrate. The foot-stalks being short, the habit of the plant is neat and compact.

The colouring is varied, and consists of many shades of orange, red, crimson, and green, all of which have a brony hue that forms a peculiarity of the Acalyphas, among which this plant is one of the most distinct for decorative effect.

It received a Certificate of Merit from the Royal Botanic Society, April 18.

Price 21s. each.

COLEUS MULTICOLOR.

A new and distinct species, introduced by us from the Solomon Islands, and presenting much striking novelty both in the form and colour of its leaves.

In form the leaves differ chiefly from the usual type in having the teeth of the edges greatly elongated and rounded at the tips. In colour it is remarkable for the number of rich shades of crimson, red, rose, &c., into which the leaves sport; some of the young leaves having also a bright yellow for its ground colour marked with rose or red. All the shades of colour in the foliage contrast finely with the bright green of the stem and foot-stalks.

It is a very beautiful plant, and will be found among the most useful of this class for decoration. It received a First-class Certificate from the Royal Horticultural Society, May 2; also a Certificate of Merit from the Royal Botanic Society, April 18.

Price 7s. 6d. each.

DRACÆNA ROBINSONIANA.

One of the most distinct Dracænas yet introduced: it is a robust growing variety.

The leaves with their foot-stalks have a length of from 15 to 16 inches, with a breadth of from 3½ to 4 inches: the ground colour is a light olive-green, very much striped with bands of bronzy crimson and greenish white, more broadly in the leaves than in others; the parts so margined are rich crimson.

The colouring is unlike that of any other Dracæna, and marks the plant as a distinct variety: and in our opinion it will prove one of the finest of the many Dracænas recently introduced.

It received a First-Class Certificate from the Royal Horticultural Society, May 15, and a Certificate of Merit from the Royal Botanic Society, May 16

Price 21s. each.

LOMARIA DISCOLOR BIPINNATIFIDA.

Of all the Lomarias yet introduced to British gardens this is certainly the most pleasing and attractive, not only on account of its light cheerful colour, but also for its elegant habit and its beautifully divided fronds, which have characteristics quite distinct from those of any other species.

It is a sub-arborescent Fern: the fronds are numerous, and spring from the crown of a short robust stem, arching, and from 18 to 24 inches in length: the pinnæ are very close set, so as to overlap each other, and are cut to the rib, the outer sub-divisions being slightly crisped: they are sub-coriaceous in texture, and of a soft light green in colour. In some of the latest formed fronds the subdivisions of the pinnæ are smaller and more distinct.

This truly fine Fern, and one of the most elegant for decorative purposes, was imported by us from Melbourne through our friend Baron Mueller, and received the award of a First-class Certificate from the Royal Horticultural Society on the recent occasion of Her Majesty's visit, May 2.

"It is one of the most charming of all the smaller Lomarias, and is well worth culture." *The Garden*, May 5.

Price 21s. and 84s. each.

PAVONIA WIOTI.

A very striking flowering plant, of which we have purchased the entire stock from Messrs. Makoy & Co., of Liége. It is the more acceptable from our having had so few plants really valuable for their bloom introduced during late years.

We take from the *Gardeners' Chronicle* of June 14, 1875, the following description of this very interesting Malvaceous plant:

"In habit and foliage it presents nothing different from familiar type of this family; it is in the flowers that we find an unusual development and colouring of the different parts. The outer calyx bears consists of two whorls of narrow slender bright red bracteoles, the outer whorl shorter than the inner, which equals the closed corolla. Both the latter and the calyx are of a rich red hue. From the mouth of the erect tubular corolla the bright red staminal column protrudes about one inch, and bears numerous blue anthers."

We may add that the flowers continuously throughout the year, but most freely in the winter months; it also commences to bloom when only from 2 to 4 inches high, and a small plant has from 20 to 30 blooms open at one time: and this with its neat habit and pleasing foliage it will be exceedingly valuable for decorative purposes. It is also of free growth, hardy cultivation, and easily flowered. It requires an intermediate temperature.

It has received the award of a First Prize as the best new plant at Cologne, Brussels, Antwerp, Liége, and Paris.

Price 31s. 6d. each.

ROYAL EXOTIC NURSERY,
KING'S ROAD, CHELSEA, S.W.



SATURDAY, MAY 19, 1877.

THE ROYAL ACADEMY.

THERE are but few pictures of the first class representing flowers and fruit in the Royal Academy this year, and but few pictures in which these objects occupy a prominent position, indeed the whole exhibition is below the usual average in high-class pictures, though the number of works displayed is somewhat larger than usual, and well-painted landscape is well represented by numerous and well-executed works. Passing by various figure-subjects, cattle pieces and portraits, we first notice 71, "A Spring Morning by the Undercliff," Isle of Wight, R. Ellis Wilkinson; an excellently painted landscape, with Primroses, Dandelions, Hart's-tongue Ferns, Orchis mascula, &c., and a hedge-hog in the left-hand corner: there is a lovely spring air about this picture. 72, "Milking Time, Jersey," E. Douglas, is a well-executed picture, in the style of Landseer and Ansdell, of cattle, with a landscape background, and a group of Horse-Mushrooms in the left-hand corner. 74, "Gillyflowers and Cherry Blossoms," H. Fantin, an unsatisfactory group of Wallflowers and double Cherry blossoms. 88, "The Fairy Ring," Valentine W. Bromley; two rustic children within a ring of fungi. We have many times seen rustic children better painted, and the fungi do not belong to the Fairy-ring Champignon but to Agaricus fascicularis, which usually grows in tufts at the foot of a tree. We greatly regret this young artist's very recent death at Harpenden, where fairy-rings have of late attracted so much attention from Dr. Gilbert. 99, "Study of Fruit and Flowers," two bits of Roses, an Apple, and a few Grapes, a tolerable little picture, with the inevitable jar which has stared at us from so many former pictures. 101, "Cowslips," G. D. Leslie, R.A., a beautifully painted picture of elegant country children with Cowslips (judging from the bag), for Cowslip wine. 106, "Fruit," Eleanor S. Wood, a well painted picture, after the style of Lance, but middle-aged connoisseurs have seen the half-peeled Orange far too often. 117, 118, 119, 120. These are four figure subjects, by L. Alma-Tadema, meant to symbolise the seasons. "Spring" is a fair girl with a Cyclamen in a field of Anemones dotted with Pines, exactly such a field as was engraved in the *Gardeners' Chronicle* a year or two ago. "Summer" is symbolised by females in a small circular bath-room, with a background of mosaic, one nude figure crowned with flowers reposes in a small circular marble bath with Rose petals floating on the surface of the water, whilst a middle-aged and rather ugly female reposes in an uncouth attitude on a seat. "Autumn" is the interior of a Roman wine-cellar, with an olive-skinned dancing Bacchante, furnished with a torch, pouring out a libation of red wine before a figure of Bacchus. "Winter" is a group of muffled figures at the base of a column, warming themselves before a brazier in the form of a mediæval castle: the wintry landscape and the effect of light in this picture are remarkably well done. The four pictures are very excellent, but less important in design and detail than the usual productions of this admirable artist. 148, "Pamela Concealing her Correspondence Between the Tiles," C. Landseer, R.A. In this picture

Roses, Hollyhocks, Sunflowers, and other flowers, are introduced, but they are all bad and unnatural. 150, "Spring Flowers," Miss M. D. Mutrie, is an excellent picture of Azaleas, Violets, and Narcissus, with a peacock-feather fan for a background. 223, "Spring Time," Marian Chase, is a pleasant and tolerably correct painting, introducing Cowslips, Orchis mascula, and Nettles, but the picture is totally deficient of light. 233, "Spring Flowers," is a creditable little flower picture, but the Primroses are shown (perhaps purposely) as quite withered. 273, "The Sound of Many Waters," J. E. Millais, R.A., a landscape picture of lichen-clothed old red sandstone rocks, tumbling waters, and Firs and Larches, one of this famous artist's best landscapes. 352, "Wallflowers," H. J. Rhodes, is a well-executed flower subject. 353, "Field Mice," C. T. Rope, is notable for the introduction of the scarlet Peziza coccinea on a decaying branch. 358, is a capital portrait, by Lowes Dickinson, of Arthur Grote, Esq., late one of the Council of the Royal Horticultural Society. 388, "Basket of Roses," H. Fantin, an unsatisfactory picture, but the drawing of the foliage is good. 435, "Wild Flowers of South America," Miss A. F. Mutrie. This is a truly admirable picture both in drawing and painting; it represents a magnificent group of Orchids, such as Odontoglots, Cattleyas, Masdevallias, &c.; several species are introduced, and all are readily recognisable. The whole picture is very satisfactory, but if the real flowers were placed beside the representations, the colours of the latter would pall immensely; no artificial colours can approach the gorgeous purples and scarlets found in the species of Cattleya and Masdevallia. Experienced artists, who don't risk failure, seldom attempt them, because they know the originals to be simply unapproachable; inexperienced artists, however, often attempt them. 509, "A Baptism of Flowers," Albert Goodwin, is a charming picture of woodlands with young Beeches in spring; the ground is carpeted with Wood Anemones, Bluebells, and Primroses, amongst which are country children at play; in the foreground is a dowdy old woman with her back to the spectator, making her way towards a churchyard; the old woman is being pelted (baptised) with Primroses from the hands of the children. 640, "Snow in Spring," G. H. Boughton. This is one of the best pictures in the Academy, and represents a group of young folks with Hogarth's dog overtaken by a slight snowstorm in a woody place, 650, "The Passing Storm," J. C. Adams, appears to be an excellent landscape, with truthful effect of lurid sunlight after a storm, and deserves a far better position on the walls. 656, "The Source of a River," J. MacWhirter, an excellent study of a river-source, rich with wild flowers, Ferns, and Brambles, all well done; in the foreground is a white Foxglove and some red fungi, painted from memory, not Nature.

Reaching now the water-colours, we have 661, "Carnations," Emily Whymper, which gives no correct idea of these plants. 663, "Lichen, Bark and Blossom," Miss B. Palmore, is a marvel of minute workmanship, but the entire picture, including the moth, is as flat and lifeless as a pancake. 655, "On the Tree-top," Emma Cooper, is a wren perched on Aucuba berries growing from nowhere in particular. 681, "The Twins," Edith M. Knapping, two red Roses very badly done. 613, "Azaleas," Helen C. Angell, not well executed, and the foliage very unsatisfactory. 695, "A Jug of Flowers," J. Jessop Hardwick, an indifferent study of Anemones and Polyanthus Narcissus. 697, "Cloisonnée enamel and flowers," Mrs. A. Lukis Guérin, a richly painted little drawing, much better than the ordinary run of the Academy floral subjects. 731, "Daffodils, Roses, &c.," W. J. Muckley, is a large group of flowers, thoroughly well drawn and boldly painted—a floral picture of quite the first class. This picture, which consists of single and double Daffodils, Roses, Azaleas, Cinerarias, Tropæolums, &c., should be carefully studied by all would-be painters of flowers. 737, "Fallen," Mrs. Pfeiffer, a Eucharis bloom dropped amongst grass and Dandelions; the stock butterfly here puts in his eternal appearance. 739, "Azaleas and Pyrus japonica," J. Jessop Hardwick, an indifferent study of the plants mentioned. 775, "Mushrooms," J. Bligh, very good and natural. 783, "A Study of Herrings," A. G. Adams: this pair of dried bloaters is quite a relief after the flood of insipid Azaleas. 792, "A Bunch of Plums," J. Sherrin, is excellent, but how many times, alas, have we seen this bunch of Plums (like the everlasting Azaleas) before! 803, "Pansies," Emily Whymper, is rich in colour and natural. 817, "Pine and Shell," J. Sherrin: this is a Pine-apple and a snail-shell; these snail-shells are quite as great a nuisance as the Azaleas. What a change and relief it would be if some of the snail-shell painters would but give us a slug or a worm or some other humble organism. 833, "Flowers," W. J. Muckley. Our remarks on 731 equally apply to this second bold and excellent picture of Rhododendrons, &c.: the perspective of the foliage is uncommonly good and correct. 840, "Fruit," Eleanor S. Wood: this is a "scenic" picture of Grapes, Pomegranates, and our too familiar and very old friend the Melon with a slice removed. 842, "Peonies," A. C. H. Luxmore: a good picture of Pæonies, but with the leaves too flaccid. 852, "A Bough of Plums and Apples," W. Kümpel, well executed, but we fancy we have seen it at least a hundred times before. 862, "A Bunch of Apples," J. Sherrin, a beautifully painted picture, the foliage being especially good. 897, "Azaleas," Anne Jenkins, very good, but we prefer Dandelions in future. 875, "Roses," Helen C. Angell, well executed Roses in a glass. 884, "Cinerarias," Miss Llewelyn: this is a very good study of these plants in a common red garden pot; the drawing and colour are alike good. 887, "Azaleas," Constance B. Philip, same as the other Azaleas, but we hope to see less of them in future. 903, "Sunflowers," Miss E. Walker: this study from Nature is thoroughly well done, the drawing and colour is bold and decisive and very natural, the tiger-moth is hardly seen. 1389, "Azaleas," C. Symonds: this is a somewhat rough painting in oil of white Azaleas, and of little interest. 1399, "Camellias and Azaleas," Miss M. D. Mutrie, a far more exact and truthful picture of these plants than the majority previously mentioned in this report.

Of figure-subjects there are many excellent examples, painted by such masters as Millais, Leighton, Alma-Tadema, Poynter, Herkomer, Gilbert, Long, and others, but we have no space for extended reference to these works, or, indeed, to many of the beautiful and truthful landscapes which adorn the Academy walls. The life-size bronze of an athlete wrestling with a python, by Mr. Leighton, is one of the finest statues we have ever seen.

New Garden Plants.

PESCATOREA ROEZLII, *Rchb. f.*

This, the Zygopetalum Roezlii of my herbarium, has finally flowered with Sir Trevor Lawrence, who was so very kind to send me both flowers—one in December, 1876, and one in January, 1877. It is exceedingly difficult (as I have before stated, when describing Bollea coelestis) to make up one's mind as to the identity of fresh flowers of this alliance with the wild-grown, dried, shrivelled flowers. After having carefully sketched and described the fresh flower, one has to get it into just as miserable and shrivelled condition as the wild specimen, and then one comes to the point. Notwithstanding some insignificant discrepancies, I feel persuaded Sir Trevor has had the good fortune to flower the genuine plant. And what a flower it is! Can it be recommended better, than by stating it is near Mr. Day's noble Pescatorea? In lieu of its usually rich violet-purple, this one boasts sepals and petals with splendid purplish-rose areas, now with a very little green apiculus. The blade of the lip, excepting the callus and the base of the column, too, are just of the same colour. I feel very thankful to Sir Trevor Lawrence for sending me these glorious flowers.

Speaking of those bulbless Maxillarids, I am sorry to state that some of my English correspondents, who tell me not only their pleasures, but their cares and sorrows too, deeply complain of the ingratitude of this group, which they feel inclined to place on the list of proscribed Orchids. My private experience at Hamburg Botanic Garden is this, that these plants dislike a treatment with sphagnum, sand, wood, coals, and bricks alone. Give them good, rich wood soil in profusion, fresh air, good circulation, and good water, free of any manure, and they will thank you immediately by offering you numerous finger-like roots, as if they wanted to shake hands with you. But let us never forget the individual value. As the best people will never feed an Apollo from a *centre's* child, so you cannot grow certain miserable individuals to good plants. Thus, after seven years' troubles, we have just witnessed the predicted death of a Vanda cœrulea, always declared a candidate for death, although other individuals of the same species have grown very well under the same treatment. *H. G. Rchb. f.*

PINUS OMORIKA, *Pancic*.*

At p. 470 of the present volume will be found some notes on this tree, and from the same source (*Monatsschrift des Vereines zur Beförderung des Gartenbaues*, &c.) we now extract the original description, given below, and the following additional particulars. One of the most noteworthy characters, Dr. Bolle says, pointed out by Dr. Pancic, resides in the glaucous upper surface of the leaves, but this is at present rather obscure, because, as is well known, the position of the respective surfaces of the leaves of many species of this section is reversed by a twist of the petiole. According to Braun, P. Omorika differs in an essential character from P. orientalis, to which it is closely allied, in having no stomates on the under-surface of the leaves, and agrees in this respect with some of the species inhabiting Eastern Asia. The special localities at present known for this Pine are the rugged mountainous districts of South-Western Servia, near Zaovina, where it is rather rare, and more abundantly at Crvena Stena, above Kastitse. The natives also report it from Jangac, above Stula, in Bosnia, and Dr. Pancic has recently ascertained that the tree is known throughout the Czernagora.

* "Arbor excelsa, coma anguste pyramidali, ramis brevibus subverticillatis superioribus erectis, medio horizontaliter patentibus ac inferioribus pendulis cum pulvinis brevibus arcuatim adscendentibus: ramulis hirsutis: foliis solitariis, rectis aut incurvis planiusculis nervo utrinque prominulo obsolete tetragonis apice acuminatis acutis aut obtusis cum apiculo cartilagineo superiore pagina eximie glaucis: strobilis sat parvis oblongis in ramis varie longitudinis erectis, horizontaliter patentibus aut pendulis, squamis a basi cuneata subrotundis, dorso sub apice striatis margine eroso-denticulatis, bracteis obovato-cuneatis apice denticulatis, sua squama multo brevioribus; nuculis parvis obovatis ala obovata-cuneata subobliqua margine subintegra triplo brevioribus. *J. Pancic.*"

THE GENUS AGAVE.

(Continued from p. 530.)

SERIES I.—CORIACEO-CARNOSÆ.—Texture of the leaf rigid, not at all fleshy or yielding to the touch when mature. End spine large, hard and pungent.

Group II. Marginatæ.—Edge of the leaf furnished all the way down from the top to the bottom with a distinct horny border of the same texture as the teeth.

Having last time dealt with the Marginatæ with ensiform leaves, I proceed in the present paper to describe those in which the leaves are oblanceolate or oblong, at any rate decidedly narrowed from the middle to the top of the dilated base.

* GRANDIFOLIÆ.

15. *A. Vanderwinneni*, Jacobi, Nachtrage, p. 19.—Acaulescent. Rosette 5 feet broad and nearly 3 feet high. Leaves numerous, oblong-spathulate, 2 feet long, 7 inches broad, with a long strong pungent terminal spine, dull opaque green, not vittate, banded and glaucescent on the back, furnished with a straight grey-brown edge, and remote regular large deltoid-uncinate teeth. Inflorescence unknown.

A native probably of Mexico. I know it only through Jacobi's description. It is the giant of the Marginatæ, and the only large species of the group with leaves of the Scolymus-æmena type of form.

16. *A. Demeesteriana*, Jacobi, Monogr., p. 218.—Shortly caulescent. Leaves very rigid, lanceolate-spathulate, nearly 2 feet long, 3½ inches broad at the middle, narrowed to 2½ inches above the base, and to a

pungent brown point ½ inch long, opaque glaucous-green, not vittate, but furnished with broad transverse deeper and paler-coloured bands, the base 1⅞ inch thick, furnished with a distinct, narrow, continuous horny repand border, and broad, small teeth. Inflorescence unknown.

A native probably of Mexico. Described by Jacobi from the collection of the gentleman at Antwerp after whom it is named. So far as I am aware, no specimen has ever reached this country.

is one of the most handsome of these dwarf Marginatæ. *A. Rohanii*, Jacobi, Monogr., p. 43, is a dwarf variety, with vittate leaves of a deader green; and apparently *A. Leguayana*, Hort. Verschaffelt, which I have seen at Mr. Peacock's, is a narrow-leaved variety of this species (leaves ½ foot long, 1½ inch broad at the middle).

18 *A. Peacockii*, Croucher, in Gard. Chron. 1873, p. 1400, tab. 283.—Acaulescent. Leaves 40—60 to and 207; Nachtrage, p. 15; Wochenschrift, 1869, p. 177; fig. 99; *A. Desmetiana*, Hort., non Jacobi; *A. Regeliana*, Hort., non Jacobi.—Acaulescent. Leaves 30—40 in a dense rosette, rigid, lanceolate-spathulate, 8—12 inches long, 1½—2 inches broad at the middle, narrowed to 1½—1½ inch above the dilated base, bright green, not vittate, ½ inch thick at the base, ¼ inch thick in the centre, the point pungent, ¾—1 inch long, the margin furnished with a continuous broad grey border, with copious, deltoid-cuspidate teeth ⅜—½ inch long. Inflorescence unknown.

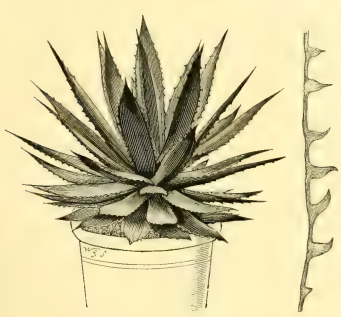


FIG. 98.—AGAVE HORRIDA VAR. MICRANTHA.



FIG 99.—AGAVE HORRIDA, TYPICAL FORM.



FIG. 100.—AGAVE GHIESBREGHTII.



FIG. 101.—AGAVE GILBEYI.

** PARVIFOLIÆ.

17. *A. Ghiesbreghtii*, Lemaire; Jacobi, Monogr., p. 42; fig. 100.—Acaulescent. Leaves 30—40 in a dense rosette, rigid, lanceolate, 9—12 inches long, 2½—3 inches broad two-thirds of the way up, narrowed to 2—2½ inches above the dilated base, bright glossy green, not vittate, ½—¾ inch thick at the base, ⅛ inch thick in the centre, the pungent end spine ½ inch long, the border narrow, red-brown till a late stage, the back not striated with deeper-coloured lines, the copious irregular lanceolate-deltoid teeth 2—3 lines long. Inflorescence unknown.

A native of Mexico, introduced by Verschaffelt in 1862. It is now widely spread in our collections, and a rosette, rigid, oblanceolate-spathulate, 9—12 inches long, 2 inches broad above the middle, narrowed to 1⅛ inch above the dilated base, dull glaucous-green, with a pale central band, ½ inch thick at the base, ⅛ inch thick in the centre, end spine an inch long, the edge bordered with a moderately broad continuous horny line, at first red-brown, the subdistant deltoid cuspidate curved prickles 3—4 lines long. Inflorescence unknown.

Introduced by Roezl, from Tehuacan in Central Mexico. Closely allied to Ghiesbreghtii, from which it differs mainly by its opaque glaucous vittate leaves. I have seen it only at Mr. Peacock's.

19. *A. horrida*, Lemaire; Jacobi, Monogr., pp. 43

A native of Mexico, introduced by Verschaffelt in 1862, and now widely spread in our collections. It is well marked by its dwarf habit, bright green colour, continuous broad border, and large grey teeth. There are many varieties, of which the following are the principal:—

1. *macrodonta*.—Leaves 50—60, broader than in the type (about 2½ inches). Spines larger than in the typical form. Seen at Mr. Peacock's.

2. *micracantha*, fig. 98; *A. grandidentata*, Jacobi, Monogr., p. 207.—Border of the leaf narrower and spines smaller than in the typical form.

3. *Gilbeyi*.—*A. Gilbeyi*, Hort. Haage and Schmidt; Gard. Chron. 1873, p. 1305, fig. 270; Regel, Gartenfl. 1874, p. 89, with woodcut; fig. 101.—Leaves about thirty, not more than 3—4 inches long, 2 inches broad.

dark green with a pale stripe down the middle, the border as broad as in the type, with 3—4 large spines on each side. Introduced by Roezl from Tehuacan.

4. *Irregularis*—*A. triangularis*, Jacobi, in K. Koch, Wochen. 1859, p. 178; Nachtrage, iii., p. 65.—Leaves obovate, glaucous-grey, about 4 inches long by 3 inches broad, the border very broad, and the few teeth very large and curved.

I cannot make out clearly from Jacobi's elaborate description how his A. Maigretiana, *Monogr.*, p. 215, a plant unknown in England, differs from horrida; A. horrida has been widely distributed in gardens under the names Desmetiana and Regeliana, but the plants described under those names by Jacobi are totally different, and both belong to the group V., Rigidæ. This concludes the group II., Marginatæ.

J. G. Baker.

THE NUTRITION OF FRUIT TREES.*

DR. GOEPPERT, in an article printed in most of the German gardening periodicals, on the necessity of scientific knowledge for the real advancement of horticulture, laid particular stress on the urgent need of the early investigation of the laws of the nutrition of plants, with especial reference to the determination of the indispensable elements as distinguished from those accidentally present in vegetable substances. Representing the first institution established in Germany for the purpose of conducting scientific researches bearing upon horticulture, Dr. Sorauer has taken up this subject with the intention of prosecuting his studies in this direction to the utmost of his power and resources. What follows is for the greater part in his own words.

With regard to the elements necessary in the food of cultivated plants the following facts may throw some light on the matter. At this experimental station, for three years past, trees belonging to various orders have been cultivated in nutrient fluids. From the circumstance that they are successfully cultivated, and exhibit a normal development, it must be assumed that they obtain in sufficient quantity all that is absolutely necessary for their nutrition. The manner of procedure recommended by Dr. Goeppert for solving this question has not been followed, because it leads to disappointments, and because it can be replaced by something simpler. Goeppert proposed that soils, and the plants that flourished perfectly in them, should be submitted to analysis. This would take us direct to the goal if plants absorbed none but the necessary elements, which is not the case. Hence analyses would have to be made of a number of different soils, and samples of the same plants growing in them, in order to arrive at an approximate idea as to which of the ash constituents were accidentally present, and which are essential. Again, a chemical analysis of a plant growing in the earth gives no certain clue to the quantity of each of the constituents at least requisite to build up a gramme (15 grains) of the dry substance of the plant in question. A glance at a series of analyses of the same plant is sufficient to teach us how widely diverse the percentages of the various ash constituents are from different soils. To give a single recent example (Biedermann's *Centralblatt fur Agrikultur-Chemie*, 1871, vol. i., p. 435), Sace's series of analyses of Lucern grown in different soils :—

	Granitic soil.	Chalky soil with flints.	Clayey soil with chalk.	Very chalky soil.
	P. cent	P. cent.	P. cent	P. cent.
Silicic acid	0·09	0·41	0·47	0·58
Ferric oxide	0·36	1·05	0·23	0·60
Magnesium carbonate ..	0·09	7·15	10·20	0·08
Calcium sulphate	4·51	3·04	7·51	6·60
Calcium phosphate ..	14·48	8·11	10·60	11·71
Calcium carbonate ..	11·42	48·15	40·68	30·19
Potassium carbonate and sodium chlorides	4·12	2·19	20·60	22·09
	6·67	2·12	0·68	6·98

The way in which this question has been investigated at Proskau has already been mentioned. The results obtained from (herbaceous) plants artificially cultivated in distilled water or quartz sand that had been thoroughly burnt go to show that very different plants invariably require only the same ash constituents for their growth, and it was reasonable to suppose that woody plants would need no other nutrient substances. This assumption has also been confirmed. The ash constituents are presented in the form of the familiar nutrient salts. The water which the plant uses and evaporates is replaced from time to time. According to the nature of the experiment, the nutrient solution is renewed within certain given periods. The solution was never of a higher concentration than 0.5 per cent., and the various salts were represented in the following proportions :—

Potassium phosphate	..	0.5 millegramme æquiv.
Magnesium sulphate	..	0.4 ,, ,,
Potassium chloride ..	..	0.75 ,, ,,
Calcium nitrate	..	4.00 ,, ,,

To which was added a small portion of phosphoric acid and oxide of iron. In this solution the following plants have been successfully cultivated :—Apple, Pear, Cherry, Plum, Peach, Grape Vine, Pine, Fir, Maple, Ash, Elm, Elder, Orange, Lime, Hazel, Robinia, Caragana, Gleditschia, Calycanthus, Ailantus, &c. Vegetables throve equally well in it.

Thus it will be perceived that trees belonging to the most distinct families require no other nutrient substances than our cultivated cereals do, and it will scarcely appear too venturesome to assume that the majority of plants can live upon these substances. If silicic acid and sodium, which are usually found in the ash of plants, be indispensable, the quantities needed are so infinitesimally small that that accidentally conveyed to the plants in dust, &c., is sufficient. A few plants, such as the salt-marsh plants, will form an exception to this, and require a larger quantity of common salt. But very few plants are peculiar to certain soils, and therefore all garden plants may first be tried in the nutrient solutions, and, in case of failure, recourse may be had to analyses of the soil and plants.

So far as our fruit trees and the others enumerated above are concerned, these experiments have advanced the nutrition question to another stage. We now know what ash constituents must be present, and further experiments must determine the smallest quantity of each separate nutrient substance requisite to form 1 gramme of dry matter. But this part of the inquiry is of little importance from a practical point of view, as we are able to insure a surplus of all of the substances in the soil even after the heaviest crop. The principal substances, such as nitrogen, potash, and phosphoric acid, we can always increase by manuring, and as fruit trees require the same food as cereals, we can regulate the manuring according to the principles laid down in agriculture. In the main it resolves itself into a question of the presence of water, for water furnishes the solvent for all the nutrient elements of the soil. And cultivated trees, it should be remembered, have a different root-apparatus from the wild tree, which usually pushes a taproot or a few main branches deep into the soil, into layers less exposed to fluctuations of temperature and moisture. So the wild tree has an advantage over the cultivated one in being able in dry seasons to pump the water from deeper layers of soil [and we may add that it is not so easily blown down]. In so far as this goes, they are right who recommend not cutting the roots of seedling trees. But trees raised in nurseries must of necessity be root-pruned in transplanting, usually more or less each time of transplanting, or when planted in their final destination few of them would live. Such trees can neither go wide nor deep for their water; hence the cultivator should pay more attention to the arrangements for maintaining an ample supply of water within reach of the roots of his trees. A question for science to solve is, how much water does a tree use in the production of a given weight of dry matter, and does the quantity vary with the conditions under which the tree is growing? These points will be the subject of future communications.

* By Dr. Paul Sorauer, Director of the Experimental Station for Vegetable Physiology at the Pomological Institute of Proskau. Condensed from the *Monatsschrift des Vereines zur Beförderung des Gartenbaues* for February, 1877.

PLANT PORTRAITS.

ABUTILON ROSEFLORUM, *Floral Magazine*, t. 253.—A new hybrid, stated to have been raised between A. Boule de Neige and A. Darwinii. It is of dwarf, free flowering habit, the flowers rose-coloured. (Williams.)

AGAVE SARTORII, *Botanical Magazine*, t. 6292.—One of the section Littæa, distinguished from all the fleshy-leaved race by its caulescent habit. It was described under three different names by Jacobi, and under a fourth by Todaro. The figure now given is from a plant which flowered in the collection of W. W. Saunders, Esq.

ANTHURIUM DECHARDI, E. And., *Illustration Horticole*, t. 269.—A very handsome, white-spathed Aroid, similar to A. Patini and A. floribundum, but with larger spathes. The plant will probably be grouped ultimately, along with the species just named, under the new genus Amomophyllum, lately established by Dr. Engler, in the *Gardeners' Chronicle*, 1877, p. 319. A. Dechardi is one of M. André's discoveries in New Grenada, and he thinks so highly of it as to prophesy for it a place in the future as a plant for the million, like Richardia æthiopica.

AQUILEGIA CHRYSANTHA, *Gartenflora*, t. 895.—This is the yellow-flowered Columbine concerning which there was some discussion in our columns in 1873.

CALLIPHRURIA SUBEDENTATA, Baker, *Botanical Magazine*, t. 6289.—This is the plant which has been grown in some gardens under the name of Eucharis candida, but it is not the true E. candida of Planchon, which was sent out by Mr. Bull last year. The plant has stalked ovate oblong leaves, and a truss of white funnel-shaped flowers, borne on a long scape. The figure is taken from a plant which flowered in the garden of M. H. Beaufoy, Esq., South Lambeth.

MASSANGEA (CARAGUATA) MUSAICA, *Illustration Horticole*, t. 268.—This is the Bromeliaceous plant, with beautifully marked leaves, which was originally sent out as Tillandsia Musaica, and is named by M. André Caraguata, but which is likely soon to be constituted by M. Morren as a new genus, under the name Massangea. In any case the orange bracts and yellow flowers, though rather showy, will not vie in beauty with that of many others of the same order, so that it is still for its elegantly marked foliage that the plant will be valued in stoves.

CATASETUM GNOMUS, André, *Illustration Horticole*, t. 250.—A species with lanceolate sepals of a greenish colour, spotted with purple spots, lateral petals lanceolate, shorter than the sepals, and of a violet colour; limb whitish, three-lobed, the central one hooded, sprinkled on the outside with purplish spots. There appears to be some doubt as to the specific identity of the plant, which will doubtless be cleared up by our learned friend, Dr. Reichenbach.

GLADIOLUS OCHROLEUCUS, Baker, *Botanical Magazine*, t. 6291.—A Kaffrarian species, with spikes of medium-sized straw-coloured flowers, introduced from the Transvaal by Mr. Bull. Independently of its intrinsic merit, it will probably prove useful to the hybridiser.

NIPHÆA ROEZLII, Regel, *Gartenflora*, t. 896.—A new species of Niphæa, with ovate-stalked downy leaves and small whitish flowers on long stalks. It does not appear to be of much horticultural importance.

ODONTOGLOSSUM CERVANTESI, *Floral Magazine*, t. 254.—A very fine variety of a now well-known Orchid, which was exhibited at the Royal Horticultural Society lately by Sir Trevor Lawrence. The figure is superior to that of many others in this publication.

PRIMULA PARRYI, *Gartenflora*, t. 894.—A species from the Rocky Mountains, with sessile oblong glabrous leaves, and numerous umbellate flowers borne on a scape. The flowers are of a purplish colour.

PRIMULA "ROSY MORN," *Floral Magazine*, t. 255, is one of Mr. R. Dean's seedling forms, of a rich magenta colour, with a yellow eye.

RESTREPIA ANTENNIFERA, *Botanical Magazine*, t. 6288.—An Orchid which has been known for many years, but of which, as it appears, no satisfactory figure has previously been published. The plant is a native of the mountains of New Grenada and Venezuela, at 6000 to 10,000 feet elevation. It is a plant for the connoisseur rather than for the generality of Orchid growers.

RONDELETIA BACKHOUSII, Hk. f., *Botanical Magazine*, t. 6290.—A beautiful shrub, needing stove or warm greenhouse treatment, with opposite stalked ovate acute leaves, midrib red on the under-surface. The panicles are terminal and many-flowered, each flower about ½—¾ inch long, salver-shaped and rose-coloured. The plant was received from Messrs. Backhouse, of York, and is probably of tropical South American origin. In any case, it is a most desirable but little known plant.

THAPSIA GARGANICA, *Botanical Magazine*, t. 6293.—An Umbelliferous plant, to which great interest attaches, as being the "Thapsia" of Dioscorides, celebrated in olden time for its healing powers, and supposed, but erroneously, to be the Silphium of the ancients. The plant was lately introduced by Dr. Leared, but it is an old denizen of our gardens.

VANDA CŒRULESCENS, *Floral Magazine*, t. 256.—Of this a good spike is depicted from the collection of Messrs. Veitch.

LIBONIA FLORIBUNDA.

IN the condition in which one usually sees this plant, the specific name appears a misnomer, and yet under a certain mode of treatment it really is one of the most floriferous and useful little plants it is possible to have for winter decoration, lasting as it does a very considerable length of time in bloom, besides being of an exceedingly neat and showy character; indeed, so serviceable is it, that I know of no plant I could so ill spare, as it is one on which I place the principal dependence from November to May, during the whole of which time the plants are studded with thousands of flowers, which, being of scarlet and yellow, quite enliven the house. Arranged as we have it here, in *iardinières*, with its hybrid variety L. penrhosiensis as an edging, or interspersed among the glowing Sericographis, with which it is closely allied, the effect is most charming; and, as it requires no heat beyond that of a warm greenhouse, it is doubly valuable on that account. Of perhaps equal merit is × L. penrhosiensis, a cross between the above and Sericograhis Ghiesbreghtiana, the leaves of which partake more of the character of the latter in a miniature form, with flowers intermediate between the two, as it is likewise in general habit and size.

To get either of these sufficiently large to be serviceable, and in good condition for next autumn, cuttings should be put in at once, but before doing this it is better to place the old plants in a gentle moist heat to start them into fresh growth, in which state the young tips always strike more readily than when taken from them before they are on the move. Any close-confined place suitable to strike Verbenas or other soft-wooded stuff of that kind will do to stand them in—a situation in which they will root readily and soon be fit for potting off, which should be done in light soil, consisting principally of fibry peat or well-decomposed leaf-mould and sand. A nice hot-bed, such as a Melon or Cucumber frame, will be the fittest place for them to get a start, or, failing either of these, any light shelf in the stoves where they can be kept well syringed both morning and afternoon till the weather is sufficiently warm to remove them to some of the cold pits or frames to complete their summer growth. This may be done by the end of May or early in June, provided the pit has been previously filled with sufficient leaves or other fermenting material in which to plunge the plants so as to afford them a very slight bottom-heat and screen the pots from the sun—a matter of much importance on account of the desiccating effect it has on the roots, and which is a frequent cause of throwing the plants into that semi-leafless half-starved flowerless condition they are so often seen in.

The soil for the final shift should be composed of good fibry loam and leaf-mould, or peat and the former, in about equal proportions, with a fair sprinkling of sand to keep it open and porous. In this they should be potted somewhat firmly, and have the points of the shoots nipped out from time to time to induce a close bushy habit. In order to assist them as much as possible, close early in the afternoon, having previously given a good syringing to engender a thoroughly moist atmosphere—a condition in which they greatly delight. By the end of August they should have completed their growth, and the whole secret of success in getting them to bloom satisfactorily lies in having this properly ripened, which can only be done by full and free exposure to both sun and air. Of course this must be done by degrees, or the leaves will become burned or discoloured, but by taking advantage of a dull day or two on first withdrawing the lights any injury of this kind may easily be obviated.

So long as the weather remains at all fair after the first week or so of hardening, they may with advantage be left uncovered day and night, but every care should be exercised in keeping them properly watered and well wetted overhead at least once a day whenever it is at all hot and sunny. Treated in this way they will be covered with flower-buds by the end of October, when they should be moved to the greenhouse, and stood in some light position to expand their blooms, or if a few are wanted early they may be subjected to a little more heat, but in this caution is needed, for if the transition is too great or sudden, the leaves are sure to fall, and many of the buds likewise. Where extra large plants are desired, it is necessary to keep them from year to year, and to prune back the shoots after flowering, much in the way that Pelargoniums are treated; when, if placed in any forcing house at work, they will soon break, and should then be partially shook out and re-potted, afterwards returning to the same or a similar position to give them a start.

By pegging out the side branches after the potting has taken place, so as to form a good foundation or frame, it is an easy matter to have two-year-old plants at least 2 feet through forming dense bushes, which, with proper ripening of the young growth, as advised, are sure to be laden with bloom. The largest and best of ours are of that description, and in 8-inch pots, which afford ample room for the roots if plunged during the summer and well cared for as regards water, &c. An easier way of growing this Libonia is by planting it out in warm, sheltered positions in the open—a practice that has at least one recommendation in its favour, and that is, that it secures a thorough hardening and ripening of the twiggy shoots, on which, as before observed, so much of the success depends.

If treated in the above manner an ordinary garden frame should be made use of for the purpose of planting them in towards the end of May, which, after they get a fair start, can be lifted and removed altogether, thus leaving the plants fully exposed till the autumn, when they should be lifted with good balls and kept close for a time, to get them established in their pots, in which they will be greatly assisted by copious syringing. Before planting them out, the bed in which they are to be grown should be properly prepared, either by putting fresh soil to a depth of 6 or 9 inches, or by a large admixture of leaf-mould or refuse peat, or any vegetable matter of that kind in a thoroughly decomposed state, so as to induce plenty of fibre close home, otherwise it will be a difficult matter to get them up with a sufficiently large ball to ensure their well-doing. *T. S.*

BRUSSELS BOTANIC GARDEN.

EVERY visitor to Brussels is familiar with the imposing appearance which the range of conservatories, placed on a commanding site facing one of the Boulevards, makes. But if this were the only claim the Botanic Garden had upon notice, it might well be passed over in this place. The fact is, however, that after having languished for some time as a private enterprise, the garden and its adjuncts have quite recently become Government property, and awakened to a new and flourishing existence, under the direction of M. Crépin, who is ably seconded by a competent and zealous band of assistants. We believe that for this happy state and happier promise Belgian botanists owe their gratitude in great measure to the venerable Dumortier, who, as a legislator, has not forgotten his early allegiance. On the contrary, he has given signal proof of his devotion, and in the organisation of the botanical department has rendered services which will not readily be forgotten. The extent of the garden, including the space occupied by the buildings, is about 6 hectares. It may be said that as a scientific establishment it dates only from 1870, the year of its purchase by the Government. Until that time it had been but a horticultural institution, the collections of which were of little or no use to the public.

There is now a much more varied and extensive collection of plants in the houses than we were at all prepared to see, the houses unfortunately being more built for show than for culture; and there is a well-arranged herbarium lodged in a spacious and well-lighted room nearly 150 feet in length, which also contains a small working library. This herbarium has for its nucleus that of the late Von Martius, whose fine collections of dried plants and of vegetable products were acquired by the Belgian Government. Subsequently the rich European herbaria of Baron Dieudonné and Crépin has been added, so that there is every prospect of this establishment taking rank among the most important of its kind on the Continent.

On entering the garden from the street the visitor is at once struck with the instructive system of labelling. In the case of the trees, not only the names, popular and scientific, and the natural order of the tree are given, but a sketch-map of the world on a small scale is affixed, on which is indicated by patches of colour the geographical distribution of the tree in question. The herbaceous plants are arranged according to the method of M. Dumortier, and planted in large circular beds. These are subdivided by concentric beds, divided by radiating paths—a plan which is very convenient for classificatory purposes, and is less unsightly than the rectangular beds frequently adopted. Small wicker screens of a hood-like form, about 2 feet in height and a foot wide, are also adopted to screen the more tender plants from the burning sun, to which they are subjected in the exposed area of the garden, the soil of which is, moreover, very light. The glasshouses, seventeen in number, comprise one very long narrow range with a circular centre surmounted by a dome, intended to receive the collections of fossil plants and of fruits, which might with much advantage be converted into a fine Palm-house. In addition to this fine range, the architectural pretensions of which are greater than its qualifications for plant growing, there are numerous smaller houses, the whole containing a larger and more varied collection than might be expected, while the cultivation is decidedly superior to that witnessed in so many of the botanic gardens of the Continent. We confess our inability to see why the requirements of botanical science and botanical instruction should be deemed incompatible with good cultivation. M. Lubbers, the curator, seems determined to show that there is no necessary antagonism, and to put in practice those physiological dictates as to plant life which in many botanical establishments are reserved for the class-rooms.

Some of the plants, we may mention, suffered indirectly from the Franco-German war. After Sedan, as may be remembered, many French soldiers took refuge in Belgium. The hospitals and other institutions of Brussels were, with noble humanity, devoted to the care of the sick and suffering, and even the cellars of the botanic garden were utilised for medical stores, among them chloride of lime, the emanations from which in one night effected serious damage to the plants, many of which, such as a fine specimen of Encephalartos Altensteinii, still show traces of the injury. Pandanus furcatus flowers every second year in this establishment. Palms, Cycads, Aroids, and succulent plants are well represented. Among the former are fine specimens of Livistona olivæformis and Sabal Blackburniana and umbraculifera.

Tree and other Ferns, including fine specimens of Angiopteris pruinosa, Tæmanniana, and other species, form a distinctive feature of the collection. They form the objects of special study on the part of M. Bommer. We cannot pretend to enumerate even a moderate selection of these plants, but we may at least allude to a plant which M. Bommer considers to be a hybrid between Blechnum brasiliense and Lomaria gibba, between which, in truth, it seems to be intermediate. It was a chance seedling found growing in the vicinity of the two species above-named. In any case it is a distinct form, and has been aptly named by M. Bommer as × Blechnum lomarioides. This Fern has appeared in English gardens on several occasions, and was shown under the name of Lomaria gibba major so long since as 1868. Hemidyction marginatum is here found to thrive best when its roots are in water.

Of Orchids there is already a collection of some 350 species, but in the matter of Orchid culture English growers have little or nothing to learn from their Continental friends. *The Rambler.*

GREENHOUSE PLANTS.

THEIR CULTURE AND MANAGEMENT.

SWAINSONIAS.—These handsome flowering plants are natives of New South Wales, and are deserving of general cultivation; they bloom freely from July to September, coming in at a season when flowering subjects are scarce; they are of somewhat straggling habit, very distinct from most others that require similar treatment as to soil and temperature; they continue opening a succession of flowers for many weeks, produced in bunches from the current season's wood. This continuous blooming habit renders these Swainsonias especially useful for conservatory decoration, although those who want flowering subjects for exhibition during the latter part of summer will find them of service. They are free growers, and will succeed well in a mixture of peat and loam, in equal proportions; or, if peat cannot be had of good quality, they will grow in loam, particularly if it contains plenty of fibre, so as to maintain it in a healthy state for some years: this is always an important condition, that cannot be too often impressed upon those who have not had much experience in the cultivation of things of this kind. It

frequently happens that a certain soil, either peat or loam, will answer for a time, but soon gets into a state that precludes the possibility of the plants grown in it keeping in health, and when such things are put in soil of this nature that do not well bear partially shaking out and a renewal of the material in this way, an unsatisfactory condition is sure to follow. If the usual nursery-sized young plants are begun with they should in April be moved into larger pots; supposing them to have plenty of healthy roots, they will bear a 2-inch shift. These are not delicate-rooted subjects, but they require efficient drainage and a porous soil; for this reason add one-seventh sand, incorporating it evenly with the soil. Swainsonias like tolerably hard potting, consequently use the potting lath freely, so as to make the soil firm. If the plants have any straggling shoots they should when potted be shortened back, at the same time tying them well out, so as to induce the lower eyes to break; if this is not done with these plants nothing but the topmost eyes will break, which prevents the possibility of their acquiring sufficient shoots to furnish the future specimens properly. After potting use no more water for two or three weeks than may be requisite to keep the ball from getting too dry; let the atmosphere be a little close until they begin to root, have the stage on which they stand moderately moist, and damp the plants overhead every afternoon. Continued and free use of the syringe is necessary all through the growing season, not alone to promote growth, but to keep down red-spider, which is liable to become troublesome if the plants do not receive enough water overhead. Swainsonias will flower in a small state if allowed, but it is not advisable to let them bloom the first season, as they would not make flower enough for it to be worth while sacrificing the growth, which its presence would prevent being made; consequently, all the shoots should have their points pinched out about the beginning of June, again tying down the strongest. This is essential, as these plants are apt to push much of their strength into a portion of the shoots, leaving the remainder weak; but by keeping these stronger ones tied out the strength becomes equalised. In very bright weather they will be benefited by a little shade. About the beginning of August again go over them, and stop any shoots that are taking the lead. Continue the use of the syringe until the middle of September, when the advent of cooler weather will render it not necessary. Through this and the preceding month admit air freely to mature the growth before the autumn gets too far advanced. All through the growing season give sufficient water, as when in active growth they require more moisture in the soil than some plants, but from the time in the autumn when they cease to make much more progress, and during the winter, apply only enough to keep the roots slightly moist. Winter them in a light house in a temperature of 40° in the night. Again repot about the same time in the spring. The second season they will do with a 3-inch shift, using the soil now in a little more lumpy state, but still with enough sand to keep it open and porous. Stop the shoots, and use a moderate number of neat sticks to keep them in their places, and afterwards for training them to. After potting treat them as in the preceding year as to syringing, air, shade, and water at the roots. The shoots must not be again stopped, but as they advance train them to the sticks, in which position they will begin to flower about July, when the plants can be taken to the conservatory, where they may remain until the blooming is over, when they should be at once cut-in moderately, placed in their winter quarters, and treated as before. Give 3 or 4 inches more pot-room in the spring, according to the quantity and condition of the roots. No stopping of the shoots will be required this season, but they should be trained regularly to the sticks, and treated through the summer and autumn as previously.

If it is not deemed desirable to grow the plants into large specimens, they may the ensuing spring, and for a year or two following, be kept in a good flowering state by the use of manure-water; in this case it should be supplied regularly every other time or so that they require water, but it must not be given too strong.

The following varieties are worth a place:—

S. galegifolia: a handsome red-flowered kind.

S. galegifolia alba: a white-flowered form of the above.

S. coronillifolia: purple flowers.

S. Osbornii and S. Rollissoni.

Insects.—Aphides sometimes attack the young growth, for which fumigate. As already mentioned they are liable to red-spider, but the continued use of the syringe recommended through the growing season will, if persisted in, always keep them clear from this pest. If they become affected with scale, these must be kept under by sponging and the use of a soft brush. *T. Baines.*

ADOLPHE BRONGNIART.

The following autobiographical notice of the late eminent French botanist has been placed at our disposal by his son, M. Edouard Brongniart, to whom, as to M. Rothschild, through whose intermediation it was forwarded to us, our hearty thanks are due. It



The Late ADOLPHE BRONGNIART.

forms the supplement to what we have already published on the subject at p. 274, vol. v.

"Adolphe Brongniart, son of Alexander Brongniart, one of the most celebrated geologists of the beginning of this century, was born in Paris in 1801, and devoted himself from his youth to the study of natural history, under the direction of his father. The study of medicine was associated by him with that of botany and zoology. He became Doctor of Medicine in 1826, and '*Agrégé*' in that faculty in 1827. He had previously published some zoological and botanical papers in the *Mémoirs* of the Museum of Natural History, and an *Essai d'une Classification Naturelle des Champignons* (1825). In 1824, in association with MM. Audouin and Dumas, he began the publication of the *Annales des Sciences Naturelles*, a journal which is still continued, and which contains numerous memoirs of M. Brongniart on vegetable anatomy and descriptive botany, among which may be cited the 'Memoir on the Generation and Development of the Embryo in Phanerogamic Plants' (1827), a memoir to which the prize for experimental physiology was awarded by the

Academy of Sciences in 1827; 'Researches on the Structure and Functions of Leaves' (1830); monographs on Rhamneæ and Bruniaceæ, &c. His researches on fossil plants, of which he was one of the first to make a careful study, were published at this time in his *Prodrome d'une Histoire des Végétaux Fossiles*, and in his *Histoire des Végétaux Fossiles*, the published portion of which forms a quarto volume with numerous plates. After the publication of these works M. Brongniart, who had during two years (1829-30) acted for M. Cuvier at the Collège de France, and for M. Desfontaines at the Jardin des Plantes (1831-1832), was nominated, on the death of the latter botanist in 1833, to the post of Professor of Botany and Vegetable Physiology at the Muséum d'Histoire Naturelle, and was likewise elected his successor at the Institute in 1834. His lectures, which in a three years' course ranged over all departments of botany, were continued almost without intermission to the period of his decease. In has not been generally adopted among us, yet his physiological researches on the formation of the ovule and of the embryo, his numerous monographs, and especially his labours in the department of fossil botany, placed him among the foremost whom British men of science delight to honour. His courtesy and kindly demeanour likewise endeared him to those strangers and young botanists who had occasion to consult him.

ALEXANDER BRAUN.

By a singular coincidence it has fallen to our lot to have to present to our readers in the same number portraits of two deceased botanists, each among the foremost in his own country—one in France, the other in Germany. The circumstance is eminently suggestive, not only of a comparison of the doings of the two men, but also of their national characteristics. This would, however, be out of place in this journal, and



The Late ALEXANDER BRAUN.

1843 the botanical garden of the Museum was planted in a larger area, and in accordance with a method of classification devised by the Professor, who published on this occasion a small volume under the title of *Enumération des Genres des Plantes Cultivées au Muséum d'Histoire Naturelle de Paris suivant l'ordre établi dans l'Ecole de Botanique en* 1843. A second edition of this work appeared in 1850. The *Nouvelles Annales*, the *Archives du Muséum*, the *Annales des Sciences Naturelles*, and the *Compte Rendus de l'Académie des Sciences*, contain many memoirs of M. Brongniart on vegetable anatomy, on fossil plants, and on various points in systematic botany. In 1852 M. Brongniart was named Inspector-General of Superior Education, by virtue of which appointment he was for several years a member of the Imperial Council of Public Instruction. He was made a Chevalier of the Legion of Honour in 1834, Officer in 1846, and Commander in 1864."

M. Brongniart died in the spring of last year. In this country his qualifications were highly valued, and, although his system of classification would demand more space than we can give to it. Alexander Braun was born at Regensburg, in 1805, and died at Berlin on March 29 of the present year. He filled the office of Professor at Giessen, at Friburg in Brisgau, and for several years past at Berlin. As early as 1822 we find him writing on the species of Oxalis and on the plants growing wild in the neighbourhood of Carlsruhe, but he first became famous by his celebrated paper on the arrangement of the scales of Fir cones in 1830. The explanation of the difficult and complex question of Phyllotaxis was thus established on its present basis, and amongst other cases the floral arrangements of Delphinium were thus explained by him. Morphological investigations were ever a favourite pursuit with him. He was one of the first to insist on the importance of ascertaining the relative position of the carpels to the bracteoles, and to explain the anomalous position of certain carpels by pointing out the existence, potential if not actual, of a second row of carpels. In his paper on spiral torsions in flowers he points out that there are two kinds of torsion—one which is in accordance with the spiral arrangement of the leaves, the other independent of it and dependent on structural causes. These morphological observations and the speculations connected therewith at length bore fruit in the remarkable work by which he is best known in this country, a translation of which was published in 1851 by the late Professor Henfrey, under the title of the *Rejuvenescence of Plants*. This work is characteristically German in its union of speculative thought and practical observation, at the same time theoretical matters are not only based on observed facts but kept within due control—which is more than can be said in the case of all German philosophers. Of like nature is his dissertation on the question as to what is to be considered the individual unit in a plant, which is complete in itself, from which nothing can be taken without rendering it imperfect, to which nothing can be added which is not superfluous. These requirements in the higher plants are supplied by the shoot or expanded bud. Teratological investigations naturally occupied much of his attention, and he was always alive to their value as indicating the laws of growth. Some of his latest publications indeed have had reference to the unusual conformation of plants and to the structure of Cycads. But while it is his morphological publications which have hitherto brought him most repute, Braun was a keen, judicious, and accurate systematist. He early studied the Algæ, Charas, and Equisetums; he gave us a descriptive enumeration of the species of Selaginella cultivated in gardens, and in the annual issues of the *Delectus Seminum* he described various plants cultivated in the fine botanic garden of which he was the head, and whose reputation has so much increased under his direction. Dr. Braun took an active part in the work of the Berlin Horticultural Society, and was ever ready to assist the science to which his life was devoted.

Florists' Flowers.

The Loves of the Florists.—It is often very amusing to discover the accidental truth of florists' descriptions of flowers to the distinguished public characters after whom they are named. The following, for instance, are taken from the spring catalogue of one of our leading florists:—Lord Elcho, fine

bold flower, good for exhibition; Prince Bismarck, very dark and double; Lord Granville, dark and satiny; Lord Derby, pure true blue, clear eye; Lord Beaconsfield, bright carmine and brilliant crimson, of great substance, free flowering, distinct; Mr. Gladstone, dark and very incurved (a soft-wooded plant); Samuel Plimsoll, large, and very constant, of perfect form, extra fine; John Bright, a fine improvement on earlier forms, and the best of this class ever sent out. This exhausts the list of statesmen popular with our English florists, and the fitness of the descriptions of the flowers to the distinguished personages after whom they are named makes one suspect more than mere coincidence, and that it is due to the subtle likeness which exists between all living things, and which close observers of Nature like gardeners are quick to catch and identify. By no act of unconscious cerebration would a gardener ever identify any flower of earth or heaven with Mr. Lowe. *B., in the "Globe."* [A brimstone-coloured Hollyhock named Match Tax has been suggested as appropriate! EDS.]

DOUBLE STOCKS.—Irrespective of any kind of selection or manipulation for the purpose of specially promoting the production of double flowers, there is not a strain of double Stocks in existence that naturally produces more double flowers on the average than does the old Purple Queen, or, as here it is locally termed, the Twickenham Purple. From 70 to 75 per cent. I have regularly found to be the proportion of double flowers. A bed of this kind now in flower looks at the first glance as though all the plants were double, and, I find, gives exactly 80 per cent. of double flowers—an average high enough to suit the most exacting, considering that the proportion of singles gives but a poor seed crop. The Scarlet Queen does not give such a high proportion of doubles, as its average is about 65 per cent. These kinds are much appreciated by market growers for cutting from after the Wallflowers, as they furnish such a large quantity of sprays or branches of flowers. Of course double kinds are most desirable, but, double or single, all are cut, and oftimes none are left to give seed; this is, however, of little consequence, as good seed can always be had in the locality from some of the cottagers, who cultivate a few for that purpose.

In gardens where it is desirable to secure good masses of flower during the month of May these dwarf scarlet and purple Stocks make very showy beds, but to be well done they should be planted out in the summer in the beds where they are to bloom. This arrangement, however, is difficult to carry out in beds specially devoted to bedding displays. Although not so valuable for market work, yet the Brompton strains are, perhaps, more favoured, especially by cottagers, who dearly love to have a few fine spikes of the deep scarlet Giant standing out in brilliant array in their gardens. Without doubt a huge spike of either the scarlet or white double Brompton is a grand flower, which can scarcely be rivalled by any other hardy biennial. If these are largely grown to cut from, the leading spike is taken off before its fine qualities are developed, and the side shoots furnish but a meagre handful. The Brompton Stock should be grown only as a decorative border flower, and then if the plant be robust its rich and massive beauties are fully displayed. The white Brompton gives of double flowers about 50 per cent., and the best strain of scarlet about 40 per cent. Intermediate Stocks are so commonly grown in pots that it has got to be an article of belief that they can only be properly seeded in pots. This is however wide of the truth, as they seed well and produce as large a percentage of double flowers in the open ground as when grown in pots. To get a good plant in the open, however, it is necessary that they should be turned out from pots towards the end of April, for if lifted from the seed-bed in the ordinary way they root badly, and do not readily get established. If potted up singly into small sixties, or two plants in a large sixty, and kept in a cold frame for winter, they will turn out in April with a good mass of roots, and not feel the removal. Intermediate, both white and scarlet, give from 75 to 80 per cent. of double flowers, and the proportion left for seed is few enough to pay for their cultivation for that purpose. That well-known summer Stock, Mauve Beauty, has for several years well maintained its double character, invariably giving 75 per cent. of double flowers. *A. D., Bedford.*

—— Among the TULIPS employed in the ornamental gardens in the Regent's Park is a novel double variety, named ROZENKROON. It is quite distinct in the section, and gives us something of the charming rose colour of the fine single variety Proserpine in a double form. The flower-stalks are stiff and erect, and it is both a striking and an effective bedding sort. The old Gloria Solis is also very good, and stands up well, better than its more double and telling colleague, Tournesol, as the latter is apt to hang its head after heavy rain. The double varieties appear to be better adapted for bedding purposes when only Tulips are employed than the single forms, as they are more durable, standing exposure better, and not shedding their petals so quickly.

—— When examining a mixed border of hardy flowers in an old-fashioned garden a few days ago, we were much struck with some groups of TULIPS, some eight bulbs of one variety forming a group. Quite telling spots of colour were thus obtained, and the decorative effect was heightened from the fact that the colours of the varieties employed were alternated. Such well-known sorts as Couleur Cardinal, Scarlet Van Thol, Vander Neer, White Pottebakker, Golden Prince, and Royal Standard among the singles; and Gloria Solis, Rex Rubrorum, Rozenkroon, La Candeur, Tournesol, Yellow Tournesol, and Duke of York, among the double varieties, are well adapted for grouping in borders in this manner.

—— The flowers of the double white sweet-scented NARCISS, and also of the POET'S NARCISS, are largely grown for cutting for market, and at this season of the year bunches of fragrant blossoms are to be met with. In some of the fruit gardens it is found that Gooseberries will do well under standard Pears, and they are planted in lines between the trees. Then between the Gooseberry bushes are planted clumps of Narcissus, and here they remain till they get well established, when they throw up an abundance of flowers. They are also grown in other ways, but the one just indicated can be commended on the ground of economy of space. The flowers of both forms of the Narcissus appear to be very fine this year, in common with those of most outdoor bulbous plants.

Forestry.

FENCES.—My last paper, on erecting and maintaining plantation fences, was for want of space so far incomplete as to necessitate its being taken up again. Cheapness and efficiency, I may again repeat, are essential conditions to be observed in erecting plantation fences. Other conditions no doubt have their respective claims, and are entitled to the consideration which they deserve. The claims of appropriateness and good taste ought always to be regarded, and it will be found, though contrary to what many believe, that in erecting fences of whatever kind, good taste, or what pleases the eye, may be observed, without increasing the expense to any appreciable extent; indeed, as a rule, an unsubstantial and badly erected fence is always an eyesore, while a substantial and well-erected one is a pleasing object. The lines, curves, and positions of fences, too, are far more the product of forethought and judgment than of expense, at least a well-defined line and good position of fence may be as cheap as one the very opposite. Nor does it by any means follow that because a fence is made to look well that it is a dear one, or because it is unsightly that it is a cheap one.

Tastes in individuals differ as widely as their faces, hence the variety and diversity of shades, colours, forms, compositions, and patterns met with all over the country. Some have a fond liking for green, because they say grass and foliage in general is of that colour. Others dislike green, but are fond of blue, because the sky is blue. Some again like stone colour, some prefer oak colour, some again see most beauty in brown or mahogany. That there is no hard, fast, and fixed rule for taste is now generally admitted, and it is well always to consult those who are entitled to be pleased with the object, as to their wishes, and specially so respecting shades and colours. I had once the honour of erecting fences upon an estate where the proprietor had an utter hatred of any fences of a white colour, and an equal dislike of black or tarred ones. The fences referred to were wooden palings, and were fences of various descriptions. The extent of fencing was too great to admit of painting with oil paints, because of the expense, and the alternative acted upon was to steep the wood in a solution of bark, Alder or Oak, with the addition of a little quick-lime. The wood in the sawn stats was allowed to remain in the steep from ten to fourteen days, at the end of which it was taken out, of a reddish-brown colour, which fortunately pleased the proprietor's taste, and not only retained the colour permanently, but the wood was evidently improved in durability, at least the softer and younger descriptions of it was so.

It is often difficult to know how best to colour palisade garden fences so as to please the eye. To paint them with even the cheapest description of oil paints, without the surface of the wood being first planed and dressed, is simply impracticable. Tarring with coal-tar renders them too dark and dull for ordinary tastes, and is besides offensive both to smell and touch. If we seek diligently, however, and long enough, we usually find, and so it has proved in my case. An excellent substitute for paint and coal-tar is found in the following prescription, which is both cheap and simple in its application, and highly beneficial to the wood.

COLOURING FENCES.

The composition is as follows, and it may be made and used by any person of ordinary capacity. A box, tub, pail, or barrel, is first provided of any dimensions suited to the quantity to be made at a time, and comparatively air and water-tight, so as to admit of covering up to confine steam and retain water. A bushel, less or more, of quick-lime is provided, reduced to a fine powder, and passed through a sieve or screen as in preparing mortar for plaster-work. To the lime water is added, and the mixture is brought to the consistency of thick cream. To each bushel of lime one-sixth part of common coarse salt should be added; boil the mixture a short time, say fifteen minutes, skimming off the froth as the boiling goes on, and by slow degrees during the boiling add for every 5 bushels of lime and water ¾ lb. of potash and 4 quarts of fine sea or river sand. Apply either hot or cold with a common whitewash brush, when it will adhere to the wood, and remain so as long as oil paint. If the colour is too light to please the taste, a little ochre, red-lead, or other colouring matter may be added, to suit the desired shade.

WIRE NETTING.

Since rabbits have become so plentiful over many parts of the kingdom as to render crops, whether trees, cereals, or vegetables, unsafe, wire netting has become a new and indispensable requisite. It is found that any width of netting less than 30 inches is too little, and the meshes should not be less than 1¼ inch, and for garden protection 1½ inch. No. 17 guage is a good strength of netting, and which I generally use. In erecting the netting, a small common No. 6 or No. 7 wire should be extended along the posts to attach the top of the netting to, and on no account allowed to hang loose, otherwise persons in climbing over the fences are certain to crush it down, and otherwise injure it. The evil of burrowing through below the netting has to be provided against also, and there are various methods of doing so; some place bricks on edge, some put down slab deals or paling rails, some put the netting 2 or 3 inches into the ground, and others fold it back a few inches upon the ground's surface, and peg it down till such time as the grass grows up and secures it. I have tried all the modes enumerated, and found each to possess some peculiar advantage, and at same time present some disadvantages. The burying or folding of the netting, for example, increases the cost of the fence just to the proportional width buried or folded at the bottom. Bricks are expensive, and wood soon decays.

Another method I have tried of securing the bottom of the netting is by means of setting a single row of stones in the form of a causeway along the front or exposed side. In order to place the stones properly, a narrow trench or notch is taken out with the spade, and the stones set carefully all along close to the netting. This in many cases, where stones are conveniently got, is the cheapest method; it is also very secure, for no sooner do the feet of the rabbits feel the hard stones than they desist from further attempts at burrowing. It is also most durable, from the nature of the materials used. Wire netting, I may add, can at present be bought at 8*d.* per lineal yard, galvanised, and of the description above given. Cheaper and weaker netting is not commendable, as strains and accidents soon render it unserviceable and inefficient. *C. Y. Michie, Cullen House, Cullen, May 12.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—One of the greatest mistakes made in plant culture by those who have not had much experience, is in carrying out the different operations, especially such as potting, at a fixed time, often whether the plants require it or not. It is no uncommon occurrence to see the occupants of a particular house potted indiscriminately all at once, whether or not the state of the roots is such as to warrant it. Although stove plants are by no means so impatient as greenhouse subjects of treatment slightly at variance with what they like, yet it is always better to move a plant when its roots have commenced to grow; neither does it matter in the potting of stove plants about the weather being hot and dry, a circumstance that is so prejudicial in its effects upon hard-wooded greenhouse plants; consequently, any stove subjects that at the time of the general potting were not in a condition for moving, may now receive a shift. In the cultivation of stove plants, as in all others in the matter of root-room, it is necessary to discriminate between those that will succeed in moderate-sized pots, and others that never attain anything like their wonted size and vigour without a comparatively large amount of root-space. It may be taken as a rule, that all plants of a deciduous character that through the winter have the soil kept very dry whilst in a state of rest, and at the annual potting bear a good portion of their roots being cut away, do not need such large pots as plants of an evergreen character that have comparatively little of the old soil removed, with no reduction of the roots. Plants of the former description, when their roots have got fully hold of the soil, may in most cases, by the liberal use of manure water, be kept growing vigorously without requiring a second potting such as the evergreen kinds that were moved early will frequently need about this time. Where any work of this kind is necessary it is well to attend to it at once, or the growth that has yet to be made will not receive the full benefit from the new soil. Dipladenias required for exhibition purposes should have their shoots trained round the trellises as soon as the flowers begin to open; where they are needed to stand in a warm conservatory for some time during the hottest part of summer it is well to let the shoots remain for some time yet growing in the usual manner near the roof, for the reason that when bent down they have to not extend further, but break out lower down growths that in their turn will flower yet might not be in bloom at the time wanted. To give that most useful plant, Bougainvillea glabra, the deepest shade of colour it is capable of, as also to enable the flowers to stand much longer on the plants, as soon as they are formed and whilst yet in their green state, before they have acquired much colour, the plants should be moved into a cooler house than the stove, where they will gradually get inured to a lower temperature; so treated, this Bougainvillea attains a colour almost equal to B. spectabilis. Where the flowers are required for cutting it is especially advisable to subject it to this treatment, and so managed they will stand in an ordinary conservatory for two months with little perceptible alteration; used in this way as cut, moderate sized plants grown in 10 or 12-inch pots, and not trained too closely, are very effective during the summer amongst the comparatively few flowering subjects then at command. Dracænas, Caladiums, fine-leaved Begonias, and any stove plants of a similar character that are intended for use in the conservatory during mid-summer, should now, if possible, be put in a house or pit where they can receive more air and a lower temperature than the stove affords them. The result of this preparatory process for a few weeks is that they do not show the effect of the change to any serious extent, and will remain in much better condition until the summer is far advanced. The same remark also holds good in respect to all plants of a like tender character required for table or room decoration. If a few spring-struck Coleus of the many fine and showy varieties that exist are moved into 10 or 12-inch pots, and kept growing in a little warmth, they will make useful decorative plants in the course of a few weeks, their bright colours harmonising well with either flowering or other fine-leaved subjects. Where climbers are grown to the rafters, or irregularly immediately under the roof, and of a strong free habit of growth, they will now require attention, so as to keep them within bounds, removing a portion of the shoots entirely if necessary, otherwise they soon exclude light to an extent that does away with the possibility of anything succeeding properly under them. Cuttings may be put in yet of any, either winter or summer-flowering stock, of which there appears to be a deficiency; in the case of the former they will not get so large as those propagated earlier, but will come in very useful for successional flowering; with summer blooming plants of a permanent character and quick growth there is yet time for them to attain sufficient size to make nice small flowering specimens for the ensuing year. Where there is an intention to increase the stock of Imantophyllums by taking off crowns or breaking up large plants altogether, this should be done immediately after flowering, before growth commences; but as there is no set time for their blooming, coming in at different seasons according to how they are treated, there can be no particular time of the year assigned for their propagation, but as with many bulbs they will never be done flowering, it will be a suitable time for division: keep them for awhile after being thus separated in a moderately close atmosphere. With the advancing season the worst description of insects will increase apace. These will require unremitting attention to their destruction; cleanliness in this respect is the sheet-anchor of stove-plant culture, and where they are not kept well under it is useless to attempt the growth of many of the very finest flowering plants that need heat. *T. Baines.*

FLOWER GARDEN, ETC.

The weather is now favourable for garden operations, which it is hoped may continue. Planting may be pushed forward with energy and care. Proceed with the plants that are well prepared and hardened off, reserving the more tender things until all the others are turned out, by which time the ground will be getting warmer and in a more congenial state for subtropical plants. If any of the beds are more sheltered than the others these had better be done first. Have branches at hand which will protect the plants in the event of frost, which may occur at any time at this season. The ground generally being in good condition as regards moisture, the plants will not require so much water after being turned out in the beds, and cold hard water, if it can be avoided, should never be used for plants of any description. Whatever style of gardening may be adopted, the material made use of ought to be planted so as to give satisfactory results. Slow growing plants which require longer time to fill their allotted space should always be planted thicker than those of stronger growth. After the planting is finished a small line may be run through the beds, which will encourage the plants to root, and give the ground a more finished appearance. Box edgings may be cut in damp or showery weather, the work is then much more easily done. I find the late frosts have killed the young shoots on the Box hedges and edgings, but Roses do not seem to have sustained much damage. I wish I could say as much of the fruit crops. The last few days has made a visible difference in the appearance of the grass. The mowing-machines must now be kept at work, for the lawns require to be cut often at this time of the year, and the Daisies being in full bloom a few days after they have been gone over. Keep the general work as well forward as the busy season will permit. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

FIGS.—If the growths require any regulation whereby sunshine, light, and air may be rendered more fully operative, it should be done now prior to the fruit commencing to colour; and in order to give it every assistance to develope itself freely, all growths which require it should be stopped, of course excepting the terminal shoots, which should run to the limit of the space allotted to them. With few exceptions, the laterals, which will need attention in this way now, will be confined to subsequent growths proceeding from laterals which were formerly pinched, and many of which have produced fruit now in an advanced state of growth. These growths should be nipped off at the second or third joint from the last break, and this practice be continued as it becomes necessary throughout the season. With the exception of Strawberries no fruit which is grown under similar conditions is so much improved in quality as Figs are, at this time of the year especially, by a proper course of treatment being applied during the ripening process; a matter of such moment should therefore evoke especial interest in this particular. Borders which have been well saturated as before indicated, will contain sufficient moisture as to dispense with further applications of it till such time as the first crop of Figs is ripened and gone; the mulching material should, however, not be suffered to become dry, but should have given to it whatever may be necessary betimes in the day. Keep the heating medium constantly warm, and insure a circulation of warm, dry air in the house incessantly by means of keeping the ventilators at the apex of the house open a little at night. The minimum temperature should be about 65°, and the maximum under solar influence about 90°, with a current of air passing through the houses. In Fig-houses proper syringing and sprinkling should be abandoned until the crop of fruit is gathered, and then be resumed again for the benefit of the succeeding crop. As soon as the fruit is gathered from very forward trees in pots, proceed with the use of the syringe over the trees as heretofore, and thin unsparingly the second crop of fruit if it be plentifully formed on such trees. In later houses copiously syringe the trees twice every day at this season, to keep the atmosphere moist and to keep down red-spider, and ventilate as previously indicated. *George Thos. Miles, Wyombe Abbey Gardens.*

HARDY FRUIT GARDEN.

The favourable change in the weather that set in on the 9th has already had a most beneficial effect on Apricots, Peaches, and Nectarines, all of which have made considerable progress since that date, and with genial showers and timely attention to keep them clear from aphides, the injurious effects of the cold cutting winds and late frosts may soon be effaced. As regards fruit in every garden I have yet visited, it is almost a total failure, and I never remember seeing trees of the above look in a worse plight than they did a fortnight or so back, as most of the young wood in Apricots was completely killed, and scarcely a leaf on Peaches or Nectarines could be seen but what showed unmistakable evidence of the untoward state of the season. In cases where the final disbudding of these has been unavoidably delayed, no time should be lost in carrying it out, that the strength of the trees may be concentrated in the proper channel, and so save a further expenditure of force. The vivifying influence of the sun acting on dry walls soon brings to active life those ubiquitous pests of the garden, red-spider, and unless the garden engine or syringe is brought into early use, their rate of increase will be something marvellous. Clean water, and plenty of it, applied with some force in the form of rain, is certainly only against these, but also green-fly and most other insects that usually affect Peaches and Nectarines, and, therefore, every favourable opportunity should be taken advantage of to give the trees a good drenching. The proper time to do this is late in the afternoon, as then the bustle and heat of the day is over, and give it out slowly during the night, much to the benefit of the foliage, and, what is of almost equal importance, to the great detriment of the colonies of spider lurking in the crevices behind to sally forth with the return of solar heat and renew their attacks. Apricots will require close watching for some time to come to keep them from grubs, which are generally more or less troublesome at this season. The most expeditious way is to go over the trees and squeeze between the thumb and finger any leaves or young growths that are curled up, as upon these likely to have these destructive creatures enveloped in their folds, as this can be done much quicker than hand picking, and is equally efficacious. Plums, too, are frequently affected in the same way, and if not attended to suffer even more severely than Apricots, that renew their foliage more readily.

Of all grubs, however, the Gooseberry caterpillar is the most voracious, and perhaps the most difficult to extirpate once they effect a footing. The old adage that prevention is better than cure is specially applicable in their case, and bearing this in mind I always strew some fresh-slaked lime and soot under the bushes, which answers the double purpose of manuring the ground and killing the larva. In cases where they have already put in an appearance, the best remedy is to get a quantity of Foxglove leaves and stems, and make a decoction by steeping them in hot water after being bruised to let out the juice they contain. After standing a few hours the liquid should be strained through a fine hair-sieve or piece of muslin, and applied through a syringe so as to wet the whole of the leaves and the insects feeding upon them. Hellebore powder dusted over while the dew is on the bushes is likewise useful, but not so effectual as the above.

The double-bearing Raspberry, which is so useful in the autumn when the summer-fruiting kinds are over, will now require attention by way of thinning out the young shoots, which should be done so as to leave only six or seven of the strongest and best situated, unless the shoots are very far apart, in which case more may be left. In order to afford these all the assistance possible, mulch the ground heavily with rotten manure, to keep their roots in a uniform state, but never dig amongst them or disturb the soil beyond what is required with the hoe, to eradicate weeds. To insure strong early runners of Strawberries for layering in pots, forced plants should be turned out at once in well enriched soil, in some convenient situation, where they can be kept well supplied with water to give them a start. Not only are they good for this purpose, but they make by far the best beds, and where they can be had should be planted in preference to runners, as they never fail to produce abundant crops in the year following, and often afford a few dishes of fruit the same autumn, when the weather is favourable. As the alpine Strawberry is but of little value till autumn, the blooms now on them should be picked off, when they will flower again later on. *J. Sheppard, Windsor Home.*

THE
Gardeners' Chronicle.

SATURDAY, MAY 19, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, May 23 { Glasgow and West of Scotland Horticultural Society's Summer Show.
Royal Horticultural Society of Ireland: Second Spring Show.
THURSDAY, May 24 { Linnean Society: Anniversary Meeting, at 3 P.M.
Reading Horticultural Society's Spring Show.
FRIDAY, May 25 { Orleans House Club (Twickenham) Horticultural Exhibition (two days).

PARTICULAR attention has always been given to determining the TEMPERATURE in which this or that PLANT is accustomed to live, and importance has been attached to certain temperatures, sums of heat, annual, summer, or spring means, to the neglect of the changes within certain limits. Further, the so-called records of the temperature of the air are usually the readings of thermometers on walls or fences, or in frames, and principally in the shade, sometimes 2 or 3 feet high, and sometimes much higher. But the temperatures which prevail in lesser heights above the ground, in which many plants live, have been too little observed. Again, the insolation temperature has not been sufficiently taken into account, for this frequently deviates from the temperature of the air. In the experimental garden at Proskau a number of thermometric observations were made by Dr. TSCHAPLOWITZ during the course of last summer on a plot of clayey soil, in which Beetroot and other vegetables, and Helianthus annuus, and other annual plants were growing. The temperatures and their courses were observed at depths of 2 and 3 decimetres (about 7.9 and 11.8 inches) below the surface of the ground, and at 1 and 5 decimetres (about 4 and 20 inches) above the surface, in all cases under the influence of the direct rays of the sun. In addition to these observations, where desirable, the prevailing temperature at 1 metre, or 1.5 metre (about 40 and 60 inches) above the ground was noted. And at the same time the temperatures of the leaves of Beet, &c., the stems of luxuriant plants of Helianthus, were determined. The latter were obtained by inserting a slender thermometer, graduated into tenths (fourths of Fahr.) of degrees, as deeply as possible in the stem. In this way a number of curves of temperature were obtained for comparison. Considerable difficulties attend the determination of the prevailing temperatures on the surfaces of leaves. Theoretically they should lie between the dew-point and the temperature of insolation read from a thermometer hanging against a leaf in full sunshine. But it is difficult to determine the temperature of any substance, and still more so to express in figures the amount of warmth communicated by one body to another. Experiments were made with chlorophyll, green paper, &c., on the bulbs of thermometers to ascertain roughly the best absorbing power of the surface of leaves. Although these experiments must be regarded as very imperfect, and were not instituted till October, the results indicated a great difference in the power of absorbing heat by leaves, according to their aqueous contents, structure, coloration, &c. There was considerable diversity in the experiments themselves, but in all cases they showed as the sun descended a temperature of 3°.6 to 5°.4 Fahr. higher than that indicated by naked thermometers close by; and in solitary cases the difference was as great as 7°.2 to 9°. Large leaves of Beet, &c., were quickly plucked and pressed in quantity around the bulb of a thermometer, and the temperatures thus obtained were compared with those of a thermometer hanging close by the plants between 12 and 15 inches above the ground. The following table illustrates this experiment :—

	9 A.M.	10 A.M.	11 A.M.	12 noon	1 P.M.	2 P.M.	3 P.M.	6 P.M.
July 18 :—	°	°	°	°	°	°	°	°
Naked thermometer	11.6	12.5	18.2	25.6	22.0	25 5	23 0	20.0
Temperature of leaves	9.5	10.5	16.8	21.9	23.0	26.0	25.3	21.3
July 29 :—								
Naked thermometer	19.1	19.2	23.0	26 3	26.0	23.5	..	17.0
Temperature of leaves	15.0	17.8	20.5	23.0	25.0	26.0	..	23 0

On a subsequent day it happened that, while the observations were being taken, the sun suddenly appeared from behind a dense cloud. This was about 8.30. The temperature of the naked thermometer fluctuated between 20°.1 and 20°.4 C., and leaves of different plants had shown 18°.3, 18°.3, 17°.9, and 18°.2 C.; but after the appearance of the sun, a plant could not be found which gave a temperature of 17°, and they were all between 16° and 17°. However, after the lapse of half an hour they had recovered their normal temperature in relation to the course of the sun, as expressed by the figures in the above table. It is quite explicable that the afternoon readings should be higher than those of the forenoon. The high insolation temperature of July, the relative stillness of the air, and the high specific warmth of the water which the plants slowly evaporate, have probably something to do with it; and it appears that the sudden fall of the temperature of the leaves just recorded should be ascribed to the more rapid evaporation; in fact, that it was the cold of evaporation. The temperature of the points of the leaves differed widely from that of their bases. The point of union of leaves on the top of a Beetroot, in which a hollow for the bulb of the thermometer was rapidly cut out, exhibited some singular fluctuations corresponding neither to the insolation temperature at 40 inches above the ground nor to the temperature of the soil at a depth of 8 inches. They seem to be connected with evaporation, but the observations on this point are too imcomplete to afford any trustworthy information.

Dr. TSCHAPLOWITZ gives tables of a considerable number of sets of observations, but we have space for no further comment on the present occasion. His remarks on the whole series of observations have not reached us yet in full, but if they contain anything of interest we shall make some extracts from them.

—— The CASCADE AT CASERTA, near Naples, represented at fig. 104, is one of those pieces of architectural and engineering gardening, on the merits of which opinions are likely to differ beyond hope of reconciliation. The mountains for miles around form the collecting ground, whence the water is conveyed by canals and aqueducts to a tunnel in one of the mountains, from this it falls some 50 feet into a basin, and from thence in a series of leaps in a straight line down the slope of the hillside, in full view of the palace, as shown in our illustration. The impression at a little distance is of a sheet of glass placed on a sloping surface, and is not proportionate to the vastness of the construction and the immensity of the volume of water, while the rigid formality of the whole reminds one of a railway cutting, or some other strictly utilitarian fabrication. Those who remember the cascade down the hillside at Chatsworth will have little difficulty in supposing that the cascade at Caserta supplied the idea for that on the banks of the Derwent.

—— We understand that at the forthcoming show in the horticultural department of the Bath and West of England Society, to be held at Bath, June 4—8, two ten-guinea cups, one for amateurs and one for nurserymen respectively, will be awarded to cut blooms of TEA ROSES. A jury of three nurserymen will be told off to judge the amateurs' collections, and a similar number of amateurs will pass sentence on the nurserymen's productions.

—— We are informed that a large ROSE SHOW will be held at the ALEXANDRA PALACE, on Saturday, June 30, for which a liberal schedule is being prepared. The schedule will shortly be ready, and may be obtained on application to Mr. JOHN A. MCKENZIE, 1 and 2, Great Winchester Street Buildings, London, E.C.

—— A very CURIOUS FORM OF DISEASE has lately been forwarded to us, which occurred IN SOME CAMELLIAS planted out in a bed, the house in which they are planted being shaded with canvas. The leaves are very pale and the shoots weak, but there does not seem any reason to believe that they have been affected either by cold or drought caused by radiation, still less by direct action of the sun. The leaves are regularly spotted over with brown specks, which look at first much like the work of some thrips, and this in fact may possibly be the first cause, but if so the subsequent effect is very curious. Each speck, whether orbicular or irregular, consists of a dark brown hard disc surrounded by a raised border, the brown tint sometimes spreading beyond the border, and more rarely extending over a considerable portion of the leaf. The disc consists of leaf-cells distorted, the walls being gorged with brown matter, similar to what occurs in so many morbid conditions of vegetables, with the cuticle very dense. Very rarely there is a slight cavity of a paler tint filled with minute cells, which have very much the appearance of the early stage of the fructification of some Sphæria, though like the whole, as in some observations on pustules in the animal kingdom, there is merely a simulation of fungi. The hardening of the discs so as to resemble cortical cells is very curious whatever the cause may be, which might possibly be difficult to discover even on the spot. *M. J. B.*

—— Mr. WAINWRIGHT, the talented gardener at Rushton, near Kettering, has lately sent us a Potato, which exhibits a condition somewhat like that figured at vol. iii., p. 247 of this journal. Professor DYER very properly suggested that the tubers produced within the original tuber [sometimes] owed their position to "an inversion of the rind of the Potato and to the gradual absorption of the cells of the central portion from the pressure exerted by the ingrowing tubers." In the case before us only a single tuber has been generated, so that we have been able to trace its origin to an inverted bud, at the same time a quantity of rootlets being thrown off at the base of the bud, and running over the tuber so as to look like an exaggeration of the copper-web. The tuber was not formed till the shoot had penetrated for an inch and a quarter, its whole course being marked by the conversion of the cell-walls into brown matter, as in the Potato murrain, which reminds one of the effect on adjacent cells of the penetration of the young Peronospora. *M. J. B.*

—— What a magnificent ornamental tree the DOUBLE BLOSSOMED CHERRY is! In the forecourt gardens of many houses in the suburbs of London there are large trees, every branch of which is wreathed with densely-crowded lines of pendent blossoms. The beauty of the tree when in full bloom is best revealed when looked at beneath. Year after year shows no diminution of its marvellous floriferousness.

—— The occurrence of various forms of what were formerly described as species of Rhizomorpha in mines, without a trace of fruit, makes it always matter of interest when they are found in fructification. A specimen from the Wharncliffe Silkstone Collieries has lately been forwarded to us, in which the tawny, strongly-branched mycelium bears an abundant crop of a minute form of Agaricus velutipes. In such cases the normal characters are seldom preserved, and the gills, even when well formed, do not bear spores. In that before us the pilei do not exceed a quarter of an inch, many very much smaller, and though the greater part of them show the usual characters, in one the gills are decurrent with an umbilicated pileus, so as to resemble an Omphalia. There is no doubt, however, about the species. HOFFMANN has figured in his work on the fungi of the Hercynian mines an Agaric, under the name of Agaricus myurus, which is clearly a mere form of A. galericulatus. With it two forms of

Rhizomorpha appear, one white and the other a black kind, which is very common in this country under decayed bark. This has not, we believe, ever been referred to its origin, though one form has been traced to a Polyporus, and another to Xylaria. It is probable that this is a state of the very common Agaricus galericulatus. The Rhizomorpha is clearly very abundant in Austria, as it is a popular remedy amongst the peasantry for diarrhœa in horses. *M. J. B.*

—— The FRUIT ORCHARDS round London have been very gay and attractive for weeks past, but now that the Apple trees are coming into bloom they are taking on some of the most charming hues they have yet displayed. The blossoms of the Plum, Pear, and Cherry, are almost, if not quite wholly white, but when the Apple blossom expands charming tints of pink and pale rose are prevalent. The Manx Codlin, one of the earliest of the Apples, is largely grown for market, for in addition to its being early it is invariably a large cropper, and will fruit when the trees are quite young. At the time of blooming the trees can be readily detected, and just now they are forming sheets of blossom of a lively pink tint. As fruit cultivators are generally agreed that this Apple is well suited for shallow soils and exposed situations, and as it does not make a rapid growth, it appears to be thus well adapted for shrubbery borders, the fringes of woods, and indeed for many places where it is desired to produce effects in the landscape. Plums and Cherries might be associated with it in shrubberies and belts of trees, and any fruit produced would serve to give occupation in their own quarters to marauders among birds, and so keep them from the fruit garden, and the sin of stealing—if their natural propensity to prey on fruit is to be regarded in such a light. A selection of Apples worked on the Paradise stock might form a portion of a list of deciduous flowering trees, and the hint is freely offered to catalogue makers.

—— The CLIMBING TROPÆOLUMS are most effective greenhouse and conservatory plants at this season of the year, for when well established in pots they bloom with great freedom. An excellent illustration of this fact is afforded in one of the houses in Mr. KINGHORN'S nursery, at Sheen, Richmond. The varieties employed are Triomphe de Gand, and Ball of Fire, scarlet; Vesuvius, crimson; and Triomphe de Hyras, yellow. The plants are in good sized pots, and stand on the stage, the shoots being trained up pillars, and then along the roof of the house. The pots stand in pans, and a little manure water is occasionally given. It is when the plants get a hard and woody stem that they flower so freely, and the number of blossoms produced is very large.

—— The lateness of the season is seen in the MARKET PEA CROPS, which are this year considerably behind their usual forwardness. In 1876 the Pea blossom was much injured by frost on April 28, but now on the forwardest, Sangster's No. 1, the flowers are beginning to be seen, and the buds were tinged by the frosts of the 6th and 7th inst., which will tend to make the crops later still. But a vigorous growth will set in after the recent rains, and blossom will soon appear. One large field of Peas of several acres in West Middlesex contains Sangster's No. 1 for the earliest crop, then Laxton's Supreme, Harrison's Glory, Veitch's Perfection, and a local selection of a somewhat similar character. Peas in well-manured ground ought to get such a start now as will result in heavy crops.

—— The following are the PARKS AND OPEN SPACES placed by Parliament under the control of the Metropolitan Board of Works:—Finsbury Park, 115 acres; Southwark Park, 63; gardens on the Victoria, Albert, and Chelsea Embankments, and in Leicester Square, 14; Blackheath, 267; Hampstead Heath, 240; Shepherd's Bush Common, 8; London Fields, 27; Hackney Downs, 50; Well Street Common, 30; North Mill Field, 29; South Mill Field, 28; Clapton Common, 9¼; Stoke Newington Common, 5½; waste land at Dalston Lane and Grove Street, Hackney, 1; Tooting Beck Common, 144; and Tooting Graveney Common, 63: total, 1093¾ acres. Negotiations are going on for acquiring the following open spaces:—Clapham Common, Boxal Heath, Plumstead Common, Wormwood Scrubbs, Brook Green, Eelbrook Common, and Parson's Green—in all 607 acres.

—— Those of our readers who have attended as exhibitors at the fruit and flower shows at the Crystal Palace, and whose business has brought them in contact with Mr. F. W. WILSON, the Company's manager of shows, will regret to hear that the long connection

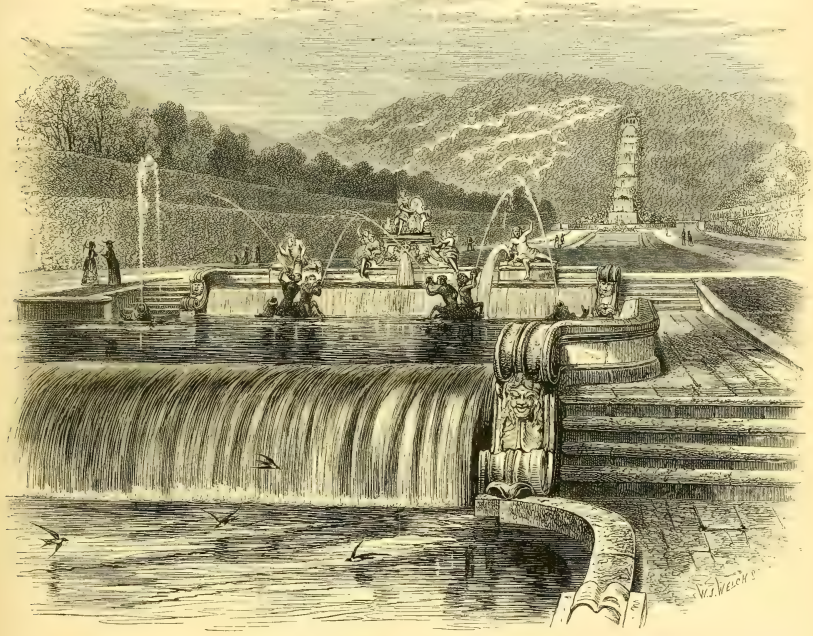


FIG. 104.—THE CASCADES AT CASERTA, NEAR NAPLES.

between that gentleman and the Crystal Palace Company has been somewhat suddenly severed, owing to a scheme of retrenchment originated by the Board of Directors, which has also involved the retirement of the General Manager, Mr. WILKINSON. Mr. WILSON has been in the company's service a quarter of a century; for many years of that time as Natural History Superintendent, and latterly as manager of most of the popular natural history exhibitions held at Sydenham. As such it was Mr. WILSON'S privilege, as we know it was his pleasure, to meet a great number of exhibitors, by whom, on account of his energetic character, straightforward, manly conduct, and urbanity of disposition, he was held in high esteem; and we feel sure that they will regret as much as we do that such long and valuable services as Mr. WILSON has rendered to the Crystal Palace Company should have met with such a poor reward from its economy-stricken Directors.

—— To the majority of gardeners the MORELLO CHERRY is chiefly known as a wall tree only; as the cultivation of it AS A STANDARD is mostly limited to market gardens, and even in these its growth is far from common. As seen just now in full bloom standard trees of from ten to twelve years of age are veritable pictures, graceful in appearance, and beautiful, with thousands of snowy white pendent blossoms. The well-known spray-like growth that invariably characterises this Cherry on walls adds greatly to its beauty as a standard, and its slender pendulous growth brings it in appearance near to the Weeping Willow. As a market tree it is one of the most profitable of fruits, as it seldom fails to produce a crop, and this is sold at a good price at per dozen pounds, either for tarts or preserving. In isolated places the birds manifest a special fondness for the fruit of the Morello, but no complaint is made where grown in bulk; perhaps the very abundance of fruit generally found in extensive fruit orchards renders the depredations of the birds less perceptible. With the strong taste that prevails for flowering and other decorative trees on lawns and conspicuous places in gardens, it is remarkable that the Morello Cherry should have been almost overlooked. In habit it is an excellent companion tree to the Laburnum, blossoms with great freedom, and retains its bloom on as long as most other spring blooming kinds, and when covered with its rich coloured ripe fruit it presents an object singularly graceful and beautiful. There are few of the ordinary decorative trees that can claim to produce a fruit crop capable of utilisation. In this respect the Morello Cherry has special claims upon the planter, as it so admirably combines the useful and the ornamental.

—— The daily papers record the fact that FOREST FIRES are making great ravages in North-Eastern New York, Long Island, Massachusetts, New Hampshire, Maine, Pennsylvania, Canada, and near St. John, New Brunswick. A large part of the White Mountains is in flames. The summer hotels are in danger, and the railways are interrupted. A great number of mills and dwellings have been destroyed, and hundreds of persons are destitute.

—— We are glad to find that the very small disused burying-ground now called by a euphemism the DRURY LANE GARDEN has been reopened. It will remain open to the poor under a new code of regulations, daily from 10 till dusk. It will be remembered that on the first occasion of its being opened a few tiny shrubs were trampled down by the throng. Let any one who has a garden of his own, or who can gain access to a breezy common, take a tour of inspection in the squalid courts of Drury Lane, and then say whether acres of breathing space are not required instead of the miserable little area dignified by the name of a garden. Surely those who would make capital out of what disturbance took place do not know what Drury Lane is, and do not know the urgent need of any means of promoting cleanliness and godliness in the wretched dwellers in the neighbourhood.

—— A correspondent asks us to tell him of any means of destroying the WILD LILY on a GRAVEL PATH. We know, or think we do, a Lily when we see one, and are not altogether ignorant of the nature of a gravel path, but a wild Lily on a gravel path is indeed a puzzle to us. We may say at once that a wild Lily, truly so called, on a gravel path, is a myth of the MRS. 'ARRIS description; but, still, what can be meant by the word Lily? This is only another illustration of the worthlessness of popular names. Speak to a botanist of a Lilium or a Lily in its proper signification, and he knows what you mean, but in popular parlance there are African Lilies, Atamasco Lilies, Barbadoes Lilies, Belladonna Lilies, Blackberry Lilies, Brisbane Lilies; other "Lilies," called Cape Coast, Corfu, Cuban, Day, Fire, Flax, Lycoris, Guernsey, Isia, Jacobean, Knight's Star, Lent, Mexican, Persian, Pond, Prairie, Rock, Rookwood, St. Bruno's, Scarborough, Superb, Swamp, Trumpet, Whitsun, to say nothing of Water Lilies, Lilies of the Valley, and Lily of the Valley Tree, and perhaps more. Now not one of these has any claim whatever to be called a Lily; moreover, we do not think any one of them is likely to be wild on a gravel path.

—— We are glad to welcome a new part of the *Flore des Serres*, the first which has appeared since the death of its founder, LOUIS VAN HOUTTE. It opens appropriately with a portrait and memoir of the distinguished horticulturist, the memoir, however, containing little that was not made public at the time in the horticultural journals. The editorship, as we had occasion to mention, has been confided to M. J. E. PLANCHON, to the great satisfaction of those who are interested in the correct nomenclature and botanical history of the plants they cultivate. We shall take an early opportunity of alluding at greater length to the contents of this part.

—— Professor ASA GRAY thus writes to us with reference to the vexed question of the DIRECTION OF SPIRAL GROWTH:—

"In the *Gardeners' Chronicle* for January 13 ALEXANDER BRAUN (whose death we now deplore) is cited as one in the formidable list of botanists who view the direction of a coil or turn of a spiral, &c., from the inside, and who would therefore say that the overlapping of the corolla lobes in a Gentian was to the left, in a Periwinkle to the right. Now I have at this moment happened to glance at an early paper by Professor BRAUN upon such 'torsions,' published in the *Flora*, 1839, and a French translation in the *Ann. Sci. Nat.* of the same year (xii., 380); here he takes the opposite view, and speaks of Gentianeæ as uniformly turning to the right, and Vinca to the left, just as BENTHAM and HOOKER now express it. Now, was not this view adopted, probably, on account of its naturalness, and given up afterwards in deference to Linnean authority?"

—— We were hardly prepared to find so great variation and so small an amount of RAINFALL as 38 inches in the island of Jamaica, as is recorded in the *Jamaica Gazette* of March 1, from which it appears that during the year 1876 the rainfall at various parts of the island was respectively 125, 117, 62, 40, and 38 inches (omitting fractions).

—— According to the official report of the BOTANIC GARDENS OF JAMAICA the establishment in question is in a satisfactory conditon, and a large number of useful plants have been propagated and distributed. The Liberian Coffee is doing well, especially on the lower altitudes, where plants only planted out a little over a year have borne fruit. Coffee culture is largely increasing in Jamaica, and on the southern slopes of the mountains it is stated that the wholesale destruction of the forest for Coffee cultivation has materially lessened the rainfall and other conditions of moisture, thus rendering the climate comparatively dry, and therefore peculiarly fitted for the successful cultivation of Coffee. Cocoa is largely and successfully grown, the climate and labour resources of the island being peculiarly favourable to it. Sugar-cane, Pine-apples for the New York market, Divi-Divi, Cocoa-nuts, Cinchonas, Eucalyptus, and Jalap, are all successfully grown in the island.

—— Mr. WILLIAM GORRIE has been well-advised in reprinting from the *Transactions of the Highland and Agricultural Society of Scotland* his paper on the TREE MALLOW (Lavatera arborea), as an agricultural plant for cattle feeding, papermaking, and other purposes (Edinburgh: NEILL & Co.) The Tree Mallow is a native of the sea coasts of this country, and even where not native thrives admirably, as on the Kentish coast near Sandgate, where it may be seen growing close to the sea, and may be used for sheltering newly planted trees, &c. It is by no means an unattractive plant in such situations, and we are glad to find Mr. GORRIE advocating its culture for papermaking purposes, cordage, &c., as well as for the sake of its seeds, which furnish a valuable feeding stuff for cattle. From what we ourselves have seen on the small scale, and from the evidence Mr. GORRIE puts before us in his pamphlet, we would urge those interested, and who have the opportunity, to make the trial. The plant is a little tender in some situations, though native on the Bass Rock, Firth of Forth, but on the west coast of Scotland, the Western Islands, the south and west coasts of England and Wales, and in Ireland, the plant would probably do well.

—— Dr. UHLWORM proposes to continue the NOMENCLATOR BOTANICUS of PFEIFFER, so as to include the names of all orders, genera, species, and varieties of plants published from 1859 to 1876 inclusive. Of the great value of such a publication to all who have to make use of the literature of botany, it is needless to speak. If carried out in the same elaborate and exhaustive manner as the *Nomenclator*, it will be a marvel of human industry and patience.

—— In the *Monatsschrift des Vereines zur Beförderung des Gartenbaues* (Berlin) for April, Dr. K. KOCH gives some particulars respecting THE NURSERIES OF BOSKOOP, in Holland, and its neighbourhood. Nearly the whole population is engaged in the pursuit of raising forest trees, fruit trees, Roses, &c., for export. The area devoted to this purpose is from 900 to 1000 acres—a small area, of course, in comparison with the large extent of land under this culture in Britain, though large for a single locality. Three-fourths of the business is with Germany. With England, it is stated, the annual export amounts in value from 25,000 to 30,000 gulden—about £2125 to £2650. The principal plants sent to this country are variegated Hollies, dwarf Roses, hardy Azaleas, Planes and other deciduous trees. A rough estimate of the value of bulbs and tubers exported is fixed at £170,000. In this communication Dr. KOCH says nothing respecting the novelties he met with in hardy trees and shrubs, the study of which was the principal object of a prolonged visit.

—— At the St. Augustine's (Canterbury) Petty Sessions, on Saturday last, a man named JOHN BROWN was charged with stealing a quantity of Watercress, value 30*l.*, at Ash-next-Sandwich, the property of WM. FOAD. The prisoner (who pleaded guilty) and another man, not in custody—he having absconded—took a truck over to Ash during the night of Thursday and filled it with Watercress from the garden of the prosecutor, who traced Cress on the road from his premises to the St. Martin's Hill turnpike-gate, Canterbury. He went to a lodging-house in that city, and there saw a large quantity of Cress, which he identified as his, it being marked with soot. The Bench sentenced the prisoner to two months' hard labour.

—— Mr. W. THOMSON sends us a leaf of Gros Colman Grape, with two side lobes and one terminal one on a long slender stalk. We never saw such an occurrence in a Vine leaf before, but it is what might be expected to occur in any palmately divided leaf.

—— At the Society of Arts lately, Mr. WILLIAM TAYLER entertained his audience with an amusing lecture on "Thaumato-dendra" (!), or the WONDERS OF TREES. Most of his illustrations are well-known to students of tree lore, but are none the less interesting on that account. We cite the following passages from this lecture:—

"There are new tales of portents at Coomassie; one, especially, of the truth of which we are assured, is certainly, at least, a very singular coincidence. The word Coomassie means, the town under the tree, and was so-called because the founder sat under a broad tree surrounded by his warriors, while he laid out the place for the future town. The market-place was marked off around the tree, and it naturally became the great fetish tree of the town. On the 6th inst., the day upon which SIR GARNET sent his ultimatum, or his summons to the king, a bird of ill-omen was seen to perch upon the tree, and half an hour afterwards a tornado sprung up, and the fetish tree was levelled to the ground! This caused

a profound sensation in Coomassie, which was no little heightened when Sir GARNET's letter arrived, and proved to be dated upon the day upon which the fetish tree had fallen."

Alluding to the Banian, the lecturer proceeded :—

"But the most remarkable evidence of the extraordinary power of the pendent roots of the Banian has been lately exhibited in the celebrated Temple of Juggernauth. The great Hindoo Temple of Juggernauth is notorious throughout the world. Built at a cost of half a million sterling, it is black with age. After seven centuries this sacred edifice, which has defied the elements and encroachments of age, has been suddenly found to be on the verge of destruction. The seeds of the Banian and Peepul tree have got under the foundations; the whole fabric has been loosened. The ruin was first indicated by the fall of some large stones, just after the idols had left the temple on the last car festival. Had they fallen a few minutes before they would have been smashed to atoms. This catastrophe has, as may be imagined, caused great consternation, and is likely to have a disastrous effect on the *prestige* of the great Juggernauth. It is a curious fact that even the most celebrated Hindoo temple should have been thus undermined by trees held sacred, if not divine, by the whole Hindoo nation. Is it accident—or Nemesis?"

Here is what is said of Lady GRIMSTON's tomb :—

"I dare say some here present will have heard of the very strange incidents connected with the tomb of Lady ANNE GRIMSTON, in Tewin Water Churchyard, Hertfordshire. As far as I have been able, after much inquiry, to ascertain, Lady ANNE GRIMSTON was, if not an unbeliever, at least a sceptic, and was occasionally heard to say that she would as soon believe that trees would, after her death, grow out of, as some say, her tomb, as that her tomb, as it had been, should be a resurrection of the body from the grave. Lady ANNE GRIMSTON, as did her ancestors before her, died; she was buried, and a substantial tomb enclosed with an iron railing was erected over her remains. A few months after burial seven small saplings of an Ash tree appeared close to the tomb; they were allowed to grow; superstition probably preventing all interference; they grew, and after some time they raised the solid tomb some distance from the ground, at the same time supporting it with their branches, and at the present time, in exact accomplishment of the alternative suggested by Lady ANNE, seven full-grown Ash trees are in full foliage around the tomb, the principal tree having germinated from that part of the tomb in which the heart of the deceased was situated."

Here is another singular coincidence :—

"One other remarkable instance of mysterious, or at least unaccountable growth, is now, and has for many years, attracted attention and surprise at Ross, in Herefordshire. The story which has been related to me by several eye-witnesses, is this :—The Man of Ross is a name and character which has been immortalised in the well-known lines of Pope. He was peculiarly partial to the Elm tree, many of which he had cherished with peculiar devotion. So long as he lived, no one presumed to interfere with his cherished favourites, but after his death several trees made their appearance at the door of the church, gradually forced their way into the interior, passed through the Man of Ross' pew, and grew up together inside the church, where they were still growing side by side, occasionally lopped when rising so high as to touch the roof."

NOTES ON OPEN-AIR VEGETATION FOR APRIL.*

THE weather during April upon the whole has been cold, and much against open-air vegetation, perhaps more so than has been observed on April 30 for many years—the wind nearly the whole month having an easterly tendency except on the 20th, when it got round to the south-west, and a few hours' warmth was the result, which brought forward the flowers of the Norway Maple and certain Elms, also the young leaves of some of the Hawthorns, besides greatly increasing the size of the leaf-buds of certain Planes and Horse Chestnuts, but with out expanding them. After that day the wind got round to the east again. Vegetation has progressed very slowly, so much so that forest vegetation, with the exception of the few examples quoted, has quite a wintry appearance. Herbaceous vegetation is also far behind, the diminutive condition of many plants being very marked. Some of the ordinary early blooming plants have been also late of flowering. The Crown Imperial (Fritillaria imperiali-), which is often past at this time, is scarcely yet in perfection. Many Scillas and other spring bulbs which usually flower in March are now in good bloom, and even the common Crocus may still be found in flower, and Snowdrops were also procurable about eight days ago. Standard plants of Ribes sanguineum have not been particularly good this season, their flowers being still much behind. Many other examples might be quoted, the foregoing, however, are sufficient to show the backwardness of vegetation. In my report for March I stated that certain species of Cupressinæ had suffered severely. The browning complained of is still going on, and many of the plants then noticed are permanently disfigured.

During the month of April the thermometer has been ten times at or below the freezing point, indicating collectively 50°; the six lowest temperatures were on the 2d, 11th, 12th, 14th, 20th, and 25th, when 26°, 26°, 23°, 24°, 23°, and 27° were respectively registered; while the six highest night temperatures were on the 8th, 9th, 15th, 16th, 21st, and 22d, indicating respectively 39°, 40°, 40°, 40°, 42°, and 38°. The prevalence of low night temperatures of late has been remarkable, nor can it be otherwise while so much snow lies in various parts of the country. Throughout April the six highest night temperatures, as already noted, only amounted to 239°, being lower than had been noticed during the corresponding month last year, when the six highest indicated collectively 290°, all counted above zero, or 47° above the freezing point for April, 1877, and 101 for April, 1876.

On April 30 ninety-seven species and varieties of plants were counted in flower on the rock garden, while the corresponding day last year 122 were noticed. The most conspicuous at the present time are Adonis vernalis, Anemone nemorosa bracteata alba, A. Robinsoniana, Aubrietia grandiflora, Colchicum soboliferum, Dondia Epipactis, Draba aizoides, Erica hibernica alba, E. h. intermedia, E. h. nana, Erythronium grandiflorum, E. giganteum, E. g. roseum, Fritillaria aurea, Orobus elegans, Polygala Chamæbuxus, Primula ciliata purpurea, P. denticulata, P. helvetica, P. integrifolia, P. nivalis, P. purpurea, P. vulgaris, Pulsatilla bracteata, Puschkinia scilloides, Saxifraga cordifolia, and others; S. retusa bryoides, Scilla sibirica, S. præcox, Soldanella montana, Trillium grandiflorum, Tulipa pulchella.

The following spring plants complete the list annually recorded to show their periods of flowering :

	1877.	1876.
Symphytum caucasicum	April 5	March 13
Narcissus Pseudo-Narcissus ..	,, 8	April 3
Adonis vernalis	,, 12	,, 5
Fritillaria imperialis	,, 14	,, 6
Hyoscyamus physaloides	,, 19	,, 2

In my monthly returns "on open-air vegetation" it is not usual to give any remarks on the vegetation of the current month; but as the present month of MAY, so far as it has gone, has been rather an exceptional one, I cannot refrain making a few observations in order to show the amount of cold we have had up to this time. Frost has been seen, more or less, every morning, with two exceptions, varying from 1° to 8°, making collectively (up to this date, May 10) 30°, the exceptions being on the 9th, when the thermometer stood at 33°, and on the 10th (this morning) at 37°.

The frosts experienced during the May months for the last twenty-three years are given in a table on p. 523 of the twelfth volume of the Botanical Society's *Transactions* for 1876-77. In May, 1855, 29° were registered; in 1861, 21°; and in 1869, 13°; in 1874, 16°, and in 1876, 26°. From this table it will be seen that during four years no May frosts were noticed, during five years 1° only each year were recorded, and for twelve years from 2° to 6° were registered.

It is difficult at the present time to say with exact certainty the period vegetation is behind former years, probably not less than three weeks. For twenty-eight consecutive seasons we have had the young branches of the Beech, each 5 inches long, to hand to the students attending the botanical class, either on May 8, 9, or 10; to show an example of an alternate leaf this year no shoot is yet out of its winter scales. Many other examples of open-air trees to show venation and prefoliation daily occur, all, however, behind; while other plants are now in good condition, such as the Fritillaria imperialis, which is generally past at this time for class purposes.

In consequence of the length of time leaf-buds have been pent-up, caused by the long ungenial spring, it is but reasonable to expect that as soon as a favourable change takes place, and with the present moisture in the ground, we shall observe a rapidity in the development of foliage such as we have not before seen.

* Read at the May meeting of the Edinburgh Botanical Society, by J. McNab, Curator of the Royal Botanic Gardens.

Home Correspondence.

Lessons to the Young Gardeners at Kew.—Sir C. W. Strickland is mistaken in supposing that the system of instruction given to the young gardeners at Kew has proved a failure. That the contrary is the case is shown in my several annual reports to the Government on the progress and condition of the Royal Gardens since 1874, when the lessons were commenced. The system in question consists of evening lessons (not lectures) given to the young gardeners in the elements of structural, physiological, and geographical botany, chemistry, and meteorology, both for their general improvement and for the special purpose of qualifying them for holding appointments in India and the Colonies, as well as in scientific establishments at home, for which a knowledge of plants and their surrounding conditions, their distribution and their useful products, is required. The attendance at the lessons is voluntary; but the conditions under which alone they can be attended are that the young gardener carries away with him from Kew when he leaves his service, stating whether he has or has not availed himself of these lessons. It is true that the original proposal to give such instruction was, when first announced, received with dissatisfaction by a majority of the young gardeners then at Kew, who expressed a wish that instruction in floriculture and bedding out should be substituted for it. This wish was, of course, not entertained, and the system, when once begun, was cordially responded to by the young gardeners, and continues to give excellent practical results. Many applications have been made to me by outsiders for permission to participate in the instruction, but the system, being tutorial, it is obviously impossible to extend it beyond the limits of our own requirements. Its success or failure does not in any way affect the question of the expediency or otherwise of the Horticultural Society instituting courses of instruction in horticulture proper, whole departments of which (such as fruit and vegetable growing) are not practised at Kew. *J. D. Hooker, Director, May 14.*

Productive Fig Trees.—The Rev. Canon Argles, Barnack Rectory, has a Fig tree which occupies one side of a south roof. For twenty years past it has never been either pruned or nailed, and the crops it bears yearly is simply enormous. Another reverend gentleman in this quarter (Stamford) has one of the same variety that overtops the wall from 5 to 6 feet, and which I have repeatedly seen laden. Fig trees under the rule-of-thumb system of culture certainly bear fruit, but not with such freedom as the naturally grown trees. Three years ago I felt determined to try a similar plan, and am thankful to say with the best results. This season the promise is so good that I have treated the young shoots with a tie to the wall and main stems. *R. Gilbert.*

Abies Menziesii and A. Engelmanni.—M. Ed. André's notes on Abies Menziesii and A. Engelmanni at p. 562 of your issue for May 5 are very interesting, in so far as they are correct; but I have a suspicion that much of the information which he gives respecting this species (admittedly, however, not all of his own proving) is inaccurate, and calculated to mislead and hinder cultivators of such plants in Britain from adding to their collections one of the most beautiful and hardy of Spruces. He informs us that young plants of A. Menziesii are readily distinguished from Engelmanni by the tips of the scales of their buds being reflexed. I have never seen Menziesii with reflexed scales; and I ask you to say, after examination of the specimen sent, whether he is correct in this statement. [In the specimen sent of Menziesii the scales are not reflexed.] They also show that the leaves of Engelmanni are not "more slender" than those of Menziesii. I look upon the former as being, next to A. polita, the most formidable of Spruces; and, as to the scales of its buds, they are decidedly recurved. But to prove this, pray never examine them in damp or rainy weather, as then they are more or less straightened out and adpressed to the buds, as if to prevent the lodgment of water. Furthermore we are informed that "on seeing the two species side by side, it is seen that A. Engelmanni begins to grow in spring a full month

before A. Menziesii ;" and that under cultivation "in America it is developed before any other species of Conifer, and the culture of it cannot be recommended anywhere but in the North of Europe." We are certainly much indebted to M. André for telling us how A. Engelmanni behaves in America, Russia, and France, and I shall now have pleasure in letting him know how it behaves here in Derbyshire. To do so it is necessary to state that the oldest plants here are, as near as I can judge, eight years from seed ; and to compare them with plants of other species it is only fair that they all be of the same age, and growing on the same ground-level and subjected to the same conditions of life. I find then that the branches and leaders of these plants—the leaders, paradoxical as it may sound, are always last to start—have gone on uninterrupted by frost for at least seven years, and now (May 12) they are just commencing to grow, the majority of the buds being yet apparently dormant. They have entirely escaped the rather severe frosts experienced towards the close of the last and the beginning of this week. Plants of Menziesii, on the contrary, have already grown an inch or more, and many of their newly-made shoots are killed. Yet more : two years ago we had a quantity of Engelmann's Spruce, Nordmann's Fir, and common and golden Yews, growing together on a low-lying part of our ground ; they had made from 1 to 3 inches of growth, when one night in the first week in June we had a very severe frost which cut the Firs and Yews back to where they had started from, without injuring a leaf of the Spruces. Lastly, the reason which M. André gives for Engelmanni beginning to grow in the spring a full month before Menziesii is rather novel, viz., "that plants growing at a great height, or in high northern latitudes, on being transplanted to a warmer climate, begin to open their buds at the first spring-like day." If M. André is right, I would ask why it is that Pinus aristata, which as a scrubby bush hugs the snow line on the upper reaches of the Rocky Mountains, when transferred to England is notably the last of all our Pines to start in the spring ? Here at present it shows no sign of life, but our native Scotch and others from warmer latitudes, growing near by and on the same ground level, have made from 2 to 3 inches of growth. My knowledge of the climatal and other conditions of life of the numerous forms of Coniferæ in their native habitats is too limited to warrant me in attempting to explain what M. André has given a reason for. Nevertheless, it is not without reason that I believe that there is no characteristic more strongly impressed on plants than their inherited tendency to start into growth at or about the time at which the conditions of life of the specific habitat admit of, even when they are, under cultivation, subjected to moderately different conditions. We see this exemplified in certain Cypresses raised in British from seeds collected near the sea coast of Upper California ; they make a double growth in one year, the second growth late in the autumn, and even form their catkins and flower before Christmas—the very best proof of them having made a second growth. This is exactly how they grow in that region. The want of moisture at their roots towards the close of the "dry season" checks and helps to mature their growth early in autumn, and then the periodical warm showers which begin to fall on or about November 1 reinvigorate them, and they begin to grow. *George Syme.*

The Oak and the Ash.—What will the weather prophets say this year when they make their observations on the relative expansion of the leaves of these trees? Last year the Ash was some three weeks later than the Oak, but this season the two are expanding almost simultaneously [not in our garden. EDS.], so that there is little to choose between them. The reason is probably to be found in the fact that the Oak is later in expanding, as almost all deciduous trees are, but the Ash being one of the very latest finds the weather sufficiently genial to allow of its expanding its leaves at the usual period. If this has any signification in relation to the weather we may look for one of those happy seasons which are neither too wet or too dry, too hot or too cold, and suits everybody. Such a season may well be expected to prove a meteorological millennium. *Alex. Dean.* [In this matter the great individual variation of particular trees seems always to be overlooked. In South Middlesex, from our windows we see some scores of Oaks, some in leaf, others not so forward as the tardy Ash, which has scarcely begun to move. EDS.]

The Cucumber Disease Stamped Out.—Last spring I sent for your inspection some fruits and foliage of Cucumber plants very badly infected with the disease commonly called gumming. After my communication I made several attempts to get rid of the disease. I procured seeds and plants from a distance, experimented with different soils, &c., raised seedlings and planted in a new house that never before had a Cucumber plant in it ; but, alas ! no matter where they were grown, the too well-known symptoms quickly put in an appearance ; the gumming in the fruit and stems and the crippled foliage soon made the plants succumb. Not one Cucumber presentable for table did I cut the whole of last year. With Melons and Vegetable Marrows the disease proved quite as fatal, even at long distances apart. I struggled on in this way, sowing and planting in all directions, till the end of September, when I thought I must give up, all my efforts being in vain. At this stage I felt somewhat puzzled as to what should be my next attempt. I then determined to root out and burn every plant on the place. The two houses where the Cucumbers had been growing were thoroughly overhauled, every particle of soil and all that was movable was cleared out ; we next gave the houses a good washing with strong soap and water as hot as it could be applied, and afterwards three coats of paint inside and out. The walls and pipes were well scraped and dressed with hot lime and turpentine several times. After all being made pure, instead of commencing again I gave the houses a rest for more than two months, having open all the ventilators and fully exposing them to wind and weather. On December 18 I closed the house and made another sowing of Telegraph and Tender and True ; the plants came up and had a healthy look, and as the days lengthened made rapid progress. The first fruit was cut on March 17, and I am pleased to say that from that day till this not the least symptom of disease has appeared on the plants or fruit. I attribute my success chiefly to the two months' rest, the thorough disinfecting of the place, and syringing the plants with clear soot-water twice a week in the evening. Should any one be labouring against the same tantalising disease I recommend them to put the above remedy into execution, and I feel sure success will crown their efforts. The fruit and foliage I sent you on the 11th inst. is that of Tender and True, and I think when you have seen it you will agree with me that the Cucumber disease is stamped out. [Certainly so far as the specimen received is concerned. EDS.] *G. Bloxham, Gr. to Sir P. D. P. Duncombe, Bart., Brickhill Manor, Bletchingly.*

Flowering of Phormium Colensoi.—Permit me to inform your correspondent, James Clelland, who inquires for information concerning the seeding of Phormium Colensoi, that this handsome variegated New Zealand Flax bloomed well with me here in the summer of 1875, producing a spike of inconspicuous brown and green flowers, similar to those of the unvariegated kind, each horned-shaped tubular flower being filled to the brim with a species of nectar eagerly sipped and drained by bees and wasps. It did not, however, set or ripen seed, which was of little consequence, as seedlings of this plant come up, not as you say in your answer mostly green, but invariably all white or cream colour, and being devoid of chlorophyll cannot live. *W. E. Gumbleton, Belgrove, Queenstown, Co. Cork, Ireland, May* 13.

Antipodal Hyacinths (see p. 591).—In reference to the remarks made in your last issue respecting the above, I beg to say that it is no new thing, as I have had one in my possession for the last quarter of a century, but simply under the name of Hyacinth vase, but the figure in your number is more of the modern style of make than what I have, as mine is of the upright, plain style, like one of the old-fashioned Hyacinth glass, but is 2 feet high without the bell, which is about 6 inches high, and this is taken off the vase when not in use, which is safest, as it might be knocked off. The mode of cultivation is simply to get a little moss and place at the base of the bell, to keep the soil, if you use soil, from falling through ; unless you use all moss or cocoa fibre. Place the bulb in the centre close to the bottom, of course with the base of the bulb upwards, and then fill in with the ingredients you use, placing the other bulb in the usual way, as in ordinary planting. You can then plunge them in the dark to root, as is customary, and when they are sufficiently developed they can be placed on the vase, which is filled with water, and the one grows up and the other down. It is much the best to use bulbs both of one habit as near as you can, as sometimes one gets ahead of the other, and spoils the appearance. You can use both of one colour or different, as fancy leads (Narcissus answers quite as well to grow in them). The water will require to be frequently changed, as it is very apt to get green, and hen it spoils the appearance, but a little charcoal is very beneficial in the water. A few gold fish would do very well in the vase, and give a double interest, but that is according to taste. I like the style of the figure given in preference to the one I have, as it is more modern in appearance and looks handsomer, and would stand much safer. As it is a very interesting object when in flower, especially for drawing-rooms, &c., for a centre, and smaller ones on each side it looks very grand, in fact it is worth having by all interested in the cultivation of the Hyacinth. *J. S. C.*

The Frost and the Fruit Crops.—Throughout the fine fruit gardens in West Middlesex the frost has proved very destructive to the Plum and Pear blossom, and of both of these fruits the crops will be light. Plums had largely set, but the fruit were frozen through, and are fast falling ; whilst three-fourths of the Pear blossom is literally blackened and useless. Cherries have not so largely suffered, as the bulk of the bloom was not expanded ; whilst Apples, unusually late, have almost entirely escaped. Gooseberries were largely favoured by an abundant leafage, but much of the fruit is injured, and will presently fall. Currants promise unusually well, but a few of the earliest blooms have suffered. Strawberries show a wonderful blossom, and the recent fine rains and genial warmth may assist to produce a heavy crop of fruit. *A. D.*

Foxgloves.—The great improvement that has been effected in these during the last few years renders them very desirable plants to cultivate, especially where they can be accommodated with a tolerably open situation near woodland walks or semi-wild places, for either of which positions they are eminently adapted. Instead, however, of being grown singly here and there, as generally seen, they should be planted in large, bold masses, in imitation of Nature, who never scatters her treasures with a sparing hand, but is lavish and prodigal to an extraordinary degree, and if we would produce similar floral effects we must follow teaching. Although Foxgloves will grow almost anywhere and in the poorest of soils, there is no comparison between them and such as are liberally treated, a striking instance of which was apparent here last year, when some in trenched and manured ground reached the height of nearly 8 feet, with huge spikes of flower as striking as they were beautiful. Any one, therefore, who would see them at their best should prepare for them in like manner, by breaking up the soil to a good depth at the particular spot it is intended to grow them, and, as they send their roots far down, to work in more or less of it from a good dressing of rotten dung, on which they will feed, and last double the length of time in bloom they otherwise would do. In ground so prepared they should be sown in irregular patches, so as to be as informal as possible, and thinned out to distances of about a foot apart ; or a better way still is to sow at once in light rich soil under handlights, and to prick out the plants in nursery rows, to stand till large enough to plant out, which they will be by the autumn, and sufficiently strong to bloom freely the following summer. By seeding out any inferior kinds, and saving seeds only from the best marked and most distinct, deterioration may be prevented ; and if any showing superior qualities are cross-fertilised improved strains will be the result. Those we have were obtained from Ivery of Dorking, and so large and handsome are the flowers said to be almost equal to some of the older varieties of Gloxinias, to which in form and general appearance they bear a close resemblance. *S. W.*

Verbenas : Store Pots.—Verbenas at this time of year, after so many croppings, may be said in many cases to be of little service for planting out, but if encouraged to grow when the striking season is over they will come in useful for furnishing cut flowers. Store pots of Verbenas turn out most profitable ; when early in the spring they get a good shift like single plants in good strong soil, they then grow so much freer and give stronger cuttings. For keeping Verbenas, too, during the winter it is a good plan to have a layer of good strong soil at the bottom of the cutting pots, as they often damp off from want of vigour. *Robert Mackellar.*

The Weather in South Lincolnshire : Fruit Prospects, — The thermometer ranged very low for the first eight days in May, viz. :—May 1, 32°, cold with hail, wind N. ; 2d, 35°, cloudy, N.W. ; 3d, 30°, cold with hail, N. ; 4th, 23°, cold with snow and hail, N.E. ; 5th, 26°, clear, frosty, hail—N.E. ; 6th, 28°, clear, frosty, N.E. ; 7th, 26°, clear, frosty, N.E. ; 8th, 28°, clear, frosty, N.E. ; 9th, 35°, thunder, stormy, rain, S.E. ; 10th, 40°, stormy, thunder, lightning, with heavy fall of rain and hail ; three-quarters of an inch fell. Apples, Pears, Cherries, and Plums, were in full bloom, and have suffered much ; Apricots, where not well protected, are destroyed ; early Potatos cut down to the ground ; early Peas are nipped ; Asparagus making its appearance, all cut down ; Box edging, young growth all killed ; in fact, vegetables have suffered more or less according to their hardiness. Apples are not yet in bloom, and, as far as we can see, safe, with an abundant show of bloom-buds. *D. Lumsden, Bloxholm Hall Gardens.*

Ivy.—Notwithstanding what Mr. Goodacre has said respecting Ivy tending to make buildings damp, I still affirm that it has quite the opposite tendency. I

lived in a house for eleven years which was completely covered with Ivy, and all the year round the soil at the base of the building was as dry as dust, and the house was perfectly dry. Again, the stables here are some 20 feet high, and the walls are all covered with Ivy, and neither the horses, if they could, nor the men who sleep in the bedrooms over, have any reason to complain of damp, for the building is as dry as a chip. If the Ivy encourages damp, how does it come to pass that every April we exercise our fire brigade on the Castle, for the twofold purpose of washing out the dead leaf-stalks of the Ivy and giving the plants a thorough soaking? The Ivy is a greedy plant, and drinks up a quantity of moisture. All buildings should have a "damp course," to prevent the damp rising in the walls. It can be either lead, slate, cement, or, better still, a material manufactured for that purpose. Let this be attended to, and the spouting of the eaves made perfect, and there will be fewer complaints about damp in buildings. I like to see the saddle put on the right horse, and therefore say—

"A rare old plant is the Ivy green."

J. Rust, Eridge Castle.

Weeping Beech Trees.—In the interesting account given by your correspondent "Rambler," of the Botanic Gardens at Leyden, he mentions a Weeping Beech as of large size. There is an extremely handsome tree of the same kind at this place. The trunk at 4 feet from the ground is 8 feet 10 inches in circumference; the diameter of the branches 90 feet north and south, 74 feet east and west: this would give a circumference of about 240 feet. I am desirous of knowing whether this is a large tree of the kind, and I shall be obliged by any information on this point. The tree has been planted between 60 and 70 years I believe. *E. E. W., Meynell Langley, Derby.* [Certainly a fine specimen.]

Aerides crassifolium, Parish and Rchb. f.—I was very glad to see this charming plant referred to by Professor H. G. Reichenbach fil, in your last issue (see p. 590). Four years ago R. B. Dodgeson, Esq., of Beardsworth Fold, Blackburn, and his gardener, Mr. Whitehead, carefully lifted down a vigorous little plant growing in a basket suspended near the roof and shewn to me as one of the good things to come home by the "big white man," the Rev. Mr. C. P. Parish, and distributed by Mr. Stuart Low. I remember Mr. Whitehead handled the plant most carefully, and gave a start of joyful surprise when a young flower-stem was detected pushing its way from the axil of one of the thick fleshy purple dotted leaves. After that I received fortnightly bulletins as to the little favourite's health and floral development, and finally the specimen, 6 inches in height, and bearing ten closely arranged leathery leaves, and a long, drooping spike of twenty-five racemes or amethyst-purple flowers was exhibited at the Blackburn flower show on May 25, 1873, where it was much admired by myself, Mr. Gower, and other visitors. It appears quite distinct in habit from Lady Larpent's Aerides (A. falcatum), the flowers being larger, more richly coloured, and far more gracefully arranged on the spike.. A. Houlletianum, a buff-tinted form of the last-named species, exhibited by Sir Trevor Lawrence last year at South Kensington, is another distinct plant, and is known in English gardens as A. Mendelii; indeed, it was exhibited, and I believe certificated, under that name. My description of this plant, published in the *Garden* in May, 1873, will interest Professor Reichenbach, as showing how nearly we agree as to the affinity of this lovely plant.

"A robust and well-grown specimen of the rare species (Aerides crassifolium) has at last been flowered by Mr. Whitehead, gardener to F. B. Dodgeson, Esq., of Blackburn, Lancashshire. It has been called 'the best species in the genus,' which is saying a great deal, considering we have the noble A. Fieldingi, and the still more handsome and rare A. Schroderi. This new species is one of Messrs. Low's importations, and is easily distinguished, even when not in flower, by its broad, thick leaves, and dense habit. Its flowers call to mind those of A. falcatum Larpentæ, being similar in conformation, but they are produced on a much longer drooping spike. Their colour is also much deeper and more effective than that of the last-named species, being a soft, amethyst purple, shading off into white at the base of the segments. The peculiar tint belonging to this species is similar to that found in the petals of Phalenopsis Luddemanniana, but deeper and richer in tone. Mr. Dodgeson's plant has ten leaves, which vary from 5 to 9 inches in length, and are about 2 inches broad, the younger leaves being dotted with purple, and slightly tinged with brown. It has borne twenty-five flowers on a spike, and this number will doubtless be exceeded as the plant developes itself. This Aerides, as has just been stated, is as yet very rare, but now that its charms are recognised by cultivators as being something superior to those of others, it will doubtless soon find its way into the most select collections." *F. W. B.*

The Maréchal Niel Rose.—You did me the favour to insert in your number for May 6, 1876, an account of my method of growing the Maréchal Niel Rose. I have again adopted the same plan, with equally satisfactory results, having cut at least fifty full-blown Roses (off the two single shoots), most, if not all of which, have measured at least 5 inches across. The plant is now cut back to two single buds, each of which, I expect, will again grow to the usual length of from 20 to 25 feet in the course of the present season. *Much Hadham, Herts, May 15.*

Protecting Peas with Paraffin.—Having seen in the *Gardener's Chronicle* a short time since a letter from one of your correspondents stating a way of protecting Peas from rats, mice, birds, &c., by soaking the Peas for two minutes in benzoline before sowing, I acted on his advice, with the following result. I procured some good sound seed of Culverwell's Prolific Marrow, soaked them in benzoline for two minutes, and sowed them in the usual way. After watching them very carefully for some considerable time, to see if the mice or rats did trouble them, I found they did not interfere with them at all; which bore out your correspondent's statement as far as mice and rats are concerned, but not one of the Peas came up, and on close examination I found the Peas rotted in the ground. I write this in hopes it will save some of your readers from trusting to such a dangerous experiment. *R. W.*

Reports of Societies.

Crystal Palace : *May* 12.—The Crystal Palace on Saturday last presented a more than usually gay appearance—the occasion being the annual May show, and the display of plants much superior to anything that has been seen here for several years—a circumstance the more remarkable, inasmuch as only two prizes were offered for competition in each class, the directors, in the fit of economy that has so suddenly overtaken them, having disallowed the sums usually given as third and fourth prizes, though we believe that late in the day such prizes were awarded to those who deserved them. Another cause of complaint amongst the exhibitors was the non-provision of the usual breakfast, which was not given, though no notice to that effect had been issued, and some of the exhibitors, too, had to remain in the Palace many hours through the usual passes being withheld. Such practices are mean, not economical, and can only be practised once with any effect. We believe the prevalent feeling amongst exhibitors is in favour of the system which provides third and even fourth prizes, the amounts, though small, contributing "something towards expenses"—a very heavy item when large plants are in question. In addition to the plants and cut flowers being of a much improved order of merit, we have to notice an innovation in the arrangement of the show, which met with the hearty approval alike of the visitors and exhibitors. For a number of years past the staging has been erected in narrow parallel lines down the centre and sides of the grand promenades on either side of the central transept, a plan which prevented anything like an effective arrangement of the subjects sent in for competition. On the present occasion all this was done away with, and instead four large broad sets of staging had been erected in the centre. These broad and rather low stages were admirably filled an Saturday, and the general effect produced was a most decided improvement upon the old style.

FLOWERING PLANTS.—The display of flowering and fine-foliaged stove and greenhouse plants was especially good, and shown in considerable numbers. The leading class for flowering plants was that for nine open only to amateurs, in which Mr. Chapman, gr. to J. Spode, Esq., Hawkesyard Park, Rugeley, came in 1st. The most noticeable subjects in this fine group were specimens of Chorozema Chandleri, a bush about 5 feet over, and splendidly flowered; Dracophyllum gracile, about 4 feet through and well bloomed; Bougainvillea glabra, of about the same dimensions, and full of flowers; Pimelea mirabilis, a large well-flowered bush; Erica odorata, a plant about 3 feet through, and beautifully flowered—one of the most meritorious plants in the show; Ixora coccinea, a fine and profusely bloomed plant; Anthurium Scherzerianum, &c. The 2d prize went to Mr. B. Peed, gr. to Mrs. Tredwell, St. John's Lodge, Lower Norwood, who also staged an admirable group, conspicuous in which were a grandly flowered Epacris Eclipse, about 4 feet high and the same through; Rhododendron Countess of Haddington, about 4 feet high and 3 through, well and evenly flowered; very good examples of Clerodendron Balfourianum, Imantophyllum miniatum, Azalea Extranei, and Erica Cavendishiana, together with admirably flowered plants of considerable size of Francisceas calycina and confertiflora. Mr. Tudgey, gr. to T. F. Greswolde Williams, Esq., Henwick Grange, Worcester, came next in order of merit, having a capital lot of plants, which, however, were scarcely forward enough in bloom. The corresponding class for nurserymen contained only one entry—that of Messrs. T. Jackson & Son, Kingston, to which the 2d prize only was awarded, the plants being much behind time in the development of their blossoms. The amateur class for six was an uncommonly good one. Here Mr. Tudgey came in 1st with Darwinia tulipifera, a plant about 4 feet high and 5 through, well furnished and grandly bloomed; Ixora Williamsii, a strongly grown and well-developed plant with several very fine clusters of flowers; Erica ventricosa magnifica, 3 feet through, and thoroughly well flowered; Imantophyllum miniatum, good; and Clerodendron Balfourianum, good. Next in order of merit came Mr. Chapman and Mr. James Child, gr. to Mrs. Torr, Garbrand Hall, Ewell, who were bracketed equal 2d. The former had good-sized, well furnished, and admirably flowered specimens of Erica ventricosa coccinea minor, Clerodendron Balfourianum, Ixora coccinea, Erica eximia superba, Chorozema varium nanum, &c.; and the latter equally fine examples of Erica depressa, Azalea concinna, Clerodendron Balfourianum, Darwinia tulipifera, and Aphelexis macrantha purpurea, &c. Mr. B. Peed contributed amongst others fine specimens of Azalea Perryana and Clerodendron Balfourianum, and a beautifully flowered bush of Eriostemon pulchellum, about 5 feet high and 4 feet through. In another group, shown in the same class by Mr. Bristow, gr. to G. Campbell, Esq., Woodhall, South Dulwich, we noticed Vanda suavis with three spikes, and a fresh, nicely flowered balloon-trained plant of Euphorbia splendens—not a frequent visitor at flower shows now-a-days.

The open and amateurs' classes for eight and six HEATHS respectively were well contested. In the amateurs' class the first position in the prize list was taken by Mr. G. Legg, gr. to S. A. Ralli, Esq., Cleveland House, Clapham Park, who appears to be as much at home with Heaths as he is with fine-foliaged plants and carpet bedding. The plants which he staged in this class were about 3 feet through, even in size, clean and vigorously grown, and thoroughly well flowered, the varieties being E. insignis, depressa, Candolleana, Vicloriana, Cavendishiana, and Tetrlomis. The second prize went to Mr. Tudgey, who had a capital lot of plants, not fully in bloom except in the case of a specimen of E. elegans, which was very fine. A well-flowered but unevenly-matched group came from Mr. Peed, the best being examples of E. eximia superba, perspicua nana, and Beauniana, &c. The open class for eight brought out Messrs. T. Jackson & Son, Mr. Peed, and Mr. Legg, who stood in the order of merit as named. The Kingston firm had large and nicely-flowered plants of E. depressa, affine, florida, ampullacea, oblata, Exquisita, tricolor Vesoni, and perspicua nana. Almost equally good were the specimens of E. ventricosa grandiflora, elegans, Cavendishiana, eximia superba, ventricosa coccinea minor, &c., from Mr. Peed. Mr. Legg's plants were small but splendidly flowered, and an extra prize was awarded to them.

AZALEAS have not been so well shown for some time, being represented here both in considerable numbers, and generally in grand condition. The leading exhibitor of Azaleas at the present time, Mr. Ratty, gr. to R. Thornton, Esq., The Hoo, Sydenham, took the 1st prize in the open class for nine, and the amateurs' for six, with a splendid lot of plants. Mr. Ratty's first-named class Mr. Ratty showed plants from 5 to 6 feet in height and 4 feet through, perfect cones of richly-coloured blossoms. The sorts represented were Exquisite, Georgiana, Model, Beauty of Europe, Eulalie Van Geert, Hollofriana, Duc de Nassau, Mrs. Fry, and Criterion. Mr. James Child came in 2d with a group of somewhat smaller plants, profusely bloomed, but not so evenly covered with flowers. An extra prize was awarded to Mr. Turner for a capital lot of standards. In the amateurs' class Mr. Ratty staged a set of standards of similar size and almost flat-headed, the leading sorts being Burlingtoni, Princess Charlotte, striata formosissima, Zenobia, Coquette de Flandres, &c. Mr. B. Peed, who was 2d here, also showed well; and in a group from Mr. J. Bristow we noticed a charming cone about 5 feet high of Azalea sinensis alba. Mr. Turner turned the tables on the successful amateur in the class for twenty in 9-inch pots, showing an evenly matched, well flowered lot of half specimens, conspicuous amongst which for their brightness of colour and general excellence being Apollo, Eugénie Mazel, Charles de Buck, Souvenir du Prince Albert, and Mons. Cuvellier, &c.

ORCHIDS were not represented so well as usual, either in number or quality. Mr. B. S. Williams and Messrs. T. Jackson & Son were the only exhibitors amongst nurserymen, the prizes being awarded in the order named. Mr. Williams had Vanda tricolor insignis, with three spikes, Sobralia macrantha

Woolleyi, with seven flowers, Odontoglossum Pescatorei, Oncidium sarcodes, Cypripedium niveum, a fine mass with about two dozen blooms; Cattleya Mossiæ grandiflora, Oncidium Marshallii, &c. The best in Messrs Jackson & Son's collection were examples of Sacanthus retusum, Dendrobium Dermahnum, Vandas suavis and tricolor formosa, Odontoglossum citrosmum roseum, finely-coloured, &c. Mr. James Child, who was 1st amongst amateurs for eight, had a very good specimen of Oncidium ampliatum majus, and a nicely flowered example of Camarotis purpurea, &c. J. Mr. B. Peed was 2d.

ROSES in pots were splendidly represented by groups of nine from the rival establishments of Slough and Cheshunt, and, as usual when these redoubtable champions meet, the competition between the two collections for the 1st prize of £20 was remarkably close. The sunless weather has been sadly against the production of flowers, and none have felt this more than the Rose growers, who for this exhibition were quite unable to wind their plants up to the high state of perfection in which they showed them last year at the Westminster Aquarium. With the exception of a scarcity of flowers, as compared with the display made on that occasion, the plants, as regards size, foliage, and style, were almost identical, and the palm was again carried off by Mr. Turner, who had fewer flowers than Messrs. Paul & Son, but they were finer in quality and a little the fresher of the two. Both had splendidly developed foliage, and to Messrs. Paul & Son the credit must be given for showing in grand form two or three varieties generally considered difficult growers. The varieties shown by Mr. Turner were Mdlle. Thérèse Levet, Duke of Edinburgh, Charles Lawson, Maréchal Vaillant, La France, Juno, Victor Verdier, Anna Alexieff, and Celine Forestier; while Messrs. Paul & Son had Dr. Andry, Victor Verdier, Celine Forestier, Anna Alexieff, Princess Mary of Cambridge, Horace Vernet, Madame Victor Verdier, John Hopper, and Madame de St. Joseph. Only two collections were staged in the amateurs' class for six, in which Mr. J. W. Moorman, gr. to the Misses Christy, Coombe Bank, Kingston, came in 1st, with medium-sized but admirably cultivated examples of Madame Alice Dureau, Annie Laxton, Madame Villermoz, Marquise de Castellane, Paul Verdier, and Victor Verdier. The 2d prize went to Mr. W. Phillips, gr. to A. Giles Pullen, Esq., Kingsbury, Ware. In the class for twenty Roses in 9-inch pots, and not less than ten varieties, Mr. Turner was the only exhibitor, and to him the 1st prize was most worthily awarded; his young, fresh, and vigorous plants carrying some splendid blooms, most noticeable amongst which were Edward Morren, Miss Hassard, La France, Madame Lacharme, Mdlle. Thérèse Levet, and Royal Standard, &c. To the miscellaneous class Messrs. William Paul & Son, Waltham Cross, contributed a small group of Roses in pots, the most conspicuous examples amongst which were of Star of Waltham, Princess Beatrice, Sir R. Wallace, Mons. Noman, Duke of Edinburgh, Madame Victor Verdier, Madame Clemence Joigneaux, Paul Néron, Marquise de Castellane, &c. The same firm also sent half-a-dozen boxes of cut blooms, and a similar quantity came from Messrs. Paul & Son, Cheshunt. The popular favourite, Maréchal Niel, was well represented in an excellent boxful, contributed by Mr. Henry Hooper, of Bath; in half-a-dozen full boxes, shown by Mr. John Mayo, Corn Market Street, Oxford; Mr. W. Corp, 24, High Street, Oxford, also sent two boxfuls of cut blooms of varieties in general cultivation. Altogether the Rose was well to the front on this occasion.

Show PELARGONIUMS were not so good a feature as usual, Mr. J. Ward's fine plants being much missed. The dull weather, too, had retarded the bloom on the plants shown, which required quite another week to finish them off. Mr. James, gr. to F. Watson, Esq., Isleworth, was awarded the 1st prize in the amateurs' class for eight, and Mr. Turner in the corresponding class for nurserymen. The most brilliantly coloured varieties shown were :—Maid of Honour, Isabella, Prince Bismarck, Duchess de Morny, Madame Charles Ketelear, Zephyr, Pericles, Rob Roy, Princess of Denmark, and Statesman. The same exhibitors also occupied similar positions in the classes for eight fancy varieties, in both cases the plants being better bloomed than the large-flowered ones. Mr. James had Princess Teck, Mrs. Hart, Ellen Beck, Acme, The Shah, Roi des Fantaisies, and East Lynn, all free-flowering and brightly coloured varieties. Some of those here named were also shown by Mr. Turner, who had besides Excelsior, Countess of Derby, Juliet, Henry Baily, and Countess of Craven.

CINERARIAS, in a group of nine, were well shown by Mr. James, whose plants were very healthy, neat in form and even in size, and included a good variety of bright colours. The 1st prize was awarded. The sunless weather is responsible, too, for a poorer display than usual of herbaceous Calceolarias, which are not yet in full bloom. All the plants shown were small but fine in the size of their flowers. Mr. J. T. Slater, Laurie Park, Sydenham, was 1st, and Mr. James 2d.

HERBACEOUS and ALPINE PLANTS were well represented by two dozen examples from Mr. R. Parker, Tooting, which included neat, well-flowered plants of Scilla campanulata and its varieties alba and rosea, S. autumn, S. cernua rubra and rosea; Helleborus lividus, a singular rather than a beautiful plant; Cheiranthus Dillenii, Saxifraga Stansfieldii, Centaurea montana alba, Symphytum caucasicum, and the lovely little blue Lithospermum prostratum.

FINE-FOLIAGED PLANTS.—Seldom has a finer lot of fine-leaved plants been seen here than those shown on this occasion. In the open class for twelve, Mr. G. Legg came in 1st with a magnificent group, which included a very handsome young plant of Stevensonia grandifolia, Alocasia Lowii, not large, but very good; Davallia Mooreana, about 5 feet through, and very fresh; Crotons Weismanni, Johannis, angustifolius, and variegatus, all of large size, well furnished and brightly coloured; Dracæna Shepherdii, 7 to 8 feet high, with grand leaves down to the base; Alocasia macrorhiza variegata, with fine bold leaves and well-marked variegation; Geonoma pumila, a tall and handsome plant, &c. The 2d prize went to Mr. E. Tudgey, who had a capital lot, including Pritchardia pacifica, Dracæna Shepherdii, Encephalartos Vroomii, Croton interruptus, a very fine specimen, from 4 to 5 feet high, Cocos Weddelliana and plumosa, also remarkably good; Pandanus Veitchii, and Dasylirion acrotrichum, &c. Mr. John H. Ley contributed, amongst others, fine specimens of Cycas revoluta, Phœnicophorium sechellarum, Cocos Weddelliana, Yucca filamentosa variegata, a fine plant in excellent health, Dion edule, &c.; and Mr. J. C. and in a group from Mr. John Wills, Melbourne Nursery, Anerley, were neatly grown though not large examples of Curmeria picturata, Anthurium crystallinum, Pritchardia Martiana, Artocarpus Cannoni, and Dieffenbachia nobilis, and a magnificent example of Yucca filamentosa variegata. In the amateurs' class for eight Mr. G. Legg was again to the front with a grand lot of plants, including Phyllotænium Lindeni, Cycas revoluta, with a magnificent crown of new fronds; Dracæna Shepherdii, Croton volutus, the largest and best plant that I have seen; Croton Weismanni, very good indeed; Dieffenbachia nobilis, &c. Next came Mr. James Ford, gr. to J. G. Megaw, Esq., Windermere House, Church Road, Upper Norwood, whose most striking plant was a large one of Caladium nymphæfolium. Mr. Legg also came in 1st in nine distinct Dracænas, Messrs. William Rollisson & Son being 2d. The specimens from the first-named grower stood from 3 to 5 feet in height, well furnished down to the pots, and the foliage splendidly developed. The sorts shown were D. Denisoni, Weismanni, Youngii, Hendersoni, Baptisti, Imperor, Lord Wolseley, and amabilis. Messrs. Rollisson's plants were all handsome young specimens, the sorts represented being D. metallica, Hendersoni, Nitzschneri, terminalis alba, recurva, Imperator, and Sydneyi. Mr. J. H. Ley, Croydon, also competed. In the contest for the best group of the class for nine distinct Crotons lay between Mr. J. Wills and Mr. J. H. Ley, the former winning easily with an even-sized, well-developed, and highly coloured lot of plants, consisting of C. variegatus, majesticus, aucubæfolius, multicolor, ovalifolius, undulatus, Weismanni, Youngii, and Joseffoliana. Mr. Ley's plants were unevenly matched, but individually of good quality. For six distinct Palms Mr. J. H. Ley came in first, closely followed by Mr. G. Legg. The group from the first-named consisted of large well-furnished and handsome specimens of Chamærops tomentosa, Seaforthia elegans, Corypha australis, Astrocaryum nigricans, Euterpe edulis, and Pritchardia pacifica. Mr. Legg's specimens were remarkable for their fine size, standing from 8 to 10 feet high, and growing only in 12-inch pots—a striking instance of good cultivation. The subjects shown were Kentia Fosteriana, Cocos Weddelliana, Verschaffeltia splendida, Dæmonorops palembanicus, Martinezia granatensis, and Dæmonorops periacanthus. Mr. B. S. Williams also staged a group of large plants. Stove and greenhouse Ferns were well shown by Mr. B. S. Williams, Mr. Tudgey, and Mr. Bristow. The first-named had large and handsome specimens of Davallia Mooreana, Goniophlebium subauriculatum—one of the best of basket Ferns, and seldom seen on the exhibition stage; Dicksonia antarctica, Alsophila excelsa, Cyathea medullaris, Asplenium Nidus, Leichtenia rupestris, &c. Mr. Tudgey's group contained greater novelty, and though the plants were not of the largest they were exceedingly good. The group included Onychium japonicum lucidum, Adiantum farleyense, A. cuneatum, and A. tenerum, Gymnogramma decomposita, Davallia Mooreana, and Gleichenia Mendelii, all nicely done and very fresh. Some half-dozen growers competed for the prizes offered for half-a-dozen plants suitable for the dinner-table, and the 1st was awarded to Mr. J. Lambert, gr. to H. W. Segelke, Esq., Herne Hill, Dulwich, the 2d going to Mr. John Wills. The former had elegant young plants, from 2 to 3 feet high, of Cocos Weddelliana, Geonoma gracilis, Dæmonorops palembanicus, Dracæna gracilis, Croton argustifolius, and Pandanus javanicus variegatus. Mr. Wills had smaller specimens, and a better choice of subjects, *i. e.*, Dracæna Percyi, Chamædorea formosa, Dracæna Victoria, Aralia elegantissima, Croton D'Israeli, and Stadmannia sorbifolia.

NEW PLANTS were exhibited in fair numbers, but we need only mention the awards made in this department. First-class Certificates were awarded to Mr. B. S. Williams for Maranta Massangeana, Bertolonia Houtteana, Panax laciniatus, Aralia gracillima, Lomaria discolor, and Phyllanthus roseus pictus; to Mr. Turner, Slough, for Azalea Jean Vervaene; to Messrs. Paul & Son, Cheshunt, for H. P. Rose Emily Laxton; and to Mr. H. Hooper, Bath, for Pansy New Guinea. Certificates of the 2d class were also voted to Mr. Hooper for Pansy Robert Parker, and to Mr. E. B. Shenton, 17, Mansfield Road, N.W., for alpine Auricula Esther Hime.

The miscellaneous class—always a large one here—included a magnificent group of new Dracænas from Mr. John Wills; a large and effective collection of stove and greenhouse plants from Messrs. John Laing & Co., Stanstead Park; and smaller miscellaneous collections of the same subjects from Messrs. Wm. Rollisson and Sons and Mr. J. H. Ley; a good group of gold and silver Tricolor Pelargoniums from Mr. H. Coppin, Shirley, Croydon; a fine group of alpine Auriculas from Mr. Turner, a large collection of Pansies from Mr. H. Hooper, Bath; a very fine assortment of skeleton leaves, seed vessels, and Fern fronds, &c., from Mrs. Hodgkins, 35, Hyde Grove, Manchester; a very large group of flowering plants from Messrs. F. & A. Smith, of Dulwich; fruits of the Loquat from Mr. Colbourne, gr. to B. Blyth, Esq., Woolhampton; Fern cases from Messrs. Dick Radclyffe & Co.; bouquets from Mr. S. Moyes, 22, Stockbridge Terrace, Belgravia; and a small group of Auriculas from Mr. J. T. Salter, &c.

Royal Horticultural : *May* 15.—Lord Alfred S. Churchill, V.P., took the chair at the afternoon meeting, at which there were present nine Fellows of the Society, eight of whom were members of the Council; and the only business transacted was the election of thirty-three Fellows and twenty-eight guinea members.

SCIENTIFIC COMMITTEE,—Dr. Maxwell T. Masters, F.R.S., in the chair.

Melastoma Malabathricum.—From Mr. Lee, of Clevedon, came a box of Violets, with a request to know why they are more strongly scented now than at the ordinary season, and why so many of them are imperfect as to the number of the petals. The enhanced perfume was considered to be due to climatal causes, and to have relation to the fertilisation of the flowers by insects. It is well known that many Violets have two sorts of flowers, one conspicuous and fragrant, to attract insects and secure cross-fertilisation, the other apetalous, inconspicuous, and which do not require the aid of insects to set their seeds. Mr. Lee's malformed specimens seemed to be intermediate between the two.

Diseased Medlar Leaves.—These were also sent by Mr. Lee, and were referred to Dr. M. C. Cooke for examination and report.

Phyllocarya.—Mr. G. F. Wilson showed root of Vine affected with Phylloxera.

Puga from Bran.—Mr. A. Murray showed a pupa, probably of a species of Silpha.

Erysiphe graminis.—Dr. M. C. Cooke made the following communication, relating to a paragraph which appeared in our columns :—

"A paragraph in last week's *Gardeners' Chronicle* on this subject may justify the allusion to an agricultural question at a horticultural meeting. I have read the communication made by Mr. Harkness to the Microscopical Society of San Francisco, and that gentleman has also sent me specimens of the Erysiphe, which in that communication he strongly doubts being the true Erysiphe graminis. This fungus I have compared carefully with European specimens, and particularly with specimens derived from Dr. Leveillé himself, and others on Wheat. My impression is that there is no feature whatever to distinguish it from the true Erysiphe graminis. The one interesting point in Dr. Harkness' communication is that he gives details of pycnidia which he has found associated with this Erysiphe. On turning to Tulasne's *Carpologia* I find that he was unable to find pycnidia, and Fückel afterwards, in his *Symbolæ*, states the same fact with regard to himself. Although I find no pycnidia upon the small specimen received from Dr. Harkness, that by no means invalidates his assertion, and the first discovery of the pycnidia is an honour to which Dr. Harkness is entitled; if upon subsequent repetition of his examinations he meets with similar success, their presence in this species may be regarded as established."

Onion Smut.—Dr. M. C. Cooke also made the following observations :—

"With reference to this fungus, upon which I made some observations at a recent meeting of this committee, it is incumbent upon me to state that Dr. Farlow has

promptly and courteously replied to my letter to him thereon, sending me a fragment of a diseased plant. I have examined and compared it carefully with Urocystis colchici, and arrived at the conclusion that Dr. Farlow had some justification for his opinion that it was a distinct species. The spore masses are rather smaller, and darker in colour. When the spores of the two species are mixed together upon a glass slide and placed under the microscope, the two kinds of spores can be distinguished with facility, so that there is really an appreciable difference between them. Notwithstanding this, I am of opinion that the differences are only such as might be caused by growth upon another species of plant, local influences, and external conditions generally. Whilst Dr. Farlow would regard it, somewhat reservedly, as a distinct species under the name of Urocystis cepulæ, I should term it Urocystis colchici var. cepulæ. It raises the old question of limitation of species, and upon this it is unnecessary to enter. Let each man be persuaded in his own mind.'

New Variety of Mushroom.—Mr. Worthington Smith exhibited a drawing, with dissections, of a new and apparently very distinct variety of the common Mushroom. The original plants were grown on shelves by Mr. John Walker, of Thame, from ordinary spawn. Mr. Smith stated that the plants in question differed in several important points from the ordinary Mushroom, the most striking being the presence of bold, white, clothy flakes on the top, after the manner of Agaricus muscarius. These white patches were free, and not the remains of a white clothy veil, which completely enveloped the young plants in infancy, after the manner of the members of the subgenus Amanita, to which Agaricus muscarius belongs. This character is quite foreign to Psalliota, the subgenus to which the Mushroom belongs. Mr. Smith expressed his belief that the new plants were hybrids between the Mushroom and some other Agaric at present unknown. In the new edition of the *Epicrisis*, Professor Fries has established a new sub-genus of Agarics, close to the common Mushroom, and named Chitonia. This sub-genus is distinguished by the presence of a universal veil, distinct from the cuticle of the pileus, analogous with Amanita, and agreeing well in this respect with the new variety of Mushroom in question. The flesh of the Thame Mushroom changes to faint rose or yellowish sienna (at length darker) on being cut or broken. The edges of the crowded gills are at first white, at length brownish purple, rarely black; the spores few, the same size as, but paler in colour than, those of the ordinary Mushroom. The whole plant is very fleshy, somewhat dry, and powerful odour; stem quite hollow, with a distinct pith. It is a Mushroom of the first class for the table.

Grafted Cherry Tree.—The same gentleman showed a drawing of a singular grafted Cherry tree, now growing near Harpenden. The point of attachment between the stock and scion is 7 feet from the ground line. The smooth stock (wild Cherry) is upwards of 3 feet in circumference, whilst the gnarled and rugged scion is more than 6 feet in circumference. The sudden disparity in size of the stem gives the tree an extraordinary appearance.

Monstrous Primroses.—Dr. Masters showed specimens of malformed Primroses, which had been referred to him at a previous meeting, as well as others which he had since obtained from Miss Dowson, of Beccles, and other correspondents. The changes in these were numerous and interesting, the most common being consisting in the change of stamens into carpels, the anthers bearing ovules instead of pollen. In some instances the stamens were lobed or divided, some of the lobes bearing ovules, while others were rolled round into secondary carpels, with distinct styles and stigmas. Dr. Masters also showed remarks on these flowers, as illustrating the peculiarities of the structure of Primulaceæ, due, as he considered, to the processes of chorisis or enation, by which the petals become doubled or many times repeated by splitting, the stamens also split off from the petals, and the segments detached in like manner from the carpels; and exhibited drawings of the flowers made by Mr. Worthington Smith.—Rev. G. Henslow also showed drawings made from similar flowers, and made some comments on the singular changes presented. A fuller account of these remarkable flowers will probably be published on another occasion.

Monstrous Calochortus.—Dr. Masters showed a drawing of the malformed Calochortus shown at the last meeting by Mr. F. W. Burbidge. The chief peculiarity consisted in the formation of a tuft of narrow petal-like lobes at the junction of the filament with the anther.

Hermaphrodite Flowers of Cupressus Lawsoniana.—Dr. Masters exhibited drawings of an androgynous cone of Cupressus Lawsoniana, specimens of which had been sent for examination by Mr. Syme, of the Elvaston Nursery. In the same spike the lower scales bore anthers, while the upper bore ovules. One of these scales bore on its outer and lower edge two anther cells, and on the centre of its inner surface a solitary stalked erect ovule.

Floral Committee.—W. B. Kellock, Esq., in the chair. With a large exhibition at the Crystal Palace on the previous Saturday, and another one at Regent's Park on Wednesday, it was not to be expected that much would be shown here to-day, and such proved to be the case. The principal contributions consisted of a small group of pot Roses from Messrs. James Veitch & Sons, a fine display of half specimen Azaleas from Mr. Charles Turner, and a nice collection of stove and greenhouse plants from Messrs. Cutbush & Sons, Highgate. The Roses shown by Messrs. Veitch were all half specimens, well-grown and nicely flowered, the sorts best represented being Baronne de Rothschild, La France, Madame Lacharme, Alfred Colomb, Captain Christy, Alba rosea, John Hopper, Duke of Edinburgh, Celine Forestier, Madame Alfred de Rougemont, &c. A silver medal was awarded for the group. The same firm also sent a fine lot of plants of the new creamy white Hydrangea, Thomas Hogg, which appears to be a strong grower, and certain to throw large trusses of flowers. Also four new varieties of Azalea mollis, one of which, named Couleur de Paille, a free flowering plant, with straw-coloured blossoms, to which a First-class Certificate was awarded. Aurantiacum and Flambeau have crimson-red blossoms, and Comte de Gomer pale rose with a yellow base. Dracæna Robinsoniana, also shown by Messrs. Veitch, is an upright growing plant, with green and crimson and yellow striated leaves. This was also awarded a First-class Certificate. To Mr. Turner's group was awarded, for the fine growth of Azaleas above alluded to, and which contained amongst others beatifully-flowered and finely-coloured examples of Souvenir du Prince Albert, Roi Leopold, Charles de Beck, Duc de Nassau, Reine des Pays-bas, Mrs. Turner, and the beautifully-coloured new Jean Verveene, &c. To Messrs. Cutbush & Son a silver medal was voted for the group of stove and greenhouse flowering and fine-foliaged plants, containing some of the old favourite greenhouse plants now rarely seen. Among them were nicely-flowered plants of the pretty Australian Leschenaultia biloba, Erica regerminans, Boronia serrulata, Erica mirabilis, Correa cardinalis, Erica persoluta alba, a dense flowering species, with small white blossoms; Chorozema Henchmanni, &c. Sir Trevor Lawrence, Bart, M.P. (Mr. Spyers grower), received a First-class Certificate for Odontioglossum xanthoglossum grandiflorum, a very large-flowered variety, as its name implies; a Cultural Commendation for a plant, with one very fine spike, of Odontoglossum triumphans superbum; and Botanical Commendations for Houlletia Lowiana, a singular-shaped, lemon-yellow coloured species, described at p. 484, vol. ii., 1874, and first found at Ocaña, in South America, in 1869, by the late Albert Bruchmüller, who sent the stock to Mr. Low; and Oncidium metallicum, "a surprising novelty," described by Professor Reichenbach, at p. 394, vol v., 1876. The same gentleman also showed a well marked variety of Odontoglossum Andersonianum; a remarkably vigorous and healthy plant, with three spikes of splendidly coloured flowers, of Cattleya Schilleriana, a rare plant, and one that is generally considered very difficult to grow; and a beautiful specimen of Cœlogyne cristosum roseum, with very delicately coloured flowers.

Messrs. William Paul & Son, Paul's Nursery, Waltham Cross, sent half-a-dozen boxes of cut blooms of Roses, containing many fine flowers, to which a bronze medal was awarded. H. J. Elwes, Esq., Preston, Grantham, was awarded First-class Certificate for Cypripedium candidum, with a white slipper-shaped lip, yellow staminode, and bronze coloured sepals and petals, with a decided odour of hay half made; and a vote of thanks for specimens of Tulipa undulatifolia, dark scarlet; Calceolaria crenatiflora, bright primrose-yellow; and Erinosma alpina, white, and Cypripedium occidentale. Mr. Ollerhead, gr. to Sir H. W. Peek, M.P., sent a cut branch with numerous flowers of Aristolochia ornithocephala; and J. D. Llewelyn, Esq., Penllegare, Swansea, sent cut flowers of a Sikkim Rhododendron from the open air, to Mr. Cannell, The Nursery, Swanley, a vote of thanks was accorded for a dozen bunches of cut flowers of Pelargonium New Life. Mr. Charles Noble, Bagshot, was awarded a silver medal for a small group of new Clematises, which included the following varieties:—Lindine, double, rosy purple; Mdlle. Torriani, a silky soft rosy lilac coloured flower, very distinct; Margaret Dunbar, lavender-blue, and fine in size; Xerxes, large deep bluish purple, and the President, a large plum-purple flower, with a pale bar. Mr. Wills received a bronze medal for a small group of Odontoglossums in variety, and a similar award was made to Mr. J. Mayo, Corn Market Street, Oxford, for two boxes of beautiful cut blooms of the Maréchal Niel Rose. From Mr. R. Dean, Ranelagh Road, Ealing, came a small group of plants, which included several examples of a very fine strain of Mimulus, cut flowers of Saxifraga granulata flore-pleno, the very dwarf and pretty white Veronica repens, the distinct Viola pedata, Sempervivum Boissieri, a bronzy leaved distinct form; and Polyanthus Vulcan, a very dark velvety black flower with bright golden centre.

Fruit Committee.—H. Webb, Esq., in the chair. The only subjects that came under the notice of the committee to-day were a brace of Tender and True Cucumbers, sent by the raiser, Mr. Jas. Douglas, gr. to F. Whitbura, Esq., to show that even on the same plant, and indeed the same branch, they will vary in the length of the neck; an excellent dish of Grosse Mignonne Peaches, from Mr. Samuel Jenks, gr. to D. Larnack, Esq., Brambletye, East Grinstead; specimens of Ward's Longford Green Melons, not in condition, and Ward's Longford Hybrid, in the style of Scarlet Gem, but no improvement on it, from Mr. Ward, gr. to the Earl of Rosebery, Longford Castle; a so-called white American Cucumber, more resembling a Vegetable Marrow, from Mr. Booth, gr. to J. Wright, Esq., Osmaston Manor, Derby; and several seedling Cucumbers of no particular merit from the same gentleman. Votes of thanks were accorded to all.

Royal Botanic: *May* 16.—The first summer exhibition of this Society was held in the large marquee in the Society's gardens on Wednesday last, and it has seldom been our lot to attend a more successful one. The show tent, with its grass-green covered slopes and undulating formation—so familiar to most of our readers—was filled to overflowing with an admirable selection of the usual subjects that come in for exhibition at this season. If the exhibition be, comparatively speaking, a poor one, one, it looks well here. How much better then, we must leave our readers to imagine was the display to-day, which was really admirable from whatever point it was looked at; and Mr. Coomber, the garden superintendent, must be congratulated on the happy results of his disposition of the various competing groups and miscellaneous collections sent in. We can only regret that the exhibition was not seen by so large a number of visitors as it deserved to be, in consequence of the very unfavourable nature of the weather—most unpropitious for a flower show, drenching showers of rain falling at frequent intervals throughout the day. As was to be expected, a number of the plants shown to-day had also appeared in many of the competitions held at the Crystal Palace on Saturday last, but the cool, sunless weather had been favourable to the preservation of their flowers, and none of them looked any the worse for their visit to Sydenham.

Stove and Greenhouse Flowering Plants were admirably shown, especially in the amateurs' class for ten, in which Mr. Chapman, gr. to J. Spode, Esq., Hawkesyard Park, Rugeley, came in 1st; Mr. B. Peed, gr. to Mrs. Norwood, Lower Norwood, 2d; and Mr. E. Tudgey, gr. to T. F. Greswolde Williams, Esq., Henwick Grange, Worcester, 3d. The plants staged were with few exceptions the same as those shown at the Crystal Palace, and therefore need not be further alluded to. That the class was, however, a good one may be gathered from the fact that an extra prize was awarded to Mr. G. Wheeler, gr. to Sir F. Goldsmid, Bart., St. John's Lodge, who put up a nice lot of plants, including a well-flowered specimen of the orange-coloured Aotis gracillimus, a plant seldom seen at flower shows; and good examples of Adenandra fragrans, Darwinia tulipifera, and Eriostemon linearifolium. The nurserymen's class for twelve included collections from Messrs. T. Jackson & Son, Kingston; Mr. B. S. Williams, Holloway; and Mr. J. Peed, Roupell Park Nurseries, Norwood; and the prizes went in the order named. The most remarkable specimen in Messrs. Jackson's group were of Darwinia tulipifera, Rhododendron formosissimum, a very good white; Ericas depressa and tricolor Wilsoni, Aphelexis macrantha purpurea, and Rhododendron Princess Alice, also a beautiful white variety; Anthurium Scherzerianum, &c. Mr Williams had fine examples of Ixora Williamsii, Clerodendron Balfourianum, Erica ventricosa magnifica, Azalea Baron de Vreive, &c. Mr. E. Tudgey had the finest half dozen amongst amateurs, which comprised very well flowered and fine specimen of Erica elegans, a remarkably good Darwinia tulipifera, Azalea Criterion, Erica ventricosa magnifica, very good; Anthurium Scherzerianum, and Aphelexis macrantha rosea, the last-named not being quite so good. Mr. Chapman took 2d honours, with a very fine lot selected from his group of twelve shown on Saturday. Mr. G. Legg, gr. to S. A. Ralli, Esq., Cleveland House, Clapham Park, was 3d, with beautiful young specimens of Darwinia tulipifera, Erica Cavendishiana, Epacris Eclipse, Allamanda grandiflora, Clerodendron Balfourianum, &c.; and an extra prize was awarded to Mr. James Child, gr. to Mrs. Torr, Garbrand Hall, Ewell, the most showy of his plants being Bougainvillea glabra, Azalea concinna, and Darwinia tulipifera. In the corresponding class for nurserymen, not a particularly good one, Messrs. T. Jackson & Son were again placed 1st, and Mr. B. S. Williams 2d.

Roses have seldom, if ever, been shown better by either Mr. Turner or Messrs. Paul & Son, Cheshunt, than they were by these renowned growers to-day.

Mr. Turner especially was in grand form, winning the 1st prizes in each of the three classes devoted to this ever-popular flower with specimens—as regards some at all events—the like of which has never been seen before. The Cheshunt plants were but little indeed behind those which gained the 1st prizes, being in all respects marvels of cultivation — of which any grower need be proud. In the open class for six Mr. Turner was 1st with a magnificent lot, the largest plant of all being one of Paul Perras, from 6 to 7 feet high, and about 5 feet through, with splendid foliage and a superb lot of flowers. Next in importance to this was a glorious bush of Edward Morren, about 4 feet high and 6 feet through, and most profusely flowered—and such flowers—the finest Edward Morren we have yet seen. The other specimens, also remarkably good, were of Juno, Duke of Edinburgh, Celine Forestier, and Paul Verdier. Messrs. Paul & Son's group, which came in 2d, consisted of large and exceedingly well-flowered bushes of Edward Morren, Victor Verdier, Docteur Andry, Celine Forestier, John Hopper, and Charles Lawson. It is hardly to be expected that amateurs should make a good fight with the nurserymen; nevertheless, the third prize in this class was taken by an amateur—Mr. Moorman, gr. to the Misses Christy, Coombe Bank, Kingston, who put up a capital lot of well-bloomed plants. Next year we hope to see a class for six Roses confined to amateurs. In the nurserymen's class for nine, Mr. Turner's 1st prize group consisted of large and very fresh plants, clothed with beautiful foliage and thoroughly well flowered. The blossoms on a plant of Edward Morren, were exceedingly fine, as also were those on a grand bush of Miss Ingram. Juno, Victor Verdier, Maréchal Vaillant, Charles Lawson, Mdlle. J. Levet, Mdme. Victor Verdier, and La France, were also very good. Messrs. Paul & Son were a good 2d, with large and grandly flowered specimens of Elie Morel, Horace Vernet, Marquise de Castellane, Baron Gonella Hugier, President, Marie Baumann, Dupuy Jamin, and La France. In the class for twenty in 8-inch pots the same order of merit was observed, both growers showing remarkably well.

AZALEAS were in excellent form, and by their size and brilliancy of colour added much to the general effect. The 1st prize for nine went to Mr. Ratty, gr. to R. Thornton, Esq., The Hoo, Sydenham, who showed the same grand plants as he had at the Palace on Saturday, and they were still in very fine order. Mr. James Child was a good 2d with large and particularly well-flowered clean and fresh specimens; and Mr. G. Wheeler was 3d. In the corresponding class for nurserymen, Mr. Charles Turner was 1st, showing a splendidly flowered group of dwarf standards with large-sized heads. The specimens of Duc de Nassau and Comtesse de Flandre were densely covered with magnificent blossoms. For a dozen varieties in 12-inch pots Mr. Turner also came in 1st, with a beautiful lot of standards and pyramids of medium size, and all finely bloomed. Grandis, Charmer, Mons. Thibaut, Roi de Hollond, and Comtesse de Flandre, were very fine indeed among the coloured ones, and Apollo the finest among whites. Mr. Ratty was a good 2d. For six in 12-inch pots Mr. Ratty came in 1st again, with a very good group of small pyramids, thoroughly well bloomed, especially the specimens of Roi des Doubles, and Duchesse Adelaide de Nassau; and Mr. G. Wheeler was 2d, with medium-sized and beautifully flowered examples of Elegantissima, Model, magnifica, perfecta elegans, Leopold I., and Criterion; 3d, Mr. James Child.

The HEATHS were not quite so fine as we have seen them here. Only one group of twelve was shown in the nurseymen's class, and to that, which came from Messrs. T. Jackson & Son, and consisted of medium sized, nicely-flowered plants of well-known sorts, the 1st prize was awarded. Only small but nicely-flowered plants were staged in the open class for six, in which Mr. G. Legg came in 1st, Mr. B. Peed 2d, and Mr. G. Wheeler, gr. For seven in a class confined to amateurs, Mr. G. Legg also came in 1st, with a fresh, clean, and neatly-grown set of plants, of medium size, mostly very well flowered; E. Victoria, Lindleyana, depressa, insignis, Candolleana, and Cavendishiana, Mr. B. Peed being a good 2d, and Mr. E. Tudgey, 3d.

FERNS were fairly represented as to numbers, as well as in quality. The 1st prize for six in the competition confined to amateurs was won by Mr. E. Tudgey, who had large plants of Alsophila australis, Dicksonia antarctica, and Cyathea dealbata, and smaller but very good ones of Davallia Mooreana, Adiantum Farleyense, and Gleichenia flabellata. Mr. G. Wheeler was 2d. The nurserymen's class for six brought Mr. B. S. Williams to the front with large and very fresh plants of Davallia Mooreana, Gleichenia rupestris and speluncæ, Cibotium Schiedei, Cyathea medullaris, Dicksonia antarctica; 2d in the same class was Mr. J. H. Ley, with a very unevenly matched set, consisting of tall specimens of Alsophila Van Geertii and Dicksonia antarctica, a fine fresh plant of Neottopteris australasica, a good Davallia Mooreana, a half specimen of Gleichenia dichotoma, and a small plant of Platycerium alcicorne.

FINE-FOLIAGED PLANTS were admirably shown, and provided abundant material for creating strong contrasts with the flowering subjects. Mr. G. Legg, gr. to S. A. Ralli, Esq., Clapham Park, came in an easy 1st amongst amateurs for six with a remarkably fine group, which consisted of a tall and elegant Geonoma pumila, a grand Dracæna Shepherdii, splendid bushes of Crotons Weismanni and variegatus, and a noble young Stevensonia grandifolia, &c.; 2d, Mr. E. Tudgey, with a good selection from his Crystal Palace group; 3d, Mr. F. Hill, gr. to H. Taylor, Esq., 20, Avenue Road, Regent's Park, with a noble plant of the distinct Cycas Armstrongii, and large, well-furnished examples of Caladium Brongniartii, Maranta Veitchii, Dasylirion acrotrichum, Croton pictus, &c. In the corresponding class for nurserymen, Mr. B. S. Williams was well 1st amongst nurserymen with a large and very fine Cycas circinalis, a remarkably good Chæmarops humilis, large, well-furnished and brightly coloured plants of Crotons Weismanni and Youngii, and handsome specimens of Pandanus Veitchii and Dasylirion acrotrichum; and Mr. John H. Ley, who had large and finely coloured Crotons variegatus, and angustifolius, a very good Alocasia Lowii, Cocos Weddelliana, &c., was 2d. In the open class for a dozen Agaves, Mr. Ratty, and Mr. J. H. Ley came in 1st with an interesting assortment, most noticeable amongst which were Cycas revoluta and circinalis, Dion edule, Yucca filamentosa variegata, Zamias Lindeni and duplicata, Agave filifera, &c. Mr. B. S. Williams came in 2d with a capital lot, including such subjects as Agave americana, filifera, and A. Sabiana, americana variegata, geminiflora filifera, aloifolia variegata, and univittata; various species of Cycas and Encephalartos, &c.

The ORCHIDS, as usual, made a very effective display on the slope usually devoted to them. Mr. Denning, gr. to Lord Londesborough, came in 1st in the amateurs' class for six, with Odontoglossum citrosmum, with three fine spikes; Cattleya superba, with four richly coloured flowers; Dendrobium Parishii, with four beautiful spikes of delicately coloured blossoms; Aerides Veitchii, with one spike; Odontoglossum Pescatorei, with five nice spikes; and Odontoglossum Roezlii, with fourteen good flowers. The 2d prize went to Mr. James Child, who had a large and splendidly flowered Oncidium ampliatum majus, Cypripedium Stonei, with four very fine flowers; a good specimen of Cattleya Mossiæ superba, Mr. H. Bowman, gr. to W. H. Michael, Esq., Cholmeley Park, Highgate, was 3d, showing nicely flowered specimens of Dendrobiums Falconeri and Wardianum, a very good Phalænopsis Luddemanniana, Cypripedium Stonei and niveum. Dr. Lyon, gr. to F. A. Philbrick, Esq., Avenue Road, Regent's Park, showed half-a-dozen, which included a large and admirably flowered specimen of Dendrobium densiflorum, and was awarded an extra prize. In the nurserymen's class, Mr. B. S. Williams was 1st with a fine fresh group, including Cypripedium barbatum, with eight-bloom spikes; Odontoglossum Pescatorei, with two spikes; Oncidium Marshallii, very good; Vanda suavis, with four beautiful spikes; a fine Dendrobium densiflorum, and a good pan of Cypripedium niveum. Messrs. Jackson & Son were a close 2d, showing finely-flowered C. Mossiæ superba, Odontoglossum citrosmum roseum, a beautifully-coloured variety; Cattleya Mossiæ superba, and Sacccolabium retusum, with six good spikes, &c. Mr. H. Heims also showed a choice miscellaneous collection of Orchids, and was awarded an extra prize.

SHOW PELARGONIUMS, in the absence of Mr. Ward's famous specimens, did not show up so well as usual, and, as regards competition, there was none, only one exhibitor appearing in each of the three classes. Mr. James, gr. to W. F. Watson, Esq., Isleworth, had the 1st prize for nine, his plants being from 2 to 3 feet across, very neatly grown, and full of flowers, not yet, however, at their best. Mr. James Child also awarded the 1st prize in the amateurs' class for six with a similar lot. The half-dozen which gained a 1st prize for Mr. Turner in the nurserymen's class were a little more forward in bloom, but not so good as specimens as Mr. James' plants, consisting of Honour, Protector, Scottish Chieftain, Prince Bismarck, and Claribel, were the varieties staged, and they are all good in form and colour. Mr. James also secured the highest award in the class for nine Calceolarias, with very nice plants about 15 inches over, with plenty of fine-sized and brightly-coloured flowers. Mr. H. Coppin, The Rose Nursery, Shirley, Croydon, was 2d. Old-fashioned hardy herbaceous plants, *i.e.*, plants that were introduced previous to the commencement of the present century, were represented by a solitary half-dozen shown by Mr. Roberts, gr. to W. Terry, Esq., Peterborough House, Fulham, to which the 1st prize was awarded. The plants shown were Scilla campanulata and its white variety, Aubrietia deltoidea, Narcissus poeticus, and Iris germanica.

NEW PLANTS were not shown in such great numbers as we have seen them at previous summer exhibitions here. Botanical Certificates of Merit were awarded to Messrs. Low & Co., Clapton, for Dendrobium suavissimum, a very fine new species in the style of D. Cambridgeanum, the flowers being of a bright orange colour, and the fringed lip blotched with dark crimson-maroon. To Mr. B. S. Williams, for Lomaria discolor var. pinnatifida, Dracæna terminalis alba, Aralia filicifolia, Adiantum Williamsii, Microlepia anthriscifolia, and Croton Andreanus, the veins of whose broad oblong leaves are picked out with orange-pink. To Messrs. Veitch & Sons for Anthurium Brownii; to Messrs. Bell & Sons, nurserymen, Norwich, for Adiantum Capillus-Veneris var. corymbiferum; to Messrs. E. G. Henderson & Son, for Blandfordia flammea var. elegans, whose large flowers are of a reddish bronze colour margined with pale yellow; and to Messrs. William Rollisson & Son for Azalea indica Rollissoni, a very dwarf and free flowering "hardy Japanese plant," the flowers of which are double, and of a soft rosy pink colour. Floral Certificates were awarded to Messrs. George Jackman & Son, for Clematis Lady Egmont, a fine eight-sepalled flower, white, shaded with mauve, in colour; and for Clematis Florence, also a large and perfect eight-sepalled flower, of a bright satiny mauve colour, margined with a lighter shade. Belonging to the C. lanuginosa type, and are free and vigorous growers. To Mr. Noble, Bagshot, for Clematis Xerxes, C. Margaret Dunbar, and C. Mdlle. Torriani, and to Messrs. E. G. Henderson & Son, for Mimulus pardina flore-pleno, a beautiful double flower, heavily blotched with crimson. A striking new Petunia, named Mount Beauty, was shown by Mr. Kingsbury, Bevois Valley Nursery, Southampton. The flowers are about 3 inches across, and have a wide, open, Gloxinia-like throat, which is white, and heavily pencilled with rosy purple, the prevailing colour of that part of the flower which is outside the throat. It is evidently a strong-growing and free-flowering variety, and certainly very distinct.

The MISCELLANEOUS CLASS was, as usual, a very extensive and important one, many subjects being shown which the schedule does not otherwise provide for. The four half-circular sloping banks which flank the centre of the tent were filled with a fine display of plants contributed by Messrs. James Veitch & Sons, Mr. B. S. Williams, Messrs. John Laing & Co., and Mr. J. H. Ley. The first-named firm filled two of these slopes, the first and the most effective one being composed of dwarf forced Rhododendrons and Ghent Azaleas, the brilliant colour of which was admirably set off by the dark and light coloured foliage of various Japanese Maples. The second slope occupied by the Chelsea firm was filled with a similar group of half-specimen Roses to that shown at South Kensington on the previous day; and being margined with Japanese Acers had a very showy and cheerful effect. The group from Mr. Williams was also remarkably attractive, being composed of good specimens of various Palms, Dracænas, Cycads, and Tree Ferns at the back, with such flowering subjects as Orchids, New Zealand Flaxes, &c., in front. Amongst the Orchids the most noticeable were Cattleya Mendelii, Dendrobium crassinode Barberiana, Oncidium leuchochilum, Odontoglossum gloriosum, Oncidium sarcodes, Cypripedium acaule, &c. Other good plants also here represented were the fine Anthurium Scherzerianum, Pteris cretica, the delicate Adiantum gracillimum, several of the elegant new Aralias, Crotons, dwarf Palms, Agaves, and such-like fine-foliaged subjects. The Forest Hill collection of Messrs. John Laing & Co. consisted mainly of neat specimens of handsome-leaved plants, such as Palms, Dracænas, Aralias, Caladiums, and Bicolor Pelargoniums, &c. This collection occupied the slope conjointly with a small group of new and rare plants, shown by Mr. J. H. Ley. In other parts of the large show tent we came across a miscellaneous group of stove and greenhouse plants, from Mr. G. Wheeler, gr. to Sir Francis Goldsmid, Bart.; another group of Rhododendrons and Ghent Azaleas, and several plants of the charming Spiræa palmata, from Messrs. James Veitch & Son; an attractive collection of forced Rhododendrons and stove and greenhouse plants, from Messrs. James Cutbush & Son; a large collection of half specimen Roses in pots, and half a dozen boxes of cut blooms, from Messrs. William Paul & Son, Waltham Cross; cut blooms of Roses and Verbenas, and half a dozen good plants of gold and silver Tricolor Pelargoniums, from Mr. H. Coppin, Shirley, Croydon; several examples of the new large-flowered Musk, from Messrs. Harrison & Sons, Leicester; a small group of new Clematises, from Mr. Noble, Bagshot; an exceedingly fine collection of hardy herbaceous plants, from Mr. R. Parker, Tooting; cut blooms of Maréchal Niel Rose, from Mr. J. Mayo, Corn Market Street, Oxford; a showy collection of alpine Auriculas, and two boxes of cut flowers of brilliantly coloured Tulips, from Mr. Turner; and a nice group of Azaleas, from Messrs. Ivery & Son, Dorking, &c. To most of these subjects extra prizes were awarded.



SUNK FLOWER-BEDS.—In small Villa gardens, where any variety in the common arrangement is acceptable, a little circular flower-bed sunk in concave form to the tinest possible central pool, in-tead of being raised in the usual convex mound, has a very good effect. For the little pool (if nothing better offers) a small tub, or a piece sawn off the end of an old cask, and well sunk in the ground, answers excellently, of any size that may be liked—a couple of feet across, and about 10 inches or a foot in depth, is a convenient measurement.

With a little care the plants, and any picturesque rock-like pieces of stone, or burr, may be arranged round this, so as to give the appearance of a natural cistern; the small quantity of water is useful as being always at hand, warmed, and aired for special needs; whilst the constant emptying and refilling, easily managed by a few buckets of water, keeps the tiny pool in order.

The slightly sunk position, with its moist air and protection from drying draughts over the roots, appears to suit many plants perfectly, and gives a picturesque "bit" of natural grouping of water, rock, and varied leafage, which is always attractive in itself, and with care it is always (except in the dead of winter) bright with some flowers.

Crocuses and Hyacinths of different kinds, first with flowers and then with foliage, look well amongst the stones; Irises, double Caltha (a most effective and permanent plant), hardy Ranuncli, low Damask Rose bushes, Campanulas, Sweet Williams, and endless old favourites according to taste, succeed in date of flowering; and their leafage bending over the pool, or standing up in rich luxuriance, is always ornamental.

As the brown tint of the withering leaves of the bulbs is not an eyesore amongst the few morsels of rock, they may be allowed to pass quietly away, and any bright temporary flower planted by the side reenlivens the spot. But however it may be arranged, the little sunk bed is usually a favourite spot with visitors, and a great convenience to its amateur owners. *O.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, MAY 16, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to 32° Fahr.	Departure from Average.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for the Day.	Departure of Mean from Average of 32 Years.	Dew Point.	Degree of Humidity. Sat. = 100.	HYGROMETRICAL DEDUCTIONS from Glaisher's Tables 6th Edition. Average Direction.	Force.	WIND.	RAINFALL
May	In.	In.	°	°	°	°	°	°					In.
10	29·37	−0·376	54·5	27·8	26·7	43·1	−10·4	29·2	61	SSW. to S	1	SW;	0·00
11	29·37	−0·388	51·4	35·3	16·1	42·8	−9·6	34·4	83	S.E. to E.N.E	0·14		
12	29·39	−0·358	48·2	40·2	8·0	47·6	−3·5	45·4	92	S.S.E. to S.E.	0·14		
13	29·51	−0·217	51·4	38·2	13·2	46·8	−4·2	43·9	96	W.	0·4		
14	29·47	−0·257	53·4	37·2	16·2	44·8	−6·2	37·4	75	S.E.; S.S.E. to W.S.W	0·5		0·06
15	29·71	0·006	54·9	46·1	8·8	52·8	+1·8	50·4	87·2	W.N.W	0·7		0·07
Mean	29·58	−0·270	52·0	44·1	15·0	50·2	−1·3	45·2	84	variable	0·66		sum 0·66

May 10.—A fine day, cloudy, cool breeze.
— 11.—Overcast and dull till 2 P.M. Fine, bright, but cloudy after. Occasional rain throughout.
— 12. Cloudy and dull with occasional rain. Thunder heard at noon.
— 13.—Dull morning, very dark at times. Occasional thin rain till 3 P.M. Fine after 3 P.M.
— 14.—A dull overcast day, frequent thin rain.
— 15.—Dull with frequent thin rain till noon. Fine and bright after. Cloudless at night.
— 16.—Dull, with frequent showers of rain. Fine and bright at intervals.

LONDON; *Barometer.*—During the week ending Saturday, May 12, in the vicinity of the metropolis the reading of the barometer at the level of the sea decreased from 29·86 inches at the beginning of the week to 29·50 inches by the afternoon of the 9th, increased to 29·59 inches by the morning of the 10th, decreased to 29·53 inches by the evening of the same day, and increased to 29·61 inches by the end of the week. The mean reading for the week at sea level was 29·65 inches, being 0·45 inch below that of the preceding week, and 0·29 inch below the average.

Temperature.—The highest temperatures of the air observed by day ranged from 60° on the 8th to 54½° on the 6th; the mean value for the week was 62½°. The lowest temperatures of the air observed by night varied from 32½° on the 6th to 45¾° on the 10th; the mean value for the week was 39¾°. The mean daily range of temperature in the week was 23°, the greatest range in the day was 33½°, both on the 7th and 8th, and the least 12¾°, on the 11th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—6th, 41°.5, −10°.1; 7th, 47°.5, −4°.2; 8 h, 50°, −1°.6; 9th, 54°.3, +2°.8; 10th, 52°.3, +1°; 11th, 49°.6, −1°.6; 12th, 47°.6, −3°.5. The mean temperature of the air for the week was 49°, being 2°.5 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 137½° on the 7th, 138° on the 8th, and 130° on the 6th and 9th; on the 12th the highest reading was 81½°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 25½° on the 8th, 26° on the 7th, and 27° on the 6th; the mean for the week for readings was 34½°.

Wind.—The direction of the wind was variable, and its strength gentle. The weather during the week was fine and bright. Distant thunder was heard on Saturday afternoon, the 12th inst.

Rain fell on two days during the week; the amount collected was 0·13 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 69° at Blackheath, 68¾° at Cambridge, and 67½° at Leicester; at Sunderland 56° was the highest temperature; the mean value from all stations was 62¼°. The lowest temperatures of the air observed by night were 25½° at Cambridge, and 26° at Sheffield; at Liverpool 39¾° was the highest temperature; the mean value from all stations was 31°. The range of temperature in the week was the least at Liverpool, 20¾°, and the greatest at Cambridge, 43°; the mean range of temperature from all stations was 31¼.

The mean of the seven high day temperatures was the highest at Cambridge and Manchester, both 64½°, and the lowest at Sunderland, 51°; the general mean from all stations was 57¼°. The mean of the seven low night temperatures was the lowest at Manchester, 34½°, and the highest at Brighton, 43¼°; the mean from all stations was 39°. The mean daily range of temperature was the greatest at Manchester, 29½°, and the least at Sunderland, 10°. The mean daily range from all stations was 18°.

The mean temperature of the air for the week from all stations was 46½, being 1° above the value for the corresponding week in 1876. The highest was 49° at Blackheath and Brighton; and the lowest 42¾° at Hull.

Rain.—The amounts of rain measured during the week at the several stations varied from 1¼ inch (nearly) at Sheffield, and 1 inch at Sunderland to one-tenth of an inch at Bradford and Hull; the average fall from all stations was half an inch.

The weather during the week was generally fine and bright. *Thunder* was heard at Wrottesley on the 10th inst., and *solar halos* were seen at Bristol on the 7th, 8th, and 9th inst.

SCOTLAND: *Temperature.*—The highest temperatures of the air ranged between 58¾° at Greenock and 51½° at Leith; the mean value from all stations was 54¾°. The lowest temperatures of the air varied from 28° at Perth to 35° at Greenock; the mean value from all stations was 32°. The mean range of temperature in the week from all stations was 22¾.

The mean temperature of the air for the week from all stations was 44½, being 3¾° below the value for the corresponding week in 1876. The highest happened at Greenock, 46°, and the lowest at Edinburgh and Leith, both 43¼°.

Rain.—The fall of rain at Edinburgh was three-quarters of an inch; at Aberdeen one-tenth of an inch (only) was measured: at Perth no rain fell; the average fall over the country was a quarter of an inch.

DUBLIN.—The highest temperature of the air was 59¾°, the lowest 31¼°, the range 28¼°, the mean 49°, and the fall of rain 0·05 inch.

JAMES GLAISHER.

Answers to Correspondents.

ABNORMAL MELON: *E. M.* The condition is not unfrequent in Cucumbers, but we have never seen it to so great an extent as in your specimen. It is the result of some check to growth in the first instance.

BOOKS: *James Herburn.* If you will state exactly what your requirements are we will endeavour to enlighten you.—*E. March.* A book of designs such as you require is published at 171, Fleet Street.

DAISY: *J. S. Manton.* A malformed flower, of no value.

NAMES OF PLANTS: *H. E. T.* Ionopsidium acaule.—*C. E. F.* The Ivy is probably a chance variety, which we cannot undertake to name.—*Sir W. C. Trevelyan.* Brassia Josiuana.—*L. Hartley.* Dendrobium pulchellum and the rare Odontoglossum Ruckerianum.—*P. S., Carè.* 1, Grevillea rosmarinifolia; 2, Agrimonia agrimonioides; 3, Veronica prostrata, a form of V. Teucrium; 4, Saxifraga crassifolia.—*H. B.* Senicio petasites.—*P. Barr.* Ixia speciosa.—*W. H. D.* 1, Leucopogon Richei; 2, Dichorisandra nudata; 3, Senecio (Kleinia) articulata; 4, Asclepias curassavica; 5, Senecio mikanioides; 6, Rivina humilis.—*A. A. Ferguson.* 1, Oxalis Acetosella; 2, Adoxa moschatellina; 3, Ajuga reptans.—*S. 2,* Pelargonium ardens.

PANDANUS VEITCHII: *P. G. R.* Both Pandanus Veitchii and P. javanicus variegatus should have a thin shade when the sun is upon them, but never in cloudy weather, as the more light they receive without the unobstructed rays of the sun coming directly upon them the better they will colour, though at the time our correspondent requires them (August) the white colouring of the leaves formed first in the season is not usually so pure as whilst they are young.

PROFESSIONALS AND AMATEURS: *W. F. T.* A gentleman's gardener who is allowed to occasionally sell fruits, plants and flowers, but who does not actually earn his livelihood by this means, should certainly be classed as an amateur.

RHODODENDRONS AND LAURUSTINUS: *F. C. F.* Both may be pruned back with advantage, if done judiciously. Cut back and thin out the strongest growths with a knife, not with shears, as soon as the plants have gone out of flower and are beginning to make a new growth.

THE OLIVE: *Ex, Bath.* It would doubtless be hardy against a wall.

WILD LILY: *W. F. C.* If our correspondent will oblige us with a specimen we may be able to tell him what to do.

WIREWORMS: *A. D. C.* If your statement as to the numbers in the border is not exaggerated, it proves a sad want of care and attention on the part of some one. The only remedy that we can suggest is to insert a plentiful supply of pieces of Potatos and Carrots about an inch under the surface of the soil, and examine these every morning, burning all the worms that you catch. You must either follow this plan up closely or turn out the Vines and the border too, and start afresh.

CATALOGUES RECEIVED.—Messrs. L. Menaud & Sons (Cemetery Station, Albany, New York, U.S.A.), Catalogue of Plants, Trees, Shrubs, &c.—Messrs. E. G. Henderson & Son (Finsbury Nursery, Maida Vale, London, W.), Spring Catalogue of Soft-wooded Greenhouse and Bedding Plants.—Messrs. Ireland & Thompson (Craigleith Nursery, Comely Bank, Edinburgh), Catalogue of Stove and Greenhouse Plants, Ferns, Palms, Orchids, also List of Bedding Plants.—B. S. Williams (Victoria and Paradise Nurseries, Upper Holloway, London, N.), Illustrated Descriptive Catalogue of New Plants, &c.—P. Van der Meer (Noordwijk, Haarlem, Holland), Catalogue of Dutch Roots, &c.—Messrs. Lévêque & Sons (26, Rue du Liégat, Ivry-sur-Seine, Paris), Catalogue of New Roses.

COMMUNICATIONS RECEIVED.—L. H., Darlington (box and contents unsuitable; send other specimens).—C. L.—A. B.—F. Yates.—L. H.—H. E. W.—M. J. B.—A. D. C.—H. S.—R. D. G. C.—G. S. (answered in another page).—J. G. B.

Markets.

COVENT GARDEN, May 17.

There has been a marked improvement in our market during the week, and all classes of goods have been more readily cleared, prices remaining much the same. French importations consist of Cherries, Apricots, Asparagus, Peas and Beans, Tomatos, and young Carrots and Turnips, all of which are arriving in large quantities. Cargoes of St. Michael Pines are still reaching us, but do not arrive in as good condition as earlier in the season. *James Webber, Wholesale Apple Market.*

VEGETABLES.

	s. d.	s. d.
Artichokes, per bush.	4 0 – 8 0	Gooseberries, green,
— Eng. Globe, doz.	4 0 – 6 0	per quart ... ...
Asparagus, French,		Herbs, per bunch ...
Giant, per bunch ...	8 0 – 20 0	Horse Radish, p. bun.
— English, p. bun.	3 0 – 6 0	Leeks, per bunch ...
— Eng. natural, p. 5	0 – 10 0	Lettuces, per doz. ...
— Sprue, per bun.	1 6 – ...	Mint, green, bunch o
Beans, French (new),		Mushrooms, per pott.
per 100	1 – 1 6	Onions, per bush. ...
— French, Long-		— young, per bun.
pod, ½-bushel ...	8 0 – ...	Parsley, per bunch...
Beet, per doz. ...	1 0 – 2 0	Peas, green, per lb...
Cabbages, per doz. ...	1 0 – 2 0	— shelled, per qt.
Carrots, per bunch..	0 7 0 10	Potatos, new, per lb.
— New French, per		Radishes, per bunch
bunch	1 6 – ...	— Spanish, doz. ...
Cauliflowers, per doz.	2 0 – 6 0	— New Jersey, doz.
Celery, per bundle...	1 6 – 2 0	Rhubarb, per bundle
Chilis, per 100 ...	3 0 – ...	Salsafy, per bundle
Cucumbers, each ...	0 6 – 1 6	Shallots, per lb. ...
Endive, per doz. ...	1 0 – 2 0	Spinach, per bushel
— Batavian, p. doz.	2 0 – 3 0	Tomatos, per doz. ...
Garlic, per lb. ...	0 6 – ...	Turnips, per bundle
		— new, per bundle

Potatos.—Kent Regents, £5 to £6: Essex Regents, £4 10*s.* to £5: Kidneys, £8 per ton.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	3 0– 8 0	Peaches, per doz.	1.5 0–2.5 0
Cobs, per lb.	1 0– 1 6	Pears, per doz.	1.2 0– ..
Grapes, per lb.	4 0–7 5 0	Pine-apples, per lb.	4 0– 7 0
Lemons, per 100	4 0–10 0	Strawberries, p. oz.	0 6– 1 0
Oranges, per 100	4 0–10 0	Figs, green, each	1 0– 2 0

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Azaleas, 12 sprays	0 6– 2 0	Narcissus, 12 sprays	1 0– 2 0
Blue Bells, 12 bunch.	2 0– 9 0	— Pheasant's-eye,	0 6– 1 0
Bouvardias, per bun.	1 0– 4 0	12 bunches	4 0–12 0
Camellias, 12 blooms	2 0– 9 0	Pelargoniums, 12 spr.	1 0– 2 0
Carnations, per dozen	1 6– 4 0	— zonal, 12 sprays	0 6– 1 6
Cow-lips, 12 bunch.	1 0– 6 0	Primroses, per dozen	0 6– 2 0
Cyclamen, per doz.	0 3– 0 9	Primula, dbl., p. bun.	1 0– 2 0
Eucharis, per doz.	6 0–12 0	Roses, indoor, p. doz.	1 6–12 0
Gardenia, per doz.	2 0– 9 0	Spiræa, 12 sprays	1 6– 4 0
Heliotropes, 12 spr.	0 6– 1 0	Stephanotis, 12 spr.	3 0– 9 0
Lily of the Valley,		Tropæolum, 12 bun.	1 0– 6 0
sprays	0 6– 3 0	Tulips, per dozen	0 6– 2 0
Mignonette, 12 bun.	4 0– 9 0	Violets, 12 bun.	1 0– 4 0
Myosotis, 12 bunch.	3 0–12 0	Wallflowers, p. doz.	3 0– 6 0

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Azaleas, per dozen	24 0–60 0	Hydrangea, per doz.	12 0–30 0
Begonias, per doz.	6 0–12 0	Lily of Valley, each	1 0– 3 6
Bouvardias, do.	12 0–24 0	Mignonette, per doz.	5 0– 9 0
Calceolaria	9 0–24 0	Myrtles, do.	3 0– 9 0
Cineraria, per doz.	4 0– 9 0	Palms in variety, each	3 6–21 0
Clematis	24 0–60 0	Pelargoniums, scarlet,	
Coleus, per dozen	3 0– 9 0	per doz.	4 0–12 0
Cyperus, do.	6 0–12 0	Petunias, per doz.	9 0–24 0
Dracæna terminalis	30 0–60 0	Rhodanthe, per doz.	6 0–15 0
— viridis, per doz.	18 0–24 0	Richardia æthiopica,	
Ferns, in var., p. doz.	6 0–30 0	per doz.	9 0–18 0
Ficus elastica, each	2 6–15 0	Roses, per dozen	24 0 60 0
Fuchsias, per dozen	9 0–18 0	— fairy, per dozen	9 0–18 0
Genista	9 0–18 0	Spiræa, per doz.	12 0–24 0
Heaths, variety, doz.	12 0–60 0	Valotta purpur., doz.	12 0–18 0
Heliotrope, per doz.	6 0–18 0		

SEEDS.

LONDON: *May* 16.—The sowing demand being nearly over, and scarcely any speculative inquiry having yet sprung up, the seed market now presents a quiet appearance. For most descriptions the present low quotations are purely nominal, and holders, as a rule, prefer to await the results of the forthcoming crops rather than sacrifice their goods at current rates. This remark applies especially to English Trefoil and American Clover. For grass seeds there is a little sale on fully former terms; in fact, the trade for perennial Rye-grass (in striking contrast to other seeds) has throughout the season exhibited extreme steadiness. The moderate rates ruling for Lucerne are attracting some amount of business. For spring Tares, although prices are low, there is very little call. Canary seed continues to droop in value; the recent excitement in the article having subsided, a good part of the late advance has now been lost. Hemp seed is dearer, as also is Rape seed. Other varieties, in the absence of transactions, show no quotable variation. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade at Mark Lane on Monday had a drooping tendency. Wheat was cheaper to sell, but holders were not anxious sellers, and in some instances the quotations of Monday 8th ought were adhered to. On the whole both English and foreign samples were worth about 1*s.* per quarter less than a week back. Barley was 6*d.* to 1*s.* per quarter lower, and Oats sold at a similar reduction. Malt was the same in price. Maize declined in value about 1*s.* per quarter. Beans and Peas were easier where pressed for sale, and the same remark applies to flour.—On Wednesday trade was very dull. Holders were not, as a rule, inclined to press sales; but it was impossible to effect a sale unless at a reduction in price. The attendance at the market was very poor, and business was at a standstill. The supplies were very moderate.—Average prices of corn for the week ending May 12:—Wheat, 65*s.* 7*d.*; Barley, 39*s.* 7*d.*; Oats, 26*s.* 10*d.* For the corresponding week last year:—Wheat, 45*s.* 1*d.*; Barley, 34*s.*; Oats, 27*s.* 6*d.*

CATTLE.

At the Metropolitan Market on Monday prices for choicest qualities in beasts advanced, yet a clearance was not effected, buyers being unwilling to submit to the order prohibiting the removal of cattle alive. In sheep trade was dull at the quotations, and several lots were unsold. Trade was very dull for lambs and calves. Quotations:—Beasts, 4*l.* to 5*l.*, and 5*l.* 4*d.* to 5*l.* 8*d.*; calves, 5*l.* to 6*l.* 2*d.*; sheep, 4*l.* 8*d.* to 5*l.* 2*d.*, and 5*l.* 6*d.* to 6*l.* 2*d.*; lambs, 7*l.* to 8*l.*; and pigs, 4*l.* to 5*l.*—Thursday's report states that trade in beasts was stagnant and quotations nominal, actual prices being irregular and uncertain. For sheep a fair demand prevailed, Monday's rates being fully upheld, and in some cases rather exceeded. Lambs sold steadily at about late values, and prime calves were in fair request.

HAY.

At Whitechapel market on Tuesday, with damp weather, trade was dull and prices easier. Prime Clover, 100*s.* to 136*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 120*s.*; inferior, 75*s.* to 85*s.*; and straw, 40*s.* to 58*s.* per load.—On Thursday the market was dull, with more than adequate supplies. Quotations:—Clover, best, 105*s.* to 134*s.*; inferior, 85*s.* to 95*s.*; hay, best, 100*s.* to 126*s.*; inferior, 75*s.* to 95*s.*; and straw, 46*s.* to 56*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 132*s.* to 140*s.*; inferior, 110*s.* to 120*s.*; superior Clover, 132*s.* to 140*s.*; inferior, 112*s.* to 123*s.*; and straw, 58*s.* to 63*s.* per load.

Cheap Bedding Geraniums.

ALFRED FRYER offers the following good Beddders at per dozen for cash:—Golden Tricolors: Peter Grieve, 12*s.*; Prince of Wales, 6*s.*; Lady Cullum, 3*s.* 6*d.*; Sir Robert Napier, 3*s.* 6*d.*; Mrs. Pollock, 3*s.*; Sophia Dumaresque, 3*s.*; Silver Tricolors: Lass o' Gowrie, 4*s.* 6*d.*; Queen of Hearts, 4*s.* 6*d.*; Miss Burdett Coutts, 3*s.* 6*d.*; Mrs. John Clutton, 3*s.* 6*d.*; Prince Silverwings, 3*s.* Double flowered: Marie Lemoine, 3*s.*; or one of each for 5*s.* No charge for packing, if empties are returned at once; also post-free for 18 per dozen extra. Priced LISTS apply to ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

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For improving those already in turf, 20 pounds should be sown per acre.

March, April and May are the best months for sowing.

Price 1*s.* 3*d.* *per lb.*, 22*s.* 6*d.* *per bushel, carriage free.*

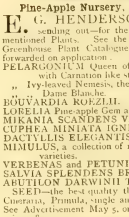
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Fresh SPHAGNUM, 10*s.* 6*d.* per sack.

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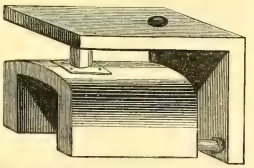
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STEAM PLOUGHING MACHINERY,
ROAD LOCOMOTIVES, TRAMWAY LOCOMOTIVES,
STEAM ROAD ROLLERS.
For Prices, Description, and Reports of Working, apply to the Manufacturers,
AVELING & PORTER,
ROCHESTER, KENT; 73, CANNON ST., LONDON, E.C.; and 9, AVENUE MONTAIGNE, PARIS.
AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of *three and one-fifth pounds of coal* per horse-power per hour.

AN EXTRAORDINARY BOILER.—During the Great Boiler Contest at Birmingham, in 1872, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 1000 feet of 4-inch pipes, and yet had more than 1 bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners. This was THE CHAMPION, Deards' Patent Close-Coil Boiler, for Drawings and Prices of which send two stamps to
Messrs. DEARDS, Boiler Works, Harlow,
who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.
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STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to
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These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
28 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May 29, 1873.*

"Having giving your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers: they will burn the refuse of other tubular boilers I have in work."

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FOR HORTICULTURAL, PUBLIC, AND OTHER BUILDINGS.

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COWAN'S PATENT COMBINED GAS-MAKING and HEATING APPARATUS,
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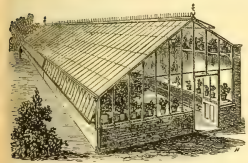
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All work done by the Company is guaranteed.

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ORNAMENTAL CONSERVATORIES and HORTICULTURAL BUILDINGS of EVERY DESCRIPTION.—For lightness, elegance and durability, these Houses cannot be surpassed. The best materials only are used in their construction. Great improvements have recently been made, to obviate the objections to iron houses. Very extensive works on this principle have been satisfactorily executed. *An Illustrated Catalogue forwarded post-free on application.*

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After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved. For Illustrations, with full particulars, apply to the Sole Makers,
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☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

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Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.
They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

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HER GRACIOUS MAJESTY THE QUEEN,
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The late EMPEROR OF THE FRENCH,
THE VICEROY OF EGYPT,
And many of the Nobility and Gentry of Great Britain.



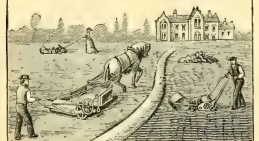
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SILICATE ZOPISSA COMPOSITION. All colours. For Damp Walls, either internal or external.
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Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom.

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THE SIMPLEST AND CHEAPEST,
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GARDEN BOXES and LIGHTS.	Each.
Portable Box with One Light, 6 feet by 4 feet, glazed good 16-oz. sheet glass, painted four coats, and packed ready for use	*s. d.* 35 0
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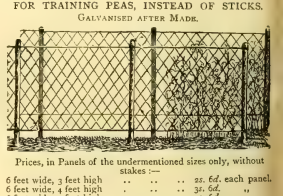
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BOOKS of DESIGNS, 5*s.* each.
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FOR TRAINING PEAS, INSTEAD OF STICKS.
GALVANISED AFTER MADE.



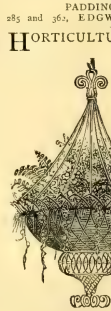
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3½ ,, ,, ... ,,	18 0	14 0	7 0
3¾ ,, ,, to balance ,,	20 0	15 0	7 0
3¾ ,, ,, ,, ,,	26 0	20 0	8 0
4 ,, ,, ,, ,,	30 0	22 0	8 0
4 ,, fine ,, ,, ,,	33 0	24 0	9 6
4 ,, ,, extra large ,,	36 0	28 0	10 6
4 ,, ,, African .. ,,	42 0	35 0	13 6
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EDGINGTON'S MARQUEES for Hire are the most handsome and capacious.
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A quantity of good Second-hand Government TENTS from Abyssinia for Sale cheap.
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TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3d. per yard, or 100 yards, 20s.; 4 yards wide, 6d. per yard, or 50 yards, 20s.
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; 5½-inch mesh, 3 yards wide, 1s. 6d. per yard.
TIFFANY, 6s. 6d. and 7s. 6d. per piece of 20 yards.
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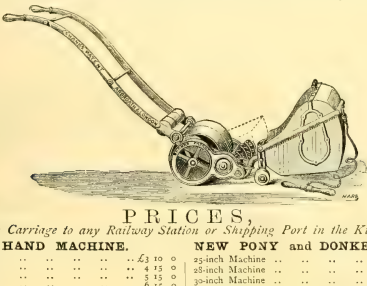
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LAWN MOWERS,
Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The *Sole-Plate* or *Bottom Blade* is made with *Two Edges*, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the Grass escaping the Box when the Machine is in use during the prevalence of wind.



PRICES,
Including Carriage to any Railway Station or Shipping Port in the Kingdom:—

NEW HAND MACHINE.

10-inch Machine	£3 10 0
12-inch Machine	4 15 0
14-inch Machine	5 15 0
16-inch Machine	6 15 0
19-inch Machine	8 5 0
22-inch Machine	9 0 0
24-inch Machine	9 10 0

The Hand Machines are all fitted with Silent Movement, and can be used either with or without the usual Front Rollers.

NEW PONY and DONKEY MACHINE.

25-inch Machine	£13 10 0
28-inch Machine	15 15 0
30-inch Machine	17 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

Price, for the 28-inch and 30-inch Machines, 30s. extra; 25-inch Machine, 25s. extra. Silent Movement, 12s. 6d. extra. Boots for Pony, 24s.; Donkey, 20s. per set.

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30-inch Machine	£20 10 0
36-inch Machine	24 0 0

42-inch Machine £28 0 0
48-inch Machine 32 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.
Price, for the 48-inch, 42-inch, and 36-inch Machines, 40s. extra; for the 30-inch, 30s. extra. Silent Movement, 20s. extra. Boots for Horse's feet, 29s. per set.

A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

SHANKS' PATENT LAWN MOWERS
Are warranted to give ample satisfaction, and if not approved of can be at once returned.

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Dens Ironworks, Arbroath; and 27, Leadenhall Street, London, E.C.
27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.
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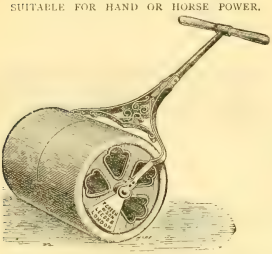
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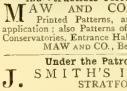
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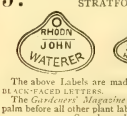


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FOREMAN, or where one is kept.—Young, married; experienced in Exotic Plants, Fruit, &c.—H. S., 5, Grove Terrace, Beverley.

FOREMAN, in the Houses, or Single-handed. —Age 26; understands the profession.—A. B., 1, Arthur Street, Gravesend.

FOREMAN, where four or five are kept.—Two years in present situation. Can be well recommended. Wages about 18*s.* per week, and bothy.—E. A., Caversham Park, Reading.

FOREMAN, where Fruit and Plants are well Grown, and things carried out with spirit. Three years' good character. Highly preferred.—State wages, &c., K. M., Uffington Gardens, Stamford, Lincolnshire.

FOREMAN, in a Nobleman's or Gentleman's Garden.—Age 24. Can take charge of the Houses, &c. Three years' good character. Please state wages.—KEY, Post-office, Wood Green, N.

FOREMAN, in a Nobleman's or Gentleman's Establishment.—Age 23; twelve years' experience in all branches of the profession. Three years Foreman with present employer.—J. S., The Gardens, Hammerwood, East Grinstead, Sussex.

JOURNEYMAN (Good).—Satisfactory testimonials.—G. C., Acton Burnell Garden, Salop.

IMPROVER, in a Gentleman's Garden, where more are kept.—Young. Two and a half years' recommendation.—A. B., Post-office, Kidlington.

IMPROVER, in a good Establishment, under a Foreman, in the Houses. Age 23; respectable. Four years' good character.—W. F. HANSFORD, 40, Tyliney Road, Widmore Road, Bromley, Kent.

To Head Gardeners.

APPRENTICE.—The Guardians of a highly respectable and well-educated youth, who wishes to learn the Gardening profession, desire to place him under a competent person in a first-class Garden as above.—Address, stating terms, &c., to Mrs. PINNOCK, Spring Road, Abingdon, Berks.

PLANT SALESMAN, in a Florist Business. —Age 26; respectable; some knowledge of Propagating. —A. K. W., Post-office, Worthing, Sussex.

KINAHAN'S LL WHISKY. Universally recommended by the Medical Profession. A pure old spirit, mild, mellow, delicious, and most wholesome. DR. HASSALL says, "The samples were soft and mellow to the taste, aromatic and ethereal to the smell. The Whisky must be pronounced to be pure, well-matured, and of very excellent quality." —Wholesale: 20, Great Titchfield Street, London, W.

DINNEFORD'S FLUID MAGNESIA.

The best remedy for ACIDITY of the STOMACH, HEARTBURN, HEADACHE, GOUT, and INDIGESTION; and the safest aperient for delicate Constitutions, Ladies, Children, and Infants.

DINNEFORD AND CO.,
172, New Bond Street, London, and all Chemists.

ELLIS'S RUTHIN WATERS.

PURE AERATED WATERS.

ELLIS'S RUTHIN WATERS. —Crystal Springs, Soda, Potass, Seltzer, Lemonade, Lithia, and Iron and Soda Waters. Corks branded "R. ELLIS AND SON, RUTHIN," and every Label bears their Trade Mark. Sold everywhere, and Wholesale of R. ELLIS AND SON, Ruthin, North Wales, London Agents: W. BEST AND SONS, Henrietta Street, Cavendish Square.

HOLLOWAY'S PILLS.—The extraordinary range of temperature prevailing in our climate is extremely trying to the delicate-chested, the weak and nervous. All troubled by these afflictions should resolve to resort to this strengthening and regulating medicine immediately they perceive in themselves discomfort, or that feeling of restlessness which betokens disordered digestion and defective secretion of bile. One of Holloway's Pills taken about noon, and followed at bed-time by a dose sufficiently large to act aperiently, will speedily restrain the faulty functions, and restore order throughout the whole system. A treatment so safe in operation and so successful in result should be known and practised when, from cold and sundry other causes, difficulty in attempting to gain a vexatious footing.



FOLLOWS & BATE'S
PATENT
LAWN MOWERS.

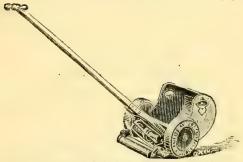


AWARDED MEDAL FOR MERIT, VIENNA, 1873,

(*The ONLY Medal given for Lawn Mowers*);

Large Silver Medal (the First Prize), at the Meeting of the Royal Horticultural Society, Birmingham, 1872;

And in addition, every First Prize wherever these Machines have been brought into competition in actual trial with other makes.



Royal Prize Medal Patent "Anglo-American Lawn Mower.

PATRONISED BY

HER MOST GRACIOUS MAJESTY THE QUEEN,

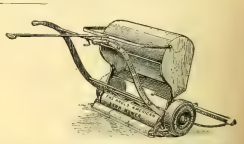
HIS ROYAL HIGHNESS THE PRINCE OF WALES,

HIS IMPERIAL MAJESTY THE EMPEROR OF GERMANY,

HIS IMPERIAL MAJESTY THE EMPEROR OF AUSTRIA,

THE IMPERIAL RUSSIAN GOVERNMENT
(For the Agricultural Museum at St. Petersburg),

And Numbers of the Nobility and Gentry of Great Britain.



"Anglo," New Patent Pony and Donkey Lawn Mower,
With the simplest tipping arrangement (as illustrated) ever introduced.

NOTICE.

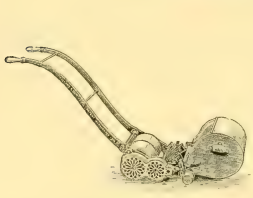
F. & B.'s Patent Lawn Mowers are sold on approval. If after a month's trial they do not meet the expectation of Purchasers, they may be returned unconditionally.



NEW "CROQUET" LAWN MOWER. Price, 8-inch, 55s.; 10-inch, 70s.

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New Patent "Roller" Lawn Mower.



Patent "Climax" Back Delivery Lawn Mower.



New Patent Lawn Edge Cutter. Price, 50s.

LIST OF PRICES.

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8 inch ..	.. £2 15	16 inch ..	.. £6 10
10-inch ..	.. 3 10	18-inch ..	.. 7 10
12 inch ..	.. 4 10	20-inch ..	.. 8 10
14 inch ..	.. 5 10		

Pony Machines.

24-inch ..	.. £10 10
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Delivered Carriage Free to any Railway Station in Great Britain.

Patent "Roller" Lawn Mower.

8-inch ..	.. £2 10	14-inch ..	.. £5 10
10-inch ..	.. 3 10	16-inch ..	.. 6 10
12-inch ..	.. 4 10	18-inch ..	.. 7 10

Patent "Climax" Lawn Mower.

6-inch ..	.. 25s.
7-inch ..	.. 35s.
8-inch ..	.. 45s.
10-inch ..	.. 65s.

N.B.—Upwards of 37,000 of Follows & Bate's celebrated Lawn Mowers have been sold within the past few years.

FOLLOWS AND BATE here abstain from enumerating in detail the various good points claimed for other Machines, and content themselves with saying that their Lawn Mowers possess them all, and more also; they therefore solicit the favour of an application for one of their Catalogues with Testimonials, *before purchasing*. To be had from all respectable Ironmongers and Seedsmen throughout the United Kingdom, or from

FOLLOWS & BATE, Patentees and Manufacturers, MANCHESTER.

Editorial Communications should be addressed to "The Editor:" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, May 19, 1877

Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 178.—Vol. VII. { New Series. } SATURDAY, MAY 26, 1877. { Registered at the General Post Office as a Newspaper } Price 5d. { Post Free, 5½d.

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NOTICE.—A COLOURED PLATE of a beautiful new variety of CYCLAMEN PERSICUM will be presented (gratis) with the GARDENERS' CHRONICLE for JUNE 9.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
The GREAT SUMMER SHOW will be held at South Kensington, on TUESDAY, June 19, under the Great Tent. Admission 3*s.* 6*d.* Band of the Royal Horse Guards. Schedules are now ready, and will be forwarded on application to the SECRETARY, Royal Horticultural Society, South Kensington, S.W.

ALEXANDRA PALACE.—The GREAT ROSE SHOW will be held on SATURDAY, June 30. LAST DAY of ENTRY, June 23. Schedules and all particulars may be obtained on application to JOHN A. MCKENZIE.
1 and 2, Great Winchester Street Buildings, London, E.C.

WIMBLEDON and DISTRICT HORTICULTURAL and COTTAGE GARDEN SOCIETY. Under Royal and Distinguished Patronage.
The FIFTH ANNUAL EXHIBITION of PLANTS, FLOWERS, and FRUITS, will be held on THURSDAY, July 5. Open Prizes. Entries Close June 29. Schedules and all information on application to P. APPLEBY, Secretary.

TUNBRIDGE WELLS HORTICULTURAL SOCIETY.
The ANNUAL GRAND EXHIBITION of FLOWERS, PLANTS, and FRUIT, will be held on FRIDAY, July 6, in the Grounds adjoining the Calverley Hotel. Prizes open to all England. Schedules may be obtained of, and subscriptions paid to Mr. E. F. LOOF.
Parade, Tunbridge Wells.

WESTON-SUPER-MERE and EAST SOMERSET HORTICULTURAL SOCIETY.
(In association with the Royal Horticultural Society.)
The ANNUAL EXHIBITION in connection with this Society will be held at Weston-super-Mere, on WEDNESDAY, August 1, when Prizes amounting to TWO HUNDRED POUNDS will be offered for competition. Schedules and all particulars may be obtained on application to W. E. FRAMPTON, Secretary.

CATALOGUES.—His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (by post) to
S. E. EXCELLENCE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

Presented (by post) on application,
NEW CATALOGUE for 1877. For remarks and List of Plants offered, with prices, see last week's large Advertisement. Plants true to name, well hardened off, low in price. See New Catalogue.
WILLIAM CLIBRAN and SON, The Oldfield Nurseries, Altrincham.

JEAN VERSCHAFFELT'S NURSERIES, 174, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium. CATALOGUES free on application.
Agents in London: Messrs. R. SILBERRAD and SON, 5, Harp Lane, Great Tower Street, London, E.C.

PYRETHRUM AUREUM LACINIATUM. Fine, well-coloured Plants, now ready for bedding purposes, 6*s.* per dozen; 40*s.* per 100. Trade price on application.
OSBORN and SONS, Fulham Nurseries, London, S.W.

To the Trade.
TURNIP, Green-top Yellow Bullock.—Grown from a choice Aberdeenshire stock. Price on application to
Messrs. J. AND G. MCHATTIE, Seed Merchants, Chester.

To the Trade.—Turnip Seeds.
H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.
Seed Growing Establishment, Wisbech.

CABBAGE PLANTS.—About an Acre to be Sold, by the Thousand. Very fine. Apply at once to H. THORNTON, 12, Maxwell Road, Fulham, S.W.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2*s.* 6*d.* per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LIST for 1877.
Extra Strong SEAKALE, 2*s.* per dozen.
RICHARD SMITH, Nurseryman, Worcester.

To the Trade.
ASPARAGUS, Giant, 1-yr. and 2-yr., fine.
JAMES BIRD, Nurseryman, Downham.

Special Offer.
CHERRIES for Autumn, Winter, and Spring Decoration.—Roots, 5*s.* per peck; Seed, 6*z.* per lb.
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS, LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different Colours; AURICULAS, Single and Double; Double with every sort of Early Spring Flowers. LIST on application.
Mr. WEBB, Calcot, Reading.

Vines, Vines, Vines.—The Planting Season.
THE COWAN PATENTS' COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Canes of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Special List of Choice Orchids (No. 33).
THE NEW PLANT AND BULB COMPANY beg to announce that the above is now ready, and will be sent post-free on application. It also contains a List of New Ferns, Beautiful Foliage Plants, Eurycles australasica, &c., all at low prices. Lion Walk, Colchester.

PRICKLY COMFREY.—The most productive and permanent Forage plant known. Can be cut five times a year—200 tons have been produced in one season. Strong plants £4 per 1000; sets £3 per 1000, carriage paid. The present is a good time to form plantings and to propagate.
FREEMAN, Economic Seedsman, Norwich.

NEW ROSES for 1877.—A Selection of all the finest English and Continental varieties, in strong robust plants, in pots. Descriptive LIST with prices on application.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

All the Best Selected
NEW CONTINENTAL ROSES for 1877. Fine Plants of the above now ready.
Descriptive CATALOGUES on application.
WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

ROSE (H.P.), "MARIE LOUISE PERNET," a seedling from Madame Rothschild: the best Rose of 1877. Splendid plants for present working or growing on, strong from eighteen to twenty buds, 12*s.* 6*d.* each. Trade Rate, 10*s.* per dozen. All the best Roses of the year at the above quotation.
H. BENNETT, Manor Farm Nursery, Stapleford, Salisbury.

CARNATION, Souvenir de la Malmaison, 12½ per dozen. PINK, Souvenir de la Malmaison, 15*s.* per dozen. Fine stock of well-rooted Plants.
IRELAND AND THOMSON, 20, Waterloo Place, Edinburgh.

Primulas, Primulas, Primulas.
WILLIAMS' superb strain, 1*s.* 6*d.* per dozen, 10*s.* per 100; package and carriage free. CINERARIAS, choicest assortment, same size and price. The above are quite equal to those I have sent out in previous years. Cash with order.
JOHN STEVENS, The Nurseries, Coventry.

WANTED, Specimen Plant of BRUGMANSIA. Size and price to
A. B., Hurst & Sons, 6, Leadenhall Street London, E.C.

BELLE DE CHATENAY.—We have much pleasure in offering this most splendid new Violet, flowers pure white, very double, quite an inch across, post-free, 5*s.* each. Special Trade offers.
JOHN LAING AND CO., Nurseries, Forest Hill, S.E.

Special Offer to the Trade.
TROPÆOLUM SPECIOSUM, in pots, 20*s.* per 100. POLEMONIUM CŒRULEUM VARIEGATUM, 15*s.* per 100.
HOWDEN 100 COMPANY, Nurseries, Inverness, N.B.

ALTERNANTHERAS, magnifica and paronychioides.—Splendid stuff, in any quantity, shaken out of pots, 6*s.* per 100, 50*s.* per 1000. Special quotations for larger quantities.
WILLIAM HOLMES, Frampton Park Nursery, Hackney, London, N.W.

EULALIA ZEBRINA.—The subscribers offer well established plants of the above beautiful Grass, figured in *Gardeners' Chronicle*, May 5, p. 565. Price 21*s.* each.
JOHN LAING AND CO., Nurseries, Forest Hill, S.E.

Splendid Novelty.
HARRISON'S NEW MUSK.—For full description and particulars, see p. 460 of *Gardeners' Chronicle*, or apply to
HARRISON and SONS, Leicester.

FIFTY THOUSAND BEDDING PLANTS in variety for Sale, at Wholesale and Retail prices; all grown in separate pots, and in excellent condition. CATALOGUES on application.
F. W. COOPER, Florist, Huntingdon.

PADMAN'S "LOBELIA EBOR," universally acknowledged to be the best out, post-free on receipt of stamps, 2*s.* 6*d.* per dozen, free to rail, 15*s.* per 100, 4*s.* 100 for 1000. Send direct, when you are sure of getting it true. Providence Nursery, Boston Spa, near Tadcaster.

Balsam, Calceolaria, Cineraria, and Primula.
F. AND A. SMITH offer Seed of the above, saved from their unrivalled collection, in 12., 2*s.* 6*d.*, and 5*s.* packets.
The Nurseries, West Dulwich, S.E.

Verbenas, Verbenas, Verbenas.
WILLIAM BAILEY offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, at 12*s.* per 100; or turned out of pots, 10*s.* per 100. Good rooted Cuttings, 6*s.* per 100, 50*s.* per 1000, package included. Terms Cash.
Cemetery Nursery, Gravesend, S.E.

Verbenas, Verbenas, Verbenas.—Important Notice.
H. BLANDFORD, The Dorset Nurseries, Blandford, will be able to supply strong rooted Cuttings of VERBENAS for the next month, all the best sorts, at 6*s.* per 100, 50*s.* per 1000.
This Advertisement will not appear again.

Verbenas, Verbenas.
JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other mixed sorts, good strong spring-struck cuttings, well rooted, at 6*s.* per 100, 50*s* per 1000, package included. Cash to accompany all orders.
Islington Nursery, Park Street, Islington, N.

To the Trade.—Pelargoniums, Show and Fancy.
JAMES GARAWAY AND CO. offer leading sorts, fine rooted plants in 48-pots, to flower in May, at 50*s.* and 60*s.* per 100.
JAMES GARAWAY AND CO., Durdham Down Nurseries, Clifton, Bristol.

Pelargoniums.
CHARLES TURNER can supply strong healthy plants of all the classes; they will have a good head of bloom this season.
The Royal Nurseries, Slough.

Special Offer—150,000 Vesuvius.
WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, 10*s.* per 100; or from store pots, 8*s.* per 100, 75*s.* per 1000, package included. Terms Cash.
Cemetery Nursery, Gravesend, S.E.

For Wood & Ingram's cheap offer of
PELARGONIUMS, DAHLIAS, VERBENAS, CALCEOLARIAS, FUCHSIAS, and other BEDDING PLANTS, see Advertisement p. 615, issue of May 19.
The Nurseries, Huntingdon.

DAHLIAS and HOLLYHOCKS.—LISTS of choice named varieties of the above free on application. The Trade supplied on the best terms.
JOHN THOMPSON, Nurseryman, Seedsman, and Florist, 24, Pilgrim Street, Newcastle-upon-Tyne.

To the Trade, &c.
PINKS.—We have a few thousands of the above, in about four good kinds, strong plants from open ground, to offer cheap; price on application.
ISAAC BRUNNING AND CO., 3, Regent Street, Great Yarmouth.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING
GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mere,
Price List on application.

SALES BY AUCTION.

Laelia elegans.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, May 31, an importation just arrived in good condition from Brazil of LÆLIA ELEGANS.

On view the morning of Sale, and Catalogues had.

Imported Orchids, New Crotons, Amaryllis, Established Orchids, Specimen Greenhouse Plants, &c.—(Sale No. 4056.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, May 31, at half-past 12 o'Clock precisely, an importation of Lælia elegans, just arrived in fine condition, a quantity of P. Schilleriana and P. amabilis, imported trunks of Dicksonia antarctica, some fine plants of Bulbes coelesia; an importation of Aspidistra variegata, A. Lobbii, Saccolabium guttatum, S. Blumei, Limatodes rosea, Calanthe vestita, Thunia alba, Cœlogyne plantaginea, C. Schilleriana, Dendrobium Dalhousianum, D. palpebrae, D. barbatulum; an important consignment of Crotons, Dracænas, and other plants from New Guinea, South Sea Islands, New Britain, &c., most quite new and now imported for the first time the plants have only just arrived, and are in splendid condition. Aconsignment of Orchids from Colombia, Peru, and Mexico; a collection of established Orchids, including fine plants of the following:—Vanda Batemanii, V. gigantea, V. suavis Veitchii, Cattleya labiata, C. bulbosa, Dendrobium crystallinum, Lælia anceps, Meadowbank variety; a magnificent specimen of Cactus; some fine Orange trees, &c.; a collection of choice named Amaryllis, several importations of Orchids from Demerara, Brazil, New Grenada, and other parts.

On view the morning of Sale, and Catalogues had.

Important Notice of a great Clearance Sale of NURSERY STOCK.

MR. J. C. STEVENS has received instructions from Messrs. Lee, to offer for SALE by AUCTION, on the Premises, Royal Vineyard Nursery, Hammersmith, W., on WEDNESDAY, June 6, and following days, at half-past 12 o'Clock precisely each day, the entire stock of STOVE and GREENHOUSE PLANTS, consisting of Tree Ferns on tall stems, including Dicksonias, Alsophilas, Cyatheas and Todeas; choice Ferns, comprising Adiantums and other species of Gleichenias, Dicksonia squarrosa and fibrosa, some beautiful specimen Todea superba, Angiopteris erecta, and others; some useful Orchids, including Aspasias, Miltonias, Odontoglossums, Cœlogynes, Cypripedium, Cattleyas, Lycastes, Lælias, Oncidiums, Vandas, and others; Eucharis amazonica, fine examples; Pandanus, Dracænas, Cordyline indivisa, Ananassoides, and others; some choice Palms, including the best kinds of Phœnix, Chamærops, Caryota, Arads, and some nice examples of the beautiful Cocos Weddelliana; fine specimens of Cycas revoluta, and other choice Stove Plants. In Greenhouse Plants are some nice pieces of Acrophyllum, Genetyllis, Eriostemon, Dracophyllum, Aphelexis, and others; also some healthy home-grown Camellias and specimen Azalea indica, with the usual collections of the best kinds, trained for fine health, and every variety of Stove and Greenhouse Plants. Also the GREENHOUSES and PITS, with BOILERS and HOT-WATER PIPES, &c.

On view the day prior and morning of Sale, and Catalogues had.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from J. G. Hepburn, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, June 20 and 21, at half-past 12 o'Clock precisely each day, the entire Collection of ESTABLISHED ORCHIDS formed by him at Sidcup Place, and Sold in consequence of change of residence, comprising, amongst many others, fine plants of the following well-known species, the majority of which have been most successfully exhibited:—Angræcum sesquipedale, Cœlogyne cristata, Dendrobium Wardianum, Vanda suavis Veitchii, large specimens and fine varieties of Cypripedium caudatum, seven spikes, twelve flowers; Vanda cærulea, Dendrobium Falconeri, large, ninety-three flowers last year, 3½ inches to 3¾ inches; Cattleya Mendelii, Odontoglossum Phalænopsis, good plants; O. Roezlii, twenty-five flowers, thirteen spikes; O. vexillarium, O. nævium majus, eight spikes; O. crocidipterum, Oncidium macranthum, Dendrobium Devonianum good variety; D. thyrsiflorum; Odontoglossum Alexandræ, O. Pescatorei, O. pulchellum majus, O. cirrhosum, O. Madrense, good variety; O. Rossi Dawsonianum. O. Hallii, Masdevallia Veitchi, M. Lindeni, M. Harryana, Calanthe Veitchii, &c.

On view the mornings of Sale, and Catalogues had.

Tooting, S.W.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Exotic Nursery, Tooting, S.W., on TUESDAY, May 29, at 12 o'Clock, by order of Mr. R. Parker, a quantity of EXTRA STOCK of STOVE and GREENHOUSE PLANTS, the whole of which are in a healthy and thriving condition, comprising Anthuriums, Aralias, Epiphyllums, Stephanotis, Yuccas, Phormiums, a quantity of choice Orchids, including Vandas, Cypripediums, Dendrobiums, Aerides, Calanthes, Cattleyas, Dendrobiums, and Odontoglossums; Exotic Ferns, selected Palms, likewise a fine assortment of Succulent and Hardy Herbaceous Plants, Clematis, &c.

May be viewed the day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Edmonton, N.

COMPULSORY SALE of the GREENHOUSE and BEDDING PLANTS, together with the UTENSILS-in-TRADE.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Bury Nursery, Bury Street, Edmonton, N., on THURSDAY, May 31, 2 o'Clock precisely, the whole of the GREENHOUSE and BEDDING PLANTS, comprising 700 large white Chrysanthemums, Ferns, 500 beautifully grown Pelargoniums in 48 pots, 100 white Clowes, Ovat's variety, in 48's; Fuchsias, 2000 Geraniums, 1100 Calceolarias, 1200 Lobelia speciosa, 1000 long white Marrow plants in 60-pots, &c. Also a useful VAN, HORSE, set of HARNESS, four-wheel WAGGONETTE, and numerous other effects.

May be viewed the day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B.—The NURSERY to be LET on LEASE. Apply to the Auctioneers.

Important Notice.

GARSTON VINEYARD ESTATE, near LIVERPOOL.

MESSRS. PROTHEROE AND MORRIS respectfully announce that, having DISPOSED OF this FREEHOLD ESTATE by Private Treaty, the same will not be offered by Auction on Tuesday, June 5, as announced. The Clearance Sale of the Stove and Greenhouse Plants, and also of the Utensils-in-Trade, will take place, as advertised, on Wednesday, June 6, and following days. For particulars see below

Garston, near Liverpool.

CLEARANCE SALE of the whole of the Valuable Stock of STOVE and GREENHOUSE, and BEDDING PLANTS, UTENSILS-IN-TRADE, &c.

MESSRS. PROTHEROE AND MORRIS are directed to SELL by AUCTION, without reserve, on the Premises, The Garston Vineyard, Garston, near Liverpool, on WEDNESDAY, June 6, and following days, at 12 o'Clock precisely each day, by Order of the Crown Patents Company (Limited), who, having disposed of the Freehold Estate, will confine their future operations to their London Establishment, the Entire Stock of STOVE and GREENHOUSE PLANTS, comprising handsome Palms, Gardenias, Crotons, Eucharis, Anthuriums, &c., 500 Orchids in variety, a quantity of Stove and Greenhouse, 50 very large specimen Camellias, 500 fine Azalea indica, 20,000 Miscellaneous Bedding Plants, including 12,000 Geraniums, 5000 Pelargoniums and Calceolarias, 1000 Fuchsias, in 60 pots; also a CART-HORSE. Two Covered Spring VANS, Capital DOG-CART, LIGHT SPRING CART, Glazed Sashes, Frames, ROLLER, FLOWER-POTS, and other sundry articles connected with the Trade.

Catalogues may be obtained fourteen days prior to the Sale, on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, London, E.C., and Leytonstone, Essex.

Important Sale of High-class Show Plants of Rare and New Varieties, the floriated and foliage growth in a state of perfection for Stove and Greenhouse, comprising remarkably fine examples of ANTHURIUMS, in 48 and 60 pots, including the original named plant CYATHEA BURKEI, 7 feet high by 6 feet; also a number of new PELARGONIUMS, the Duchess of Bedford, and many other choice sorts.

MESSRS. ARTINGSTALL AND HIND beg to announce that they have received instructions to submit to PUBLIC COMPETITION, on THURSDAY NEXT, May 28, commencing at 11 o'Clock in the morning, at the Belvedere Society's Gardens, Belvedere, Bexley Hill, Manchester, a very valuable collection of SHOW PLANTS, which are now on exhibition.

Catalogues can be had on application to this office, or will be forwarded to intending Purchasers on the Auctioneers on receipt of application at their Office, 51, Princess Street, Manchester.

Tettenhall, near Wolverhampton, Staffordshire.

A large and exceedingly choice Collection of SPECIMEN, STOVE and GREENHOUSE and BEDDING PLANTS, PEACH, NECTARINE, and PLUM TREES, in bearing, GARDEN TOOLS, IRON HURDLES, and EFFECTS.

MESSRS. WALKER and H. J. LLOYD are instructed by the Executors of the late G. H. Perry, Esq., to DISPOSE OF by AUCTION, on MONDAY and TUESDAY, May 28 and 29, at the Residence at 11 o'Clock each morning—at his late residence at Stockwell End, Tettenhall, near Wolverhampton, a splendid collection of GREENHOUSE and BEDDING PLANTS, including remarkably large and beautifully-grown specimen Camellias, including the named varieties of imbricata (bright scarlet and crimson), Fabian Gledhill, Lady Hume's Blush (white), Donckelaeri (dark), alba compacta (pure white), Colvillii striata (white, striped with carmine), Beali (dark crimson), Countess of Derby (white rose, with white stripe in centre of each petal), Jubilee (delicate pinkish white), Comte de Flandre (fine white, frequently striped with carmine), Imbricata Lindleyana (white, with broad and distinct flake rose markings), Jenny Lind (white, spotted and striped with rose), Sacco-Nova (rose colour), &c.; also an assortment of Camellias, comprising Reticulata, and duplex maculata. The Bride, Lovely, Iveryana improved, Reine des Pay-Bas, alba illustris flore-pleno, hardy Ghent, &c.; also a beautiful and interesting Encyclopædian group, consisting of Cuphea, Fleur de Flandre, Hendersoni, Denisoni, Fragrantissima, Nuttalli, Dalhousiana, McNabi, Princess Alexandra, Countess of Haddington, &c. Also a selection of FUCHSIAS; Tree, Greenhouse, and Hardy FERNS; pair of named varieties of CHRYSANTHEMUMS, noble Agave aurea variegata, do. Agave filifera, Liliums, and choice variegated ORNAMENTAL PALMS, promising two-year-old and yearling PINE PLANTS, valuable BEDDING PLANTS, GARDEN TOOLS, Mowing Machine, Hand-Barrow, Pot Lifts, 155 IRON HURDLES, and other Effects.

Particulars of which may be had in Catalogues at the Offices of

Messrs. WALKER and H. J. LLOYD, 62, Darlington Street, Wolverhampton.

Monro's Nursery, Great North Road, Potters Bar, Middlesex.

TO FLORISTS, GARDENERS, and GENTLEMEN.

The Twelfth Great Annual Sale of Bedding-Out Plants.

MR. CUTBUSH will SELL by AUCTION, upon the Premises as above, without the least reserve, on THURSDAY, May 31, at 1 for 2 o'Clock precisely, by direction of Mr. John Monro, 25,000 BEDDING-OUT PLANTS, comprising Master Christine, Stella, Crystal Palace Gem, Cloth of Gold, Blue Bell, Flower of the Day, Mrs. Pollock, Prince Silverwing, Model, Lucifer, Diana, Tom Thumb, Madame Vaucher, Beauty, Christine, Vesuvius, Beauty of Calderdale, Haydn, Glow, Flower of Spring, Indian Yellow, Lord Byron, Mrs. Pearson, Rose Unique, Purple Perfection, Lobelias, and aurea floribunda Calceolarias; Petunias, choice Lobelias, five varieties of Verbenas, Lady Hetchbury, Trineo and Bo-Peep Pelargoniums; Mimulus, Heliotrope, Callas, Coleus, Fresne Linderi, Golden Feather, Lilies of the Valley; choice sorts of STRAWBERRIES, CUCUMBERS, &c. (in pots). The plants are strong, healthy, and in fine condition, and, should purchasers wish, may remain for one week after the day of Sale, during which time Mr. Monro will guarantee their safety and quantity.

May be viewed one week prior to the Sale. Catalogues may be had on the Premises, at the usual Inns in the neighbourhood, and at the Offices of the Auctioneer, Barnet, Herts.

Islington, N.

IMPORTANT SALE of about 50,000 BEDDING PLANTS, and 200 ORCHIDS.

MR. W. F. BOFF will SELL by AUCTION, without the slightest reserve, on the Premises, the Northampton Park Nursery, Douglas Road North, Islington, N., on THURSDAY, May 31, at 12 o'Clock precisely a fine and well-grown assortment of about 50,000 BEDDING PLANTS, comprising about 10,000 Vesuvius, Madame Vaucher, Master Christine, &c.; 1000 Mrs. Pollock, 8000 Verbenas, 5000 Calceolarias, &c.; also about 200 choice ORCHIDS.

On view day prior to Sale. Catalogues on the Premises, and of the Auctioneer, 203, Upper Street, Islington, N.

Edmonton.—(4135)

TO BE SOLD, with Possession, as a Going Concern, a Small MARKET NURSERY, 1¾ acre in extent. Lease of Premises unexpired, Price £285, to include Four newly-erected Greenhouses, Two Brick Pits, Hot-water and other Fittings thereto. For particulars, apply to PROTHEROE AND MORRIS, Horticultural Agents, 98, Gracechurch Street, London, E.C.

TO BE LET, a SHOP, in the best part of South Kensington. Low Rent. Shop 55 feet deep: Conservatory attached. Splendid opportunity for a Florist. To a practical man money would be advanced.

13, Alfred Place, West South Kensington, S.W.

Stockwell End, Tettenhall, near Wolverhampton, Staffordshire.

TO BE LET, at Midsummer, 1877, all that very excellent RESIDENCE, known as WOOD-HOUSE, containing Dining, Drawing, and Breakfast Rooms, with 8 Bedrooms, W.C., Kitchen, Brewhouse, Stables, Coach-house, and other Out-buildings, situate at Stockwell End, Tettenhall, the late residence of George H. Perry, Esq., deceased. The Pleasure Grounds are considerable, and contain some very valuable and ornamental Timber, together with a Vinery 100 feet long, a second Vinery 60 feet long, and Orangery and Peach House 100 feet long, a Pine Pit, Orchid-house, and several Forcing Pits. The Kitchen Garden is well stocked with the choicest Fruit Trees, and is estimated to contain about 2 acres. The Premises are in excellent repair and condition, and are suitable for a highly respectable family.

The Premises can be viewed, and further particulars obtained, on application to Mr. BEALEY, Solicitor, 7, Queen Street; or to Messrs. WALKER and H. J. LLOYD, Auctioneers, Darlington Street, Wolverhampton.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION, for the Relief of Decayed Farmers, their Widows and Orphans.

Patron: HER MAJESTY THE QUEEN.
President: HIS GRACE THE DUKE OF RICHMOND AND GORDON.

Allowances to Pensioners.

Married	£40 per annum.	
Male	£26	,,
Widows and Unmarried Orphan Daughters	£20	,,

Every information to be had of the SECRETARY, by whom Subscriptions and Donations will be thankfully received.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.

The SEVENTEENTH ANNIVERSARY FESTIVAL, in aid of the Funds of the Institution, will take place at Willis's Rooms, on WEDNESDAY, June 6, at 6 for half-past.

The Right Hon. the EARL OF DUNMORE in the chair.

Dinner Tickets, 21s., application for which should be made to the SECRETARY, not later than June 4.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.

The ANNUAL GENERAL MEETING will be held at Willis's Rooms, St. James's, on WEDNESDAY, June 20, at 12 o'Clock precisely; and the ELECTION OF PENSIONERS will take place on the following day.

All subscriptions shall be deemed payable on January 1 in each year; and no Contributor shall vote in respect of an Annual Subscription while the same is in arrear.

Offices of the Institution—26, Charles Street, St. James's, London, S.W.

BATH and WEST of ENGLAND SOCIETY (Established 1777), and SOUTHERN COUNTIES' ASSOCIATION.

Patron: H.R.H. the PRINCE OF WALES, K.G.
President: The MARQUIS OF LANSDOWNE.

CENTENARY MEETING, Bath, JUNE 4, 5, 6, 7, and 8.

GREAT EXHIBITION of LIVE STOCK, POULTRY, CHEESE, MACHINERY, IMPLEMENTS, WORKS of ART, and HORTICULTURAL SPECIMENS.

JOSIAH GOODWIN, Sec.
4, Terrace Walk, Bath, May, 1877.

For Greenhouses, Winter Gardens, Terraces, &c.

STANDARD and PYRAMID SWEET BAYS (LAURUS NOBILIS)—More ornamental and of easier culture than Orange trees, their constant deep green colour being of a very pleasing effect.

The following are all grown and established in tubs, and fit for travelling any distance:—

STANDARD BAYS—Height of stems, 3½ to 4½ feet; diameter of heads, about 2 feet, price £2 to £3 per pair.
,, ,, with very large compact heads, 3 to 4 feet in diameter, £6 to £8 per pair.
,, ,, extra large and fine, £12, £16, £20, to £40 per pair, according to size and beauty.
PYRAMID SWEET BAYS.—Fine young Pyramids, 6 to 7 feet high, £2 to £3 per pair.
,, ,, large, strong, 3 to 4 feet diameter at the base, £5 to £6 per pair.
,, ,, extra large specimen Pyramids, 8 to 10 up to 15 feet high price £8, £12 to £20, up to £40 per pair, according to size and beauty.

Hundreds of pairs to be disposed of. Apply at once to
JEAN VERSCHAFFELT'S Nurseries, Ghent, Belgium.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s per dozen: extra strong plants, 3 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.
RICHARD SMITH, Nurseryman, Worcester.

Cheap Bedding Plants.

H. J. HARDY has much pleasure in offering fine and healthy autumn-struck plants of the following:—

GERANIUMS, Vesuvius, Master Christine, Jean Sisley, Triumphant, Madame Vaucher, and other best Bedding sorts, at 8s. per 100 from store, or 10s. from single pots.
CALCEOLARIA FLORIBUNDA AUREA, 5s. per 100 from store.
Package free and carriage paid for 20s. worth. Terms Cash.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.
Please note alteration of Address.

Dahlias.

CHARLES TURNER can now supply strong Plants of all the classes, also the following New Varieties offered for the first time, viz.:—Artiste, Burgundy, Black Knight, Canary, Chas. Ridley, Drake, Lewis, Elsa, Figaro, Mrs. Urquhart, The Rover and Vivian Grey.
The New Spring CATALOGUE, containing full descriptions of above and all the most popular plants, may be had free on application.
The Royal Nurseries, Slough.

Cheap Bedding Geraniums.

ALFRED FRYER offers the following good Bedders at 10s. per dozen for cash:—Golden Tricolors: Peter Grieve, 12s. ; Prince of Wales, 6s. ; Lady Cullum, 3s. 6d. ; Sir Robert Napier, 3s. 6d. ; Mrs. Pollock, 3s. ; Sophia Dumaresque, 3s. ; Silver Tricolors : Lass o' Gowrie, 4s. 6d. ; Queen of Hearts, 4s. 6d. ; Miss Burdett Coutts, 3s. 6d. ; Mrs. John Clutton, 3s. 6d. ; Prince Silverwings, 3s. Double flowered : Marie Lemoine, 3s. ; or one of each for 5s. No charge for packing, if empties are returned at once ; also postfree for 6d. per dozen extra. For Priced LISTS apply to
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

RODGER, McCLELLAND AND CO. have still a few extra strong plants of
HYDRANGEA PANICULATA GRANDIFLORA, 1½ to 3 feet high, 12s. to 18s. per dozen.
CLEMATIS JACKMANII, 10s. per dozen.
,, PRINCE OF WALES, 5s. per dozen.
TROPÆOLUM SPECIOSUM, beautiful hardy climber, 6s. per dozen.
MUHLENBECKIA COMPLEXA, one of the most elegant of hardy climbing plants (like Maidenhair Fern), 6s. to 9s. per dozen.
64, Hill Street, Newry.

SPECIAL OFFER TO THE TRADE.
DELPHINIUM, nudicaule, 5s. per dozen, 25s. per 100.
MYOSOTIS, alpestris, dwarf, fl. albo, 5s. per dozen, 25s per 100.
,, alpestris nana, fl. cœrulea, 5s. per dozen, 25s. per 100.
PRIMULA, farinosa, 5s. per dozen, 25s per 100.
,, sp. sinensis, 8s. per dozen, 40s. per 100.
All grown in pots.
A. M. C. Jongkindt Coninck begs to call attention to the beautiful dwarf white and blue alpine FORGET-ME-NOT, which does not exceed 4 inches, and is equally well adapted for Rockwork as for Carpet Bedding.
A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle.

Clearance Sale.

CHOICE AMERICAN and OTHER POTATOS, 2s. per peck, or 8s. per cwt. Rhubarb roil, Norwich, Early Rose, Champion Regents, Red-skin Flourball, Bresee's Peerless, Brownell's Beauty, Yorkshire Hero, Scotch Blue Victoria, Wood's Scarlet Prolific, Alpha, &c. Orders will be sent out in succession till all are cleared.
DANIELS BROS., Seedsmen to the Queen, Norwich.

FIFTY THOUSAND MAGNIFICENT DWARF ROSES, in POTS.
ROSES for BEDDING, at 12s. to 18s. per dozen, 100s. per 100.
TEA-SCENTED ROSES, superb, established in 6-in. pots, adapted for greenhouse or conservatory, 30s. per dozen, 200s. per 100. Descriptive CATALOGUES on application.
WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

New Bedding Tropæolum, "Hunteri."

DOWNIE AND LAIRD have much pleasure in offering for Spring delivery the above, an excellent Bedding Tropæolum, surpassing its parent Cooperi, being of a dwarfer habit : they can with perfect confidence recommend it. Price, per dozen plants, 12s. ; each, 1s. 6d. Usual discount to the Trade.
West Coates Nursery, Edinburgh.

Chrysanthemums, Dwarf Summer-flowering VARIETIES.

ROBERT PARKER begs to announce that he can supply the above-named in twelve distinct varieties, by the dozen, 100, or 1000, price, 9s. per dozen ; 50s. per 100. Special quotations for larger quantities. For lines, masses, or clumps in mixed borders, these take a first rank among flowering plants.
Exeter Nursery, Tooting, Surrey, S.W.

SPECIMEN MYRTLES.—For Sale, Three magnificent Myrtles in Ornamental Tubs, measuring 4 feet 6 inches high by 5 feet 3 inches in diameter ; two dozen fine Myrtles, also in tubs, and some good flowering YUCCAS and ALOES ; a large quantity of BEDDING-OUT PLANTS, and some well grown INDIARUBBER TREES. Apply at once to
GARDENER, 89, Wandsworth Road, Vauxhall, S.W.

BEDDING-OUT PLANTS of all kinds, the Cheapest in the Trade.
All kinds of Bedding Plants, from 5s. per 100, packed and sent to any station free of charge.
T. C. Paul's British FERNS, at £1 per 100, comprising twelve varieties, including Osmunda regalis—the Royal Flowering Fern—are the best and largest in the trade.
T. C. PAUL, Covent Garden Market, W.C., opposite the church.

THE NEW SEEDLING ROSE,
"QUEEN of BEDDERS"
(NOBLE).

See Coloured Plate (after Mrs. Duffield), "Gardeners' Chronicle," May 5, 1877.

Perhaps the finest of all the English Seedling Roses of recent introduction. It is *par excellence* a really Bedding Rose in every sense of the word—requires no pegging down, support, or training of any kind, and is a continuous early and late bloomer.

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that a plant 18 inches high had eighty-four buds and expanded flowers upon it on September 6, 1876.
A constant supply of buds was obtained from early June to November of that year—over five months.
Good Plants are now being sent out in strict rotation at **10s. 6d. each.**
Coloured Plates 1s. each.

CHARLES NOBLE, BAGSHOT.

TO OBTAIN THE
Best Garden Lawns and Croquet Grounds
SOW
SUTTON'S
LAWN GRASS MIXTURE,



Which forms a close velvety turf in a very short time. For making New Lawns or Croquet Grounds 3 bushels or 60 pounds is required per acre, or 1 gallon to every 6 rods (or perches) of ground.
For improving those already in turf, 20 pounds should be sown per acre.
March, April and May are the best months for sowing.
Price 1s. 3d. per lb., 22s. 6d. per bushel, carriage free.
From Mr. J. MERRICK, *Gardener to* S. Forster, Esq., *Le Court.*
"The Seed you sent me last year turned out uncommonly well. Several gentlemen who came to Le Court could scarcely credit, from the appearance of the lawn, that it was only sown in May. In August it was as fine and thick as I have seen some lawns that had been laid down for three years."

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds Gratis and post-free.

Suttons Sons

THE QUEEN'S SEEDSMEN, READING

QUANTITY and QUALITY.

NEW ROSES, IN POTS.
TEA and NOISETTE ROSES, IN POTS.
CLEMATISES, IN POTS, of best New and Old Sorts.
ORCHARD-HOUSE TREES, IN POTS.
VINES, IN POTS.
Also, by far the largest and most carefully grown Outdoor NURSERY STOCK in this part of England.

LISTS FREE.

EWING & COMPANY,
THE ROYAL NORFOLK NURSERIES, EATON, NEAR NORWICH.

IRELAND and THOMSON have pleasure in intimating that their CATALOGUE of STOVE and GREENHOUSE PLANTS, FERNS, PALMS, ORCHIDS, &c., is now ready, and will be forwarded post-free on application.
ADIANTUM FLEMINGII.—A sport from A. concinnum, and is in every respect much superior to the species that produced it. Its dense, compact, semi-erect habit, with the dark green colour of the fronds, which in their young state are of a beautiful brownish purple tint, constitute it a most decided acquisition for exhibition purposes, and is almost without an equal as a table Fern. Price 10s. 6d. and 21s. each.

NEW BEDDING PLANTS for 1877.
I. & T. desire to call attention to the following splendid novelties :—
LOBELIA, St. Martin's Blue, new bronzed-leaved, price 12s. per dozen, 4s. per 100.
VIOLA, Sir Walter Scott, splendid new bedding, price 12s. per dozen, 4s. per 100.
GERANIUM, Marchioness of Huntley, new bronze, price 18s. per dozen.
For detailed descriptions see *Gardeners' Chronicle.*
I. & T. are now busy lifting out the above. Orders will be executed in rotation.
Craigleith Nursery, Comely Bank ;
Seed Warehouse, 20, Waterloo Place, Edinburgh.

DAHLIAS, DAHLIAS, DAHLIAS.—2000 of the finest varieties, 4s., 6s., 9s., and 12s. per dozen.
PELARGONIUMS, 2000, Show, Fancy, and French, 6s., 9s., and 12s. per dozen.
ROSES, 500, in pots, well established, 12s., 18s., and 24s. per dozen.
GERANIUM, Wonderful (Smith's), 9s. per dozen, strong plants.
An immense stock of STOVE and GREENHOUSE PLANTS of all the leading varieties.
CATALOGUES on application.
HENRY WALTON, Edge End, Brierfield, near Burnley.

Cheap Plants—Special Offer.

WILLIAM BADMAN offers the following :—
VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 10s. per 100 or 1s. 6d. per dozen ; well-rooted Cuttings, 6s. per 100, 50s. per 1000 ; twelve choice named sorts, 8s. per 100.
CALCEOLARIA, Golden Gem and aures floribunda, good plants from single pots, 10s. per 100, 1s. 6d. per dozen.
LOBELIA, speciosa, Bluestone, pumila grandiflora, good strong plants from thumb pots, 10s. per 100, 1s. 6d. per dozen ; from store pots, 3s. per 100, 20s. per 1000. Emperor William Lobelia, good plants, 12s. per 100 ; rooted cuttings, 5s. per 100.
PELARGONIUMS, Vesuvius, finest scarlet, from stores, 8s. per 100, 75s. per 1000 ; Jean Sisley, 10s. per 100 ; Madame Vaucher, fine white, 10s. per 100 ; Master Christine, 12s. per 100 ; Mrs. W. Paul and Bluebell, fine pink, 10s. per 100 ; all from single pots, and at 1s. 6d. per dozen.
TRICOLOR PELARGONIUMS, Mrs. Pollock, 20s. per 100, 2s. 6d. per dozen ; Flower of Spring and Prince Silverwings, 12s. per 100, 2s. per dozen.
GOLD-LEAF PELARGONIUMS, Crystal Palace Gem, strong, from single pots, 12s. per 100, 2s. per dozen : May Queen (Turner's), fine silver variegated, 12s. per 100, 2s. per dozen.
CRIMSON PELARGONIUM, Waltham Seedling, good bedder, 10s. per 100, 1s. 6d. per dozen.
HELIOTROPE, finest dark, good plants, 10s. per 100, 1s. 6d. per dozen ; rooted cuttings, 6s. per 100.
AGERATUM, Imperial Dwarf, blue, fine bedding plants, from single pots, 10s. per 100, 1s. 6d. per dozen ; rooted cuttings, 5s. per 100, 40s. per 1000.
IRESINE LINDENI, best crimson-leaf bedding plant, strong stuff, 10s. per 100, 1s. 6d. per dozen : from stores, 6s. p. 100.
CENTAUREA CANDIDISSIMA, fine silver-leaf, 3s. per dozen, 20s. per 100.
Package included. Terms cash.
Cemetery Nursery, Gravesend, S.E.

A. VAN GEERT, NURSERYMAN, Ghent, begs to offer the following MISCELLANEOUS PLANTS, of which a good stock is now on hand, viz.:—

50	Acacias, in 25 sorts for 40s.	25	Gesnera macrantha, strong bulbs, 20s.
12	Adiantum farleyense, 21s.	12	Gardenia florida, 9s.
12	,, macrophyllum, 15s.	12	,, radicans, 9s.
12	,, gracillimum, strong, 21s.	12	new Gloxinias, splendid varieties, 18s.
12	,, crispulum, 9s.	12	Grevillea robusta, 15s.
50	,, of sorts, 30s.	12	Hovea Celsi, 12s.
12	Æschynanthus, of sorts, 18s.	12	Hedychium, of sorts, 18s.
12	Asplenium Veitchii, 12s. and 24s.	6	Jacaranda mimosæfolia, 18s.
12	Areca monostachya 24s. and 42s.	12	Latania borbonica, table sizes, 18s., 30s., and 60s.
6	Aralia Veitchii, 30s.	100	Livistona humilis, 3-yr. seedlings, 80s.
3	,, elegantissima, 21s.	12	choice Maranta, 21s.
12	Agave and Yucca, choice, 15s.	12	Musa enseta, 30s. and 60s.
100	Begonia (tuberous), 42s.	12	Mitraria coccinea, 12s.
6	Bertolonia Van Houttei, 24s.	100	Pandanus utilis, seedlings, in strong 30s.
6	,, marmorata, 18s.	12	choice Palms, table size, 30s. and 60s.
12	Chamærops Fortunei, 18s., 30s. and 42s.	12	Palms, recurvata, 3-yr., single pots, 80s.
12	,, humilis, 18s., 30s., and 48s.	12	Pteris cretica fil. (the new Californian Palm), 30s. and 60s.
12	Coffea arabica, 18s.	12	Psychopsis Alexandræ, a very elegant Palm, 30s. and 60s.
12	Cocos Romanoffiana, 60s.	12	Passiflora, of sorts, 12s.
12	Croton, choice vars., 15s.	12	choice Stove Plants, middle size, 24s. to 48s.
12	Chorozema splendens, 9s.	12	choice Greenhouse Plants, 18s. and 30s.
12	Cyrtomium atratum, 18s.	12	choice Orchids, 63s.
12	Cyathea dealbata, 18s. and 30s.	12	Sarracenia purpurea, strong growing plants, 42s.
12	Caladium, choice vars., 15s.	12	,, flava, 60s.
100	Darea diversifolia, 40s.	12	,, Drummondi, 60s.
12	Dracæna, choice varieties, 18s. and 30s.	12	choice Selaginella, 9s.
12	Dorvanthes Palmeri, 30s. and 60s.	12	Sericobonia ignea, 9s.
12	Dieffenbachia grandiflora, 100s.	12	Soliya serrata, 9s.
6	Dionæa muscipula, 21s.		
12	Eurya latifolia, 30s.		
50	choice Ferns, own selection, 21s., 42s. and 63s.		
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The finest stock of growing plants in Europe, splendid specimens, with fine regular heads of fronds, from £3, £5, £10, £15, and £20.

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S. BIDE can now supply, for cash, strong, healthy, spring-struck Verbenas, free from disease of any kind, at 6*d.* per 100; well-hardened, extra good plants, 8*d.* per 100, including Purple, Scarlet, White, Pink, and many other shades of colour. All true to name, and package free.

CALCEOLARIAS, aurea floribunda, and other varieties, good strong plants, 8*d.* per 100, 60*d.* per 1000.

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GERANIUMS, Crystal Palace Gem, good plants, established in single pots, 15*s.* per 100. Cash with order to

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JOHN SOLOMON offers VERBENAS, White, Scarlet, Purple, and Pink; LOBELIAS, pumila grandiflora, Bluestone, and pumila magnifica; CALCEOLARIAS, Golden Gem; HELIOTROPES; AGERATUMS, Imperial Dwarf and Countess of Stair; FUCHSIAS, in all the best bedding sorts; all the above at 12*s.* per 100. GERANIUMS, Vesuvius, Christine, and Flower of Spring, at 4*s.* per 100. All the above are good, strong, well-hardened, and established in single pots. Cash to accompany all orders.

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CATALOGUES on application.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15*s.* to 18*s.* per dozen.

,, extra size, in 6-inch pots, for Greenhouse, set with buds, 24*s.* per dozen.

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NEW FRENCH ROSES of 1877, 30*s.* per dozen.

HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36*s.* to 42*s.* per dozen.

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Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18*s.* to 30*s.* per dozen.

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Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12*s.* and 18*s.* per doz., or £5 per 100.

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KNAP HILL NURSERY, WOKING, SURREY.

ZONAL GERANIUM.

With the New Dahlias,

JOHN KEYNES

is now prepared to offer one of the finest ZONAL GERANIUMS ever yet before the Public.

J. K. trusts his long experience and care will be sufficient guarantee for the quality and character of this splendid variety. It was raised by Mr. Wm. Dodds. A great truss of flower, splendid bedder, lively majenta colour, quite a new shade from any other. Has been the admiration of all in the beds at Salisbury.

"JENNIE DODDS,"

Price 18s. per dozen. One-third off where twelve or more are ordered.

SALISBURY.—April 23, 1877.

Highly Important Sale of New Crotons, Dracænas, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, May 31, a quantity of CROTONS, DRACÆNAS, &c., just arrived from New Guinea, South Sea Islands, New Britain, &c., in splendid condition. Many of the Plants now offered are quite new, and are not in commerce.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

WILLS' NEW HYBRID DRACÆNAS.

MR. J. C. STEVENS has received instructions from Mr. WILLS, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 26, at half-past 12 o'Clock precisely, the entire Stock of about Twenty-four of the very finest of the above magnificent

HYBRID DRACÆNAS,

raised by Mr. F. BAUSÉ, at the Melbourne Nursery, Anerley. Mr. Wills has determined to give the Trade an opportunity of purchasing the above magnificent plants.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.

WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above; also of his

MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

NEW DOUBLE WHITE VIOLET, "BELLE DE CHATENAY."

Awarded a First-class Certificate by the Horticultural Society of France.

We offer this magnificent Viola for the first time. The flowers are pure white, most delicately perfumed, of immense size, and very double; in fact, almost equalling in size the well-known white Aquilegia.

It is pronounced by French horticulturists to be the very best double white Violet in cultivation.

Trade price on application.



The raiser says: "This new Violet will be appreciated as a Market Gardener's and Florist's plant, as it blooms most freely and continuously."

The illustration is from some specimen flowers, which are of natural size. We can strongly recommend this Viola as a charming addition to the popular group of flowers.

Trade price on application.

Retail Price—Strong Plants, 4s. 6d. (Post-free 5s.)

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ODONTOGLOSSUM VEXILLARIUM.

MR. WILLIAM BULL

Intimates that at present he has about 150 plants of ODONTOGLOSSUM VEXILLARIUM in bud and flower, presenting a *coup d'œil* of this magnificent plant never before seen in Europe, and he will be happy to show the group to any one favouring him with a visit.

ESTABLISHMENT FOR NEW & RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

"ARCHIMEDEAN" AMERICAN LAWN MOWERS,

Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.

They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

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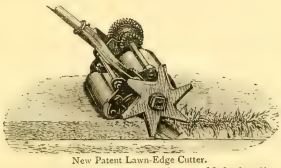
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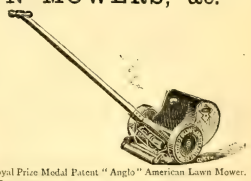
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Awarded Medal for Merit, Vienna, 1873 (the only Medal given for Lawn Mowers), Large **Silver Medal** (the First Prize) at the Meeting of the Royal Horticultural Society, Birmingham, 1872, and in addition, every First Prize wherever these Machines have been brought into competition in actual trial with other makes.

FOLLOWS AND BATE here abstain from enumerating in detail the various good points "claimed" for other Machines, and content themselves with saying that their Lawn Mowers possess them all, and more also; they therefore solicit the favour of an application for one of their CATALOGUES, with Testimonials, BEFORE PURCHASING.

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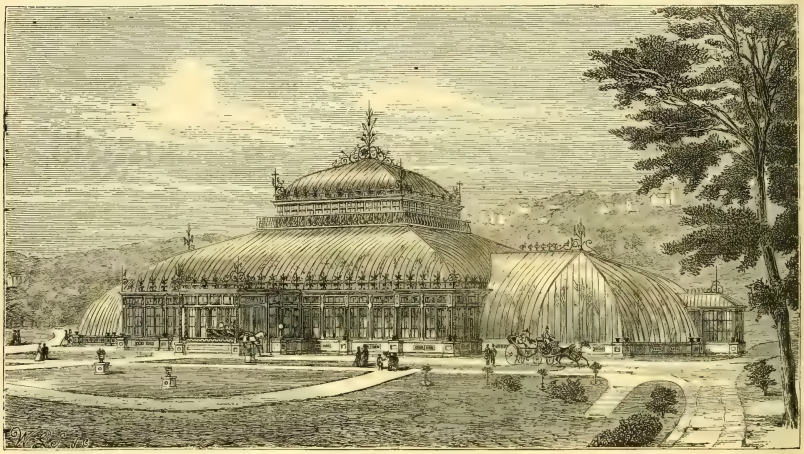
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LONDON, 1873.


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GOLD MEDAL, 1872.



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HORTICULTURAL BUILDERS AND HOT-WATER ENGINEERS,

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By which means the Curvilinear Form is obtained without the use of Bent Glass, and for which they have been awarded the GOLD MEDAL at the ROYAL HORTICULTURAL SHOW, 1872, also at London and Vienna.

GOLD MEDAL AND EVERY DESCRIPTION OF BOILER.

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MYOSOTIS DISSITIFLORA—Forget-me-not ..	0 6
PANSY, choicest mixed English	6d. and 1 0
PRIMULA SINENSIS, choicest mixed	2s. .. 2 6
POLYANTHUS, finest gold-laced, choice	1 0
STOCK, Brompton, scarlet Giant	0 6
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SWEET WILLIAM, very choice, mixed..	0 6
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GREENHOUSE PERENNIALS, 12 fine varieties ..	6 0
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DANIELS BROS.,
ROYAL NORFOLK SEED ESTABLISHMENT,
Norwich.

Sole Medallists for the Best Hot-Water Apparatus at the United States Centennial International Exhibition, Philadelphia.

By Royal Her Majesty's Letters Patent

WRIGHT'S ENDLESS-FLAME-IMPACT *HOT-WATER BOILERS.*

GUARANTEED

The most Powerful, the most rapid, the most Economical, the Simplest, and the Cheapest in the World.

"The 'Boiler of the Future.'" I have no doubt about this."—WM. THOMSON, *Tweed Inverpeffs.*

From the "Gardener," March, 1877.

WRIGHT'S PATENT

ENDLESS FLAME-IMPACT BOILER.

"This boiler is attracting a good deal of attention in the horticultural world at the present time; and as I have just had one of their largest-sized ones fitted up here, and have now got it well working, perhaps a few lines from me upon its capabilities may not be without some advantage to some of your numerous readers. I have had some experience as to the annoyance and extra labour caused by badly-constructed boilers, and any improvement effected in these to save labour and fuel demands the attention of all interested parties.

"To give your readers a better idea of the work this boiler has to do, I may begin by stating that our hothouses consist of a range having a total length of 190 feet, a ridge-and-furrow-roofed greenhouse being in the centre, two lean-to Vineries on each side, with Camellia-house and general plant-house at each end; on the opposite side of wall we have a Fern-house, partly lean-to and partly span, 99 feet in length, varying in width from 10 to 30 feet. Attached to end of boiler-house is our foundry, with a drying chamber fitted up with about 250 feet of 4-inch piping.

"The whole of the above houses are heated with hot water, and have a total of about 3200 feet of 4-inch piping. We had formerly two oval flue boilers, one being 4 feet 6 inches long, the other 4 feet long. With these two boilers I had first and we always found great difficulty in keeping up the temperature during frosty weather, and had frequently to lose a night's sleep attending to the fires. On the last day of last year the larger boiler came to grief—the water from it drowned out the fire; and in taking down some of the brickwork it was found to have cracked beyond repair. To be thus left in the middle of winter with only the one boiler was no joke. I had to look out for another without delay. I have given a good deal of attention to the construction of hot-water boilers, and I must say I had never seen one that came up to my idea of what a boiler should be until about a month ago my attention was called to a drawing of Wright & Co.'s Boiler, which appeared in the *Gardener*.

"After talking the matter over with my employer, W. S. Mitchell Innes, Esq., he at once granted permission to get the boiler I had formed such an opinion of. I at once put the order into the hands of Messrs. Meikle & Philp, hothouse builders and hot-water engineers, Torphichen Street, and they have fitted it up and attached the piping in the most complete manner. I also got some additional tight valves attached, so that if anything should at any time go wrong it can be attended to without disturbing the piping.

"And now as to the capabilities of the boiler for the work. As formerly stated, I had considerable difficulty in keeping up the heat with the two oval flue boilers kept hard at work. I now find that with the remaining oval flue boiler idle, I can heat up the whole of the houses and the laundry to a degree they never were before, and that with much less coal than it took to fire *one* of the oval flue boilers.

"Our chimney consists of a fine 79 feet long, led horizontally through the centre of back wall, with 15 feet of a perpendicular stalk. Some doubt was expressed that, as we required a chimney pipe attached to boiler about 6 feet long, there would be deficiency of draught; but we have found the opposite to be the case. I attached a 6-feet length of 8-inch stove pipe, with elbow at boiler, and cleaning door on the angle, and as I found the draught very strong I got a throttle-valve damper fitted into the bend of the stove pipe, and am able to regulate the fire to a nicety, and by banking-up the fire at 10 P.M., and leaving the damper fully half round, I can leave it to do work with the greatest confidence till the usual time of commencing labour the following morning; and instead of, as formerly, having to sit up firing the half of the night at times, and sometimes whole ones, we can retire to rest at a reasonable hour, confident of sleep being undisturbed by unpleasant dreams of plants and fruits going to ruin. In concluding my remarks I may say that not the least of the good qualities of this boiler is its portability. We had only the slightest difficulty in putting it down in our contracted stokehole through a trap-door 4 feet long by 2 feet broad, and fitting it up in a recess 4 feet square; and I am confident that with the assistance of two men I could take the whole to pieces and have it again in full working order in two hours. I have no hesitation in saying that for rapidity of circulation, small consumpt of fuel, portability, and cleanliness, it has no rival, and have no doubt this boiler will win its way; and where cost is high in price it will effect a considerable saving, and as there is good fire space in it it will be found a capital boiler for burning wood and other fuel."—J. CLARK, *Head Gardener, Pearsie's Grove, Edinburgh.*

(We have a very high opinion of this boiler, and predict that it will take a foremost place in heating hothouses by all other boilers now in use.—ED. *Gardener.*)

"I think yours the most perfect '**Heat Trap**' yet invented.—DAVID THOMSON, *Drumlanrig Gardens.*"

For details and particulars as to the various sizes made, and prices, see new pamphlet, entitled, "OUR COMMON SENSE HOT-WATER HEATING," which will be handed to all applicants, post-free.

We are prepared to supply **Thirty Different Boilers** of all powers, sizes, and heights, and can very these to suit any particular situation or requirement.

WM. WRIGHT & CO.,
HOT-WATER ENGINEERS,
AIRDRIE, near GLASGOW, N.B.



SATURDAY, MAY 26, 1877.

ATHOLIA.

THERE is not an estate in Britain more affluent in waterfalls than the Duke of Athole's, extending as it does over the cloud-compelling peaks of the Grampians, and over a country of mountain burns, the feeders of the Garry and the Tay.

The principal source of the fountains of Athole is situated 17 miles from the Castle and 1450 feet above the level of the sea, in the Pass of Drumouchter, between the Boar of Badenoch and the Athole Sow. Just here the streamlets are small, and at the point where they are balanced, so to speak, upon the ridge of the watershed, some run to the Garry, some to the Spey. Mr. Geikie, writing of the courses of the glaciers, tells us that, "the glacier of Loch Garry split upon the watershed and sent one branch into Glen Garry and the other into Glen Truim," and so to the Spey. Above, where the ice parted in the ice age, the waters now part—a pebble might sometimes turn them either way; and near here, at the Inn of Dalwhinnie, in 1861, the Queen, travelling adventurously through the country, stopped to dine and sleep. The story is told in the *Journal of Our Life in the Highlands.*

The Royal party in that last expedition round about the Grampians from Balmoral reached the forlorn and elevated inn at nightfall on October 9, without bringing food. Two lean fowls snatched from the perch lost their lives in consequence, and were placed on the parlour table with tea, the only beverage. The frightened maids refused to wait at table. "Mary and Maxted, Grant, Brown and Stewart," were engaged drying their clothes in the commercial room; they afterwards dined on meagre fare, and nothing to drink but tea. We are told that on this cheerless night there was "no pudding and no fun." It rained, and the little rill before the door was every instant rising; and 50 miles distant at Perth there is often as sudden a rising of the river from the swelling of all the streams from Dalwhinnie to Perth Bridge.

Next day the party passed Loch Garry, lying darkly as in a den among the mountains. It had been a good night for the Duke of Athole's waterfalls; aad as they rode along they presently met the Duke on a chestnut pony, "in his kilt and shooting jacket as usual," coming out to attend the Queen. Some more heavy showers fell, early autumn showers, interrupted by a glorious sun breaking through the clouds. The Garry is described in this attractive narrative as rolling along by the roadside, "over large stones, and forming perpetual falls, with Birch and Mountain Ash growing down to the water's edge."

Soon the travellers see in the distance Ben-y-Ghlo, the source of the Feudar and the Tilt, which tumble through Blair Athole park. Then they passed the Falls of Bruar, a stream which commences at a spot where Aberdeenshire, Inverness-shire, and Perthshire meet upon the heather and the high ground of Athole Forest, and which crosses twenty-two miles of wild moor, and flows into the Garry three miles above Blair.

The finish of the Bruar is beautiful. For half a mile at the end of its course the stream dashes and tumbles through a narrow glen, and sometimes passes through deep, long chasms,

which are spanned at salient points by bridges, reached from above by winding paths. The deepest fall is 60 feet perpendicular. An ornate shelter hut commands it from the edge of a convenient precipice, where you may observe the animating noise and flow of the water, and the ingenuity of the Duke in planting several of the ledges and steeps above the stream. Burns had spoken to the Duke on the subject of the bare sides of this glen, and Bruar Water had been made to apostrophise his Grace in these and other charming verses :—

> "Would then my noble master please
> To grant my highest wishes,
> He'll shade my banks wi' towering trees
> And bonnie spreading bushes."

The difficult places were planted by letting boys down in baskets, with their pockets full of Fir plants and young bushes, which they set in the crevices, and covered with earth let down for that purpose.

Since the Duke brought his Royal guest past this spot a railway has been laid up the valley, and thousands of acres of the slopes above have been covered with Scotch Fir ; and 2 miles from the Castle there is now a baronial lodge. It was at this point that the party entered the park. They were afterwards driven forwards on their journey in a carriage specially constructed for fluvial districts and precautionary, like Noah's Ark. The journal we quote from describes it as a "boat—a mere boat," put on four wheels.

It is the same lower down the valley, and as far as the Grampians extend—the pebble reefs in the rivers Garry and Tay everywhere bespeak streams well fed in the rainy season ; and the high flood-marks on Perth Bridge, dated 1814 and October, 1847, with the lowest water-mark of that dry summer, 1859, tell the same story as the pebbles, of varying water supply.

Walking from Birnam past Lady Well and along the main road, the Bruar runs, unseen for the most part, but not unheard, parallel with the road, and many feet below it. We remember capercailzie getting up into the Fir trees to roost, and sometimes getting down again alarmed as we passed. The river became more and more noisy among the trees, recent rains having increased its flood. For a mile there was a perpetual sound of tumbling waters on the right, and presently there came from Rumbling Bridge the roar of one of the Duke's best waterfalls ; and in a sort of shanty looking down the foaming stream towards the bridge, was an artist of a world-wide fame studying the effects of moonlight on the rushing water. We must leave the task of describing rapids, torrents, and cascades, to him and to the poets. Immediately around Blair Athole there is much movement of the mobile element in the various glens, each with its stream issuing from some parent loch among the mountains.

Walking along Tiltside, the Feudar is seen not far from the Castle, falling from a high rock into the larger stream below. An arched grotto has here been erected in the steep bank opposite, in which the reverberation is heard with curious effect, and a Tulip tree stands upon the bank above. You may reach it by a steep ascent through Hazel and other underwood, and you will observe that the timber of Tiltside and the grass upon its banks have been enriched by a bed of limestone which crosses the forest from Braemar, improves the pasture of the park, and then passes southwards through the country—a superior seam, excellent everywhere for the dairy or for sheep. Presently the glen begins to wind, its deep channel takes a wider sweep, and upon the steep ledges of the river banks all sorts of Firs stand, spiral and beautiful. Gilpin, who abused the Beech and Bramble, described the Scotch Fir as a dark spot upon the landscape, especially when young. It is so sometimes, but not always, and all old fellows ought always to praise youth in its best aspects, and to respect and admire it. It is unbecoming to have youth decried by age. The Scotch Fir is dark on sunless days, but in ascending Glen Tilt in bright weather we found its trunks red in the sunlight, and its exquisite green foliage deeply tinged with blue.

Beyond the Tulip tree a bridge crosses the Tilt, and from that point you follow its swinging course, with water music on your left and echo on your right. The slopes are about as steep as those of a Gothic roof, and this is not an uncommon style of hill architecture among the wilder glens. In ascending higher the trees are gradually left behind, till the Sloe with purple fruit, the Rowan with dropping berries, and the Hazel with changing leaf, struggling against the breath of autumn, keep company together. A Birch level follows, and a little forest with leaves brown, yellow, and ochreous, dead but lovely, and awaiting the first wind that will sweep them to earth. The wild Rose, too, brightens the hillside with its gay, decaying leaves, and red fruit. A little higher the Alder still stood robust and green, resisting the season of change—a gloomy tree nearer home, but not uncheerful in so wild a scene.

Beyond this tree limit is the Marble Lodge, in which a keeper lives. At Forest Lodge, 8 miles from Blair, the road for carriages ends, and bare steeps bound the glen on either side.

A high bank at Dalcronachie overhangs the Tilt, and looks up a glen towards Loch Loch, where one of the Comyns of Badenoch rests under a cairn. Near this spot are "the Pudding Burn," *Alt na marag*, and "the Brook of the Nose," *Alt no sroin*, illustrating the richness of the Celtic language in nomenclature. These streams were named from the following incidents: Comyn had seized the castle of Macintosh of Tirinie, murdered his family all but one, and seized his lands. The one child who was saved, on attaining manhood, attacked Comyn at Blair, drove him up Glen Tilt, and shot him near Loch Loch ; and at *Alt na sroin*, during the rout, a nose fell into the stream, and at *Alt na marag* another person received a gash, and the stream was named "the Pudding Burn." The view here is very fine, and here the party we left in the boat upon wheels took luncheon, attended by the pipers and the people and by Sandy McAra, the head keeper, "old and grey," the wild strains of the pibroch sounding softly amid the hills, and Glen Tilt looking like a long, straight furrow drawn down the mountain side.

The cavalcade set off again and crossed the celebrated ford of the Tarff—Poll Tarff it is called—the Duke leading the Queen's pony on one side, a trusty servant leading on the other, Sandy McAra, the guide and the pipers, playing all the time, marching in advance. In the middle of the stream the current proved sufficiently strong and deep, but all waded through in safety, and soon after the road became precipitous. From this point the Tilt becomes narrower and narrower to the spot where the travellers emerged from the pass upon an open valley. And here, where the waters part and the Bainoch runs towards the Dee, the Duke of Athole finds a boundary. Along the ridge his forest meets those of Mar and Badenoch, his armies of deer unite with those of neighbours, and all troop over the hills together.

At the "county march," where Perth and Aberdeen meet, the cavalcade halted. The Duke produced some whiskey and a silver flask, and proposed a toast, and rather than rob the waterfalls of Dee he took his whiskey neat ; and then there was a great cheering, a little starting on the part of "my pony, good Inchrory," and then the parting.

Dr. John Maculloch examined the flora of Ben-y-Ghlo in 1824. He says :—"On this mountain is found, in abundance, one of our rarest and most elegant of alpine plants, the Azalea procumbens, as it is on the range of hills opposite. The neighbourhood of Blair is, indeed, a tempting field for the botanist. Near the dense and trailing cushions of this delicate shrub, and even among its bright crimson flowers, it is not unusual to find the rare Rubus arcticus, with its elegant berry, and the still rarer Cornus suecica. The Rubus Chamæmorus and the more ordinary alpine plants are found in profusion, and in one place there is a miniature forest of the Betula nana, a plant almost limited to this spot.

"The rare Lichen (Platysma) nivale occurs all over Ben-y-Ghlo, the Lichen (Cetraria) islandica almost covers the ground in some places. On the calcareous skirts of Glen Tilt, the Dryas, with the Satyrium viride and some other rare Orchidaceæ, are seen everywhere ; and here, even in the bed of the stream, at a lower elevation than I have ever elsewhere seen it, the rocks are covered with the long trailing stems and brilliant crimson flowers of Saxifraga oppositifolia. Here also the cushioned Silene acaulis grows at a low level, while there are few of the alpine Saxifrages which are not found somewhere ; the golden flowers of the autumnalis decorating every rill and cascade. In the wet ground above the Anthericum calyculatum occurs in profusion, as does the Trollius, a plant far from common in Scotland. About Blair the delicate starry flower of the Trientalis is the Daisy of the heaths and woods, as the two commoner Fyrola emulate the Lily of the Valley in profusion as they do in odour. In the Fir woods also the very rare Pyrola secunda abounds, and near the Feudar I found the most rare of our plants, the Convallaria (Polygonatum) verticillata, only known as yet in one other place (in Scotland), near Dunkeld. Of the fungi, the park and woods of Blair are a perfect magazine, containing almost every Agaricus that exists, together with a great number of species in all the other genera." *H. Evershed.*

New Garden Plants.

HESPERANTHA LONGITUBA, *Baker.**

This pretty Ixia-like Irid has just been introduced into cultivation by Max Leichtlin, Esq. It is widely spread through the eastern provinces of the Cape, extending northward through Kaffraria to Natal. It is a near neighbour of the old Hesperantha falcata, Ker (Ixia falcata, *Bot. Mag.*, tab. 566), with which it agrees in its flowers being fragrant and expanding in the evening. It differs by its longer and more grass-like leaves and larger flowers, with a longer perianth-tube and much larger spathe.

Bulb small, ovoid, with firm membranous dark brown tunics. Leaves two or three in a distichous nearly basal rosette, and one much reduced clasping the scape below the middle, bright green, glabrous, grass-like in texture, the fully-developed ones reaching a length of 6 or 9 inches, and a breadth of 3 or 4 lines. Flowering-stem reaching a height of 1 foot, with a simple lax erect spike of from three to eight flowers. Spathe-valves entire, green tinged with red at the flowering time, the outer one lanceolate-oblong, varying from 1 inch long in the lower part of the spike to ½ inch at the upper, clasping round and hiding the ovary and inner valve of the spathe. Perianth-tube cylindrical, usually protruded from the spathe ; segments of the limb oblong, ¼—⅔ inch long, the inner ones white, the outer much tinged with reddish-brown. Filaments ⅓ inch long ; anthers linear, sagittate at the base, ⅔ inch long. Entire portion of the style not protruded from the tube of the perianth, its three falcate subulate branches as long as the anthers. *J. G. Baker.*

ANTHURIUM SPATHIPHYLLUM, *N. E. Br.*

Whole plant quite glabrous and smooth. Stemless (in the Kew plant, but perhaps forming a stem with age) ; petiole 3—6 inches long, 2—2½ lines thick,

* *Hesperantha longituba*, Baker.—Bulbo parvo ovoideo, tunicis brunneis membranaceis ; foliis productis basalibus 2—3 linearibus glabris scapo brevioribus ; scapo gracili folio unico reducto infra medium bracteato ; spicâ laxa erecta pauciflora ; spathæ valva exteriori oblongo-lanceolata, 6—12 lin. longa integra viridi rubro-tincta, interiori minori inclusa, floribus vespertinis ; perianthii tubo cylindrato limbo longiori, segmentis oblongis, interioribus albidis, exterioribus rubro suffusis ; filamentis brevissimis, antheris magnis linearibus ; styli ramis elongatis subulatis.—*Gressoria longituba*, Klatt, in *Linnæa*, vol. xxxv., p. 383.

trigonous, flat on the face, the three edges narrowly membranous margined, green; geniculus 3—4 lines long, tumid, trigonous, green, and margined as in petiole; blade 16—24 inches long, 1½—2½ inches wide, narrow lanceolate, attenuate-cuneate in a straight line from middle to base, apex acuminate, texture about like that of thick paper, bright green above, pale greyish green beneath, impunctate; midrib prominent, rounded or obtusely triangular above, more prominent beneath and acutely triangular, with a membranous dorsal keel (continued up from the petiole); lateral veins 16—30 on each side of midrib, varying according to length of leaf, impressed above, prominent beneath, rather distant, erecto-patent, curved, all forming a continuous pseudo-nerve 2½—3 lines distant from the margin, or those in the basal part running out into the margin or forming short pseudo-nerves of 2—3 anastomosed veins, and then excurrent to the margin. Peduncle 7—10 inches long, 1—1½ line thick, trigonous, slightly compressed, the edges membranous margined, sometimes with a fourth edge or keel on one side in the upper part, pale green. Spathe about 1½ inch long, 1—1½ inch broad, erect, deeply concave-hooded or boat-shaped, broadly ovate, apex shortly acuminate, sub-obtuse with a short mucro, base amplexicaul, very shortly



FIG. 105.—DENDROBIUM THYRSIFLORUM.

decurrent; pale green inside and out. Spadix 10—12 lines long, 3—3½ lines thick, slightly clavate, very obtuse, quite sessile, projecting forwards, pale yellow. Ovary 2-celled, cells 1-ovulate.

The dimensions given in the above agree with the Kew specimen, but as I fancy that it is rather a young plant, they may possibly be considerably increased in a more adult state, as is usually the case with Anthuriums. I know nothing of its native country, no record of it having been kept. *N. E. Brown.*

MASDEVALLIA LATA, *Rchb. f.**

Among the plants of the late Mr. Zahn, one of the recent botanic martyrs (drowned in a stream), sent from Central America to Messrs. Veitch, was a curious Masdevallia, much in the way of M. bicolor, Pöpp., Endl., and auropurpurea, Rchb. f., yet with some extra quality. It produces two flowers at once, and whether it may hereafter develope more such organs, who knows? To judge from the very thin peduncle one would, however, scarcely expect it. The flowers are dark reddish brown, with ochre-coloured tails, and such is too the colour of the upper sepal on a narrow line over the lateral sepals. The broad lateral sepals forming part of the tube are very concave of course, and at once most apparently rounded on their upper margin. Now, if they are artificially expanded, they form a very broad body over the entire tube, and this suggested the name "lata." My first knowledge of this plant was due to Messrs. Veitch, who introduced the plant I think at the same time with M. attenuata, Rchb. f. I obtained fresh flowers in September last from Mr. Day, and I saw the plant with its metallic shining flowers at this gentleman's Orchidic Eldorado a few weeks ago, before the days of Amsterdam, and carried home with me the beloved load of a two-flowered peduncle. *H. G. Rchb. f.*

* *Masdevallia lata*, Rchb. f.—Affinis M. atropurpureæ, Rchb. f.: foliis cuneato-oblongo-ligulatis acutis; pedunculo oligantho (uni—bifloro), mento angulato, tubo brevi infernæ ante menti angulum deinceps angulato; sepalo impari pro parte libera brevi angusta triangulo in caudam longam extenso; sepalis inferioribus extus semiorbiculato-expansis longe caudatis, caudis omnibus perigonium non caudale bene superantibus (prope bis longioribus); tepalis a cuneata basi panduratis apice bidentatis; media unilamellata; labelli lamina ligulata antice utrinque angulata, angulo in laminam anticam, semioblongam denticulatam descendentibus, superficie disci superioris denticulata; columna apice trifida, laciniis lateralibus obtusis, laciinia mediana acuta.—America Centralis; Zahn!

DENDROBIUM THYRSIFLORUM.

THE accompanying illustration (fig. 105) of this showy Orchid was prepared from a photograph of a plant which produced ten spikes of flowers, in the collection belonging to Sir William Marriott, Down House, Blandford. D. thyrsiflorum is an introduction from Moulmein, whence it was introduced into this country by Messrs. James Veitch & Sons, who obtained a First-class Certificate for it from the Floral Committee on April 6, 1870. It has the habit of D. densiflorum, but is a stronger grower, and produces splendid spikes of flowers, the sepals and petals of which are white, and the lip a rich golden yellow.

GREENHOUSE PLANTS.

THEIR CULTURE AND MANAGEMENT.

MITRARIA COCCINEA.—This is a dense-growing evergreen plant that produces freely its handsome mitre-shaped scarlet flowers during the summer and autumn, at which time it forms a conspicuous object in the greenhouse or conservatory. It was introduced about the middle of the present century from San Carl de Chiloe, and is another of the number of handsome things comparatively neglected. It is more remarkable for the length of time it continues to produce a succession of flower than for opening them simultaneously, as in the case of most plants the blooming of which is of shorter duration; for this reason it is more suitable for general decorative purposes than for the exhibition stage. It is of comparatively easy growth, and succeeds well in moderately close peat, containing a fair amount of fibre with a good sprinkling of sand. It is a tolerably quick grower when well managed, soon acquiring a useful size and flowering freely in even a small state.

Those commencing its cultivation will find it the best to procure plants in the autumn, after the summer's growth is completed. Select the usual nursery size, such as are young and free in growth, and have been stopped so as to cause them to have plenty of shoots, bushy, and not long or straggling. Keep them for the winter in an ordinary greenhouse temperature, where they will receive a fair amount of light; at the latter end of March they should be moved into pots a couple of inches larger than those they have hitherto occupied. This is a strong-rooted plant, and will bear the soil using in a moderately lumpy state, mixing the sand well with it previous to use. Put an inch of crocks for drainage, and ram the soil pretty firm. Cut back the shoots to an uniform length of 6 or 8 inches from where they were last stopped to, and tie them well out. The wood is of a somewhat weak character, consequently will require a moderate number of sticks for support. Be sparing of water until the roots are at work in the new soil, and keep the atmosphere a little close till the young growth begins to push, after which admit more air in the early part of the day. As the weather gets warm close the house with sun-heat, and damp overhead with the syringe, at the same time keep the material on which they stand moist. Shade will not be required, as the plant will bear any amount of sun.

As already stated, it is a free-flowerer, producing its blooms from the current season's shoots, yet the first season's growth will rather be to get the plants on in size than the production of flowers; consequently, about midsummer all the strongest should be stopped, so as to cause them to break back. Continue to keep the branches well tied out, and also the use of the syringe until the middle of August, when give more air night and day, so as to ripen up the growth, at the same time discontinue syringing and maintain a drier atmosphere; keep on this treatment through the autumn, merely guarding against too low a temperature on cold nights. Through the winter a temperature of about 40° in the night should be kept up, giving no more water at the roots than necessary to preserve the soil in a healthy condition. Again about the end of March repot, giving a 3-inch shift, in soil similar to that which was advised the preceding season, stopping and tying-out the shoots as before. Let the treatment during the spring be in every way as recommended last year. By the end of July they will most likely begin to show flower; as soon as these make their appearance discontinue the use of the syringe, and give plenty of air and light. When the bloom commences to open the plants, if required, may be placed in the conservatory, where they will keep on flowering for many weeks; after which they can be removed to the greenhouse, and wintered as previously. It will be advisable at this time to go over them and shorten their shoots back, as this will be better done now, when the plants have attained some size, than in the spring as heretofore. Give them another shift about the time advised the preceding seasons; they should again have pots 3 inches larger, and be treated in every way as hitherto recommended as to potting, syringing overhead, and water at the roots; by the time of flowering they will have got to a useful size, and be found attractive.

This Mitraria, from the free but somewhat weak habit of the shoots, requires cutting back after flowering to within 6 or 8 inches of the point from whence the season's growth has commenced. Twelve or 14-inch pots are large enough to grow even the largest plants in, as after they get into that size they may be kept in a free healthy condition by the use of manure-water during the growing season.

Insects.—The plant is sometimes affected with red-spider, but if the syringing advised whilst in active growth is attended to, it will be kept in check. Should black thrips make its appearance fumigate with tobacco, or syringe freely overhead with tobacco-water. *T. Baines.*

THE SPECIES OF PRIVET.

To the last number of the *Flore des Serres* M. Decaisne contributes a revised list of the cultivated species of Privet, Ligustrum. The following species are enumerated :—

1. L. VULGARE, Linn., common Privet : Europe.
   Var. : *α.* foliosa.
   β. buxifolia.
2. L. OVALIFOLIUM, Hawk., oval-leaved Privet : Japan. Syn., *L. reticulatum* and *L. californicum.*
3. L. IBOTA, Sieb., Ibota Privet : Japan. Syn., *L. ciliatum*, Sieb.; *L. amurense*, Carrière, not of Maximowicz ; *L. Röxburghii*, Hort. ; and *L. sinense*, Hort.
4. L. QUIHOUI, Carrière, Quihoui's Privet : Japan. (M. Quihou is the garden superintendent at the Jardin d'Acclimatation, of Paris.)
5. L. MASSALONGHIANUM, Visiani, Massalonghi Privet : Khasia and Neilgherry Mountains. Syn , *L. myrtifolium*, Hort. ; L. spicatum, Hort., non Don ; L. longifolium, Hort.
6. L. LUCIDUM, of Acton, shining Privet : China. Syn., *L. Roxburghii*, of Blume ; *Olea clavata*, Wight, Icon, 763 ; *Phyllirea paniculata*, of Roxburgh ; *L. japonicum*, Hort., not of Thunberg ; *lucidum* var. *macrophyllum*, Hort. ; *magnolieefolium*, Hort.
   Var. : *α.* coriaceum, Revue Hort. 1874, p. 418, fig. 56.
   β. L. japonicum variegatum, Hort. (Produces vegetable wax)
7. L. JAPONICUM, of Thunberg : Japan. Syn., *L. Kellerianum*, *L. spicatum*, *L. syringæfiorum*, *L. lucidum*, Hort. (not of Aiton) ; *L. macrophyllum*, Hort. ; *L. Kellermanni*, Van Houtte, Cat. ; *L. Sieboldi*, Hort. ; *L. coriaceum*, Hort. ; *L. glabrum*, Hort. ; *L. ovalifolium*, Hort. (not of Hasskarl).
   Var. *α.* variegatum. Syn., *Ligustridium japonicum*, Spach.
8. L. INSULENSE, Decaisne (China ?). Syn., *L. Staunstoni*, Hort. (not of D.C.).
9. L. COMPACTUM, Hook. and Thoms. : Himalaya. Syn., *L. oblongifolium*, Hort. ; *L. longifolium*, Carrière ; *L. lanceifolium*, Carrière ; *L. Simonii*, Carrière.
10. L. ROBUSTUM, Hook. et Thoms. : Himalaya. Syn, *L. nepalense*, Hort., not of Wallich ; Phyllirea robusta, Roxburgh ; Visiania robusta, D.C.
11. L. NEPALENSE, Wall. : Nepal. Syn., *L. spicatum*, Don ; *L. vestitum*, Hort.
12. L. HOOKERI, Decaisne : Nepal. Syn., *L. nepalense, var.*, Hook. Bot. Mag. 2921 ; *L. Wallichii*, Visiani, not of Blume.
13. L. SINENSE, Loureiro : China. Syn., *L. villosum*, Rev. Hort. 1875, p. 299 ; L. Ibota villosum, Hort.
14. L. STAUNTONI, D.C. : China. Syn., *L. chinense*, Carrière; L. chinense nanum, Hort. ; Phlyarodoxa leucantha, Le Mar. Moore, in Trimen, Journ. Bot. 1875, p. 229.

Excluded Species.

L. caruleum, Descourt = Lippia species ; *L. spicatum*, Jacques = L. multiflorum, Hort. ; *L. amurense*, Hort., Sahut = Lippia ligustrifolia, G. Thuret ; *L. cotinifolium*, Jacq. = Linociera cotinifolia.

MARÉCHAL NIEL ROSE.

SOME brief notices in recent numbers of the *Gardeners' Chronicle* on this king of yellow Roses suggest the desirability of a few remarks on its management, inasmuch as not a few are unable to meet with success. Of course at present the plants coming into bloom are those cultivated under glass, where the treatment is comparatively easy, where appliances are at hand not to be met with out-of-doors. Indeed, except in specially favourable localities, the Maréchal is only fit for the Rose-house. It is so easily excited into growth that its early development suffers from the ungenial springtide which of late years, at least, appears to have become a characteristic of our climate. To those whose plants are under glass it will be sufficient to remark that the use of the syringe and abundance of liquid manure are the chief cultural points that require attention now. In case long rods of the season of 1876 have been made, showing much succulence and little promise of bloom, the top of such must be nipped out and the branches bent down, which will cause them to throw out laterals which will flower later on. This latter mode of treatment may also be pursued with plants on walls or trellises, and, where specimen flowers are required, it will be well to commence disbudding in time. But it is to the trees in the open ground we wish to direct special attention, because, being an early Rose, as we have hinted above, they will require additional care. These likewise must have frequent applications of liquid manure, the best way of administering which has been found to be as follows :—

In a circle round the plant, at such a distance from the collar as the roots are judged to extend, let several holes, from 10 to 12 inches deep, be dibbled, into which let the stimulating fluid be poured, and that frequently, so that the food may be within the reach of the spongioles, which will greedily suck it up for assimilation by the organs of nutrition. This is a most important point in giving manure in this form, because that which only comes into contact with the more solid roots is little better than waste. Another way is to dig a trench a few inches deep round the tree, to be kept filled till the adjoining soil has been thoroughly saturated therewith. It will be as well to add that pot plants are best watered by immersion, as that mode secures thorough moistening of the soil. Both these methods are far more immediately effective than any mulching. Guano, drainings from the stable or cowhouse, a decoction of sheep droppings, or a solution of fowl-house scrapings, all make excellent liquid manures.

One secret of success with Maréchal Niel is patience. The plants must be well established—young or fresh ones can never be expected to afford much display ; indeed for the first two or three seasons it would be advantageous to the future welfare of the trees if they were not allowed to flower at all. Such self-denial, it must be admitted, is difficult to practise, but the benefit is undeniable.

Plants now obtained are necessarily those in pots, and purchasers cannot be too urgently recommended to have only specimens on their own roots, and large in preference to small, even at enhanced cost—they are cheaper in the end, as time and nursing are thereby saved, and risk of failure at the period for turning them out is reduced to the minimum. As to "worked" plants, it is a well ascertained fact that Maréchal Niel will not do on the Manetti. Many stocks have been tried for it, such as Gloire de Dijon, Climbing Devoniensis, and others. Mr. Harrison, of Darlington, states he has a stock called the "Napoleon," upon which it takes admirably ; the writer would venture to suggest that as this variety is really a Noisette, some of the older strong growing kinds of cognate habit should be experimented upon when the budding season arrives. The Rose is so superb, and plants upon their own roots take so long in reaching a productive size, that it is worth any amount of trouble and experience to discover a certain mode of propagating it. Lastly, we have to refer to the Briar, upon which sometimes the variety succeeds and makes fine plants, and very often not. There is a peculiarity of this Rose when worked upon the tree which the writer has never seen discussed in print, but has often remarked at the great Rose nurseries, the buds take and appear to grow freely for a time, then they stop. Next they turn sickly looking and yellow, and finally snap off at the neck with a puff of wind, or even with a touch. Upon examining the base it will be perceived that a hard callosity has formed, in appearance much resembling a "callus" before roots are emitted. We have seen as many as fifty plants in this condition out of a couple of nursery rows of 200, some with four or five branches from the stem of the original bud. The cause of this singular phenomenon is a topic too extensive and abstruse for discussion in the present paper. We have alluded to it to emphasise our advice as to "own root" plants, and as a suggestion for opening up—it may be—an interesting discussion in the pages of the *Gardeners' Chronicle* further on. *W. D. Prior.*

SEAKALE AND ITS CULTURE.

AMONGST the various plants adapted to culinary purposes which are only used in a blanched or whitened condition, induced by the exclusion of solar light, such as Celery, Endive, &c , the Crambe maritima, or Seakale, stands pre-eminent, and its season of usefulness usually extends from Christmas until about the end of April.

The plant is perfectly hardy, being indigenous to Britain, and is found in a wild state in various places on the sea coast growing in light sandy or stony soil. It belongs to the great natural order Cruciferæ, which order comprises a large number of plants most valuable for culinary purposes, and they are considered to possess a greater proportion of azote than any other tribe of plants ; most of them are also possessed of considerable antiscorbutic properties, the result of an acrid volatile principle very conspicuous in the Horse Radish and the Turnip ; but in the case of the Seakale this is entirely dissipated by the process of blanching, which does not, however, diminish its diuretic and diaphoretic properties ; the plant is, consequently, never used for culinary purposes unless when in a thoroughly blanched condition, and has in that state been long esteemed as a wholesome and delicious vegetable, and is said to have been known and used in this country at a period so remote as during its occupation by the Romans. It is freely produced from seed, and the plants vary little, if at all, from the original type ; so that there is, I believe, only one variety in cultivation, and this is of course improved by culture. The plant is grown and blanched in various ways, and submits very readily to forcing at almost any period of the year.

In some localities on the southern coast of England the root of the plants growing in a wild state are during the winter, or as soon as the leaves have decayed, covered to the depth of a foot or more with sand or shingle, and the plants so covered furnish excellent and thoroughly blanched Seakale by the middle or end of March. In gardens a similar result is secured by growing the plants in lines at a distance of 4 feet, more or less, from each other, covering the roots in early spring with a depth of 6 or 8 inches of finely sifted cinder ashes or sand, and this may be covered with a portion of soil obtained by digging out a trench between the lines of plants ; while to accelerate the production of Kale the trench should be filled with warm fermenting stable manure, which should be frequently turned and fresh material occasionally introduced in order to communicate a genial warmth to the soil, which will have the effect of exciting the plants into earlier growth. Where the natural soil is of a light dry character, the covering of sand or ashes may be dispensed with.

It has been said that the season of this esculent extends from Christmas to the end of April. Attempts, however, are frequently made to have it in at an earlier period than that just named, but this is accomplished at a considerable sacrifice, as it necessitates the commencement of forcing at a time when the crowns are not thoroughly ripened, and the leaves still green, so that such production is generally weak and of inferior quality. In order to have Kale fit for use at Christmas the plants should be introduced to heat about the last week of November, or not later than the first of the following month.

Various methods of forcing are resorted to, most of them being attended with similar success—such as filling pits in which Cucumbers or Melons have been grown during the summer with fresh manure, which should be well trodden down, and allowed to settle for a week at least, when 9 or 10 inches of any light common garden soil should be placed upon it, in which the roots should be planted as closely together as possible, and the temperature of the structure should be about 65°. In order to entirely exclude light, the roof should be covered with mats or Frigi Domo, and over which should be spread an additional covering of dry litter ; or a hotbed may be formed of stable-yard manure in the usual manner, upon which soil should be placed as has been recommended, and the plants, after being carefully taken up, should be planted in this, and after being well watered to settle the soil about the roots, each plant or group of plants should be covered with an ordinary Seakale-pot or box, when all should be well covered up with light dry littery manure, taking the necessary care to prevent the heat produced from becoming too intense.

Seakale of good quality may also be expeditiously produced by potting the plants and placing them in a Mushroom-house, a propagating-pit, or in any similar structure where heat and moisture can be furnished and light withheld. One of the best methods, however, of producing this esteemed esculent in the greatest possible perfection at either an early or a late period of the year is to grow the plants in pits prepared expressly for the purpose. These pits should be about 6 feet in width and of any desired length. The walls should be formed of 9-inch brickwork, and several of the lower courses should be pigeon-holed, if forcing is intended to be accomplished by the use of fermenting materials, such as stable manure, tan, or

tree leaves. But much labour may be saved by using for this purpose hot-water pipes. The back wall of the pit should be about a foot higher than that of the front, and the aspect should be south or south-east. The walls should be protected by a plate of wood, and fixed in the plate of the back wall should be hooks or staples of iron, on which light but strong wood shutters are to be hung when the process of forcing commences. The shutters will have the desired effect of entirely excluding light, and in order to more fully secure this condition they should be kept covered with straw or any littery material, so that the Kale is produced perfectly blanched, as well as being quite clean, without being in contact with any decaying or fermenting substance.

The pit may be more or less sunk in the ground, as may be desired, or as circumstances will permit, for should there be reason to apprehend the rise of water, great depth had better be avoided; it should, however, be constructed to contain at least 2 or 2½ feet of good light rich soil in which to plant the Kale, and under this, say 1½ foot of brickbats or flints to surround and cover the hot-water pipes; and in order to have sufficient command of heat for a pit 6 feet wide, not less than three lengths of 4-inch pipes will be required: two lengths have been found to be insufficient for the purpose.

At a distance of 6 feet from each other, 4-inch earthenware pipes should be placed vertically, the lower end resting upon the stratum of flints or brickbats and over the hot-water pipes, and this will be found to give sufficient surface-heat, as I foot of space between the surface of the soil and the wood shutters will be enough.

A pit so constructed should have the shutters removed as soon as forcing is over, if the weather be sufficiently mild. The plants should have proper attention as regards watering when necessary, manuring, keeping clean, &c., when they will submit to moderate forcing for many years, and continue to afford a good supply of Kale, and they can be readily replaced by young plants when this is found necessary.

Where Seakale is extensively grown for market purposes, and where land is of great value, it is, I believe, seldom forced in the soil where it grows. But in private establishments, where a moderate but continuous demand has to be met, this is the most universally adopted method; and it is only for an early supply that a portion of plants are taken up and forced in various structures, as has been already alluded to, and old plants are generally selected for the purpose.

Seakale is generally planted in beds about 4½ or 5 feet wide, each bed containing three lines of plants; and when about to be forced the ordinary Seakale-pots with loose tops or lids are placed upon them, and all are then surrounded and covered up with warm fermenting stable manure mixed with tree leaves, and it then becomes necessary to carefully guard against the fermenting material becoming too warm, which would be not unlikely to prove fatal to the plants, although they are capable of enduring a very considerable amount of heat. But an excess of it is sure to produce weak and inferior Kale, so that it is always advisable to thrust a few sticks into the material, and its temperature can be ascertained by withdrawing and feeling the same with the hand. Tree leaves are generally to be preferred to stable-yard manure, as the heat they engender is more mild, equable, and lasting.

It is also better to grow and force the plants in lines than in beds, as in the latter case the plants in the central part of the beds are very liable to get over-heated. A plantation of Seakale plants should be formed in lines running if possible north and south at a distance of 2½ or 3 feet from each other; each alternate line should be lifted for the purpose of early forcing, and those remaining will of course be at the distance of 5 or 6 feet from each other, and the plants should be 2½ feet apart, so that each may have a pot placed over it, and be well covered up with tree leaves, and should be occasionally examined to ascertain the temperature, as well as to know when the Kale is fit to be cut.

Seakale plants may be successfully raised from seed and also from cuttings. The seed should be sown thinly, early in the month of March, either in lines or in beds about 4 feet wide, with 1-foot alleys between them. The soil should, if possible, be light but rich, deeply dug or trenched, but without manure; and when the plants are large enough to handle they should be thinned out so as not to be closer than 6 inches from each other. The soil in which they are growing should be occasionally stirred up, so as to keep them free from weeds during the ensuing summer, and so treated they will be ready to plant out by the middle of the following March in soil which should be duly prepared for them, and where they are intended to be grown and forced. Before planting the small straggling roots should be neatly trimmed off the plants, leaving only the straight tap-root with the crown or bud at the top. The planting may be effected with a dibble or setting-stick, and should the weather be dry the plants should have one good watering, and will generally require no further care than merely keeping the soil free from weeds.

When it is intended to raise plants from cuttings, these should be formed from pieces of the roots of plants which have just been forced, selecting for the purpose pieces about 3 or 4 inches in length, with, if possible, a bud or eye at the top, but this condition is not absolutely necessary, as nearly every portion of the roots will form buds; and to induce them to do this they should be spread out thinly on the surface of the soil in any convenient situation, and covered with about 2 inches of light soil or sand, and by the middle or end of March most of the cuttings will be found to have formed several eyes or buds, all of which, excepting the top, strongest, or best placed, should be rubbed off; and they should then be planted out where they are intended to remain, and receive in all respects treatment similar to what has been recommended for seedling plants. *P. Grieve.*

THE VEGETABLE PRODUCTS OF ASTERABAD, PERSIA.

A VERY interesting account of the produce of Asterabad, Persia, is embodied in a recent report to the Foreign Office. The whole trade of the province of Asterabad does not amount, it seems, to more than £160,000 a year, and yet the province teems with valuable fruits and other vegetable produce. With regard to the climate we read that there is a remarkable difference between that of the southern shores of the Caspian Sea and the plateau of Persia between which rises the elevated range of the Elburz; for while the latter is dry, these provinces are noted for their dampness, and their vegetation is quite tropical. Swampy forests cover the whole surface of the low-lands lying at the foot of the Elburz on its northern face, in which every description of fruit tree grows luxuriantly; thus Walnuts, Nuts, Pomegranates, Mulberries, Plums, Grapes, Apples, Pears, Hops, and various kinds of berries grow wild in the forests; their quality is necessarily inferior, but they afford ample subsistence to the poor, who are in consequence inclined to be indolent. In summer the vegetable gardens produce every kind of Melon and Cucumber, and the vast quantities of this crude fruit consumed by the lower classes generates various sorts of fever, which prevail between the months of July and October. Owing to the great abundance of water on the surface of the soil everywhere, Rice is grown very considerably, but the culture of the Mulberry tree is what absorbs the greater part of the attention of the inhabitants. There are extensive plantations of this tree to be seen all over the plains. The younger the trees are, the more prized is the leaf as food for the silkworm, and old trees are usually cut down to make room for new plantations.

Near the foot of the mountains Boxwood grows in abundance, particularly in the district of Tenckaboun, in the province of Mazenderun. Upwards of £27,000 worth of this wood was purchased at Rostow last year by an English firm, of Liverpool, and the great profits made by some individuals have induced many people to engage in this trade this year. Box-wood was formerly cut down in large quantities in the mountainous regions of the Caucasus, but disputes having arisen as to the rightful ownership of the forests, the Russian Government has, within the last few years, prohibited its being cut; hence it has been sought for in these provinces. It is a wood that grows very slowly, and requires much time to attain the size required for the market. It is thus probable that a very few years will see the end for a time of this branch of trade in this part of Persia. Already, in Ghilan, it has become scarce, but vast forests of it are still to be found in Mazenderun. The Governor of Ghilan, with a view to making the Persian Government profit by this rising industry, has thought fit to obtain the Shah's sanction to prohibit the further cutting of this wood and *loupes* without a special permission, and this measure has given rise to great dissatisfaction both amongst the owners of Box-wood forests and those engaged in cutting and exporting this timber.

In the valley of Elburz, through which the Sefudrood runs from the plateau of Persia to the Caspian Sea, the Olive tree grows freely, and Olive oil of a very fair quality might be produced if proper presses were employed; as it is, the oil, extracted by the most primitive methods, is thick and unsuited for the table; it is principally used in the manufacture of soap. Oranges, Lemons, Mandarins, and all the various descriptions of this kind of fruit are plentiful. Unfortunately the winter of 1874-75 destroyed many trees; the loss accruing to the inhabitants of Ghilan alone from this calamity is estimated at not less than £200,000. Tobacco of the quality grown on the shores of the Black Sea, and known under the name of Bafra, has been tried at Resht, and the quality produced is not inferior to the original stock. The governor, Nasir-ul-Mulk, who is both enlightened and enterprising, has, at the suggestion of the British Consul, written to Constantinople for a large supply of Yenija and Latakieh seed; and should these qualities, so famous in Turkey, be suitable to this climate, the growth of this plant may attain some importance in the course of time. Owing to the great similarity of the climate of these shores with that of the foot of the Himalaya, where a fair quality of Tea is produced, it has been supposed that this plant would succeed here, and Tea seed has been applied for from that part of India to try it. Unfortunately the person who had first suggested this idea, and who had made overtures to the Persian Government for the establishment of a Tea plantation in Ghilan, has been obliged to quit the country on account of ill-health, and this notion has apparently been abandoned.

HÆMANTHUS MULTIFLORUS AND ITS ALLIES.

MR. KEIT, the present Superintendent of the Botanic Garden at Durban, in Natal, has just forwarded to Kew a dried specimen—living plant to follow—of a very fine Hæmanthus, allied to the well-known H. multiflorus, of Sierra Leone, which he asks, if new, may be published, and named after the lady who discovered it, Mrs. Katherine Saunders. We had flowers of the same plant from Mr. Saunderson in 1869, but nothing more, and as it is still unnamed and undescribed I have pleasure in fulfilling Mr. Keit's request. As we now know much more about this group of species than has ever found its way into print, and they are of great horticultural interest, and there are no satisfactory descriptions in existence of the species already known, I propose at the same time to pass the whole group under review, and to describe two other new species which I have been for some time intending to publish.

This group of Hæmanthi, of which three species are already published, is marked by its large thin leaves, comparatively narrow and fugitive bracts, and by its loose globose umbels of very numerous flowers, in which the segments of the perianth spread horizontally or even become reflexed when fully expanded—thus offering a decided contrast in habit to the three other groups, of which we may take H. puniceus, H. carneus, and H. coccineus as the types. It will be found characterised as a genus under the name of Nerissa in Salisbury's *Genera Plantarum*, p. 131, with a character drawn up from H. multiflorus, which was the only species with which Salisbury was acquainted.

As we know the species now, they stand as follows, including the three novelties:—

1. *H. multiflorus*, Martyn, Monog. cum icone; Bot. Mag., t. 961 and 1995; Andr. Bot. Rep., t. 318; Red. Lil., t. 204; Lodd. Bot. Cab., t. 912 and 1948; Flore des Serres, t. 52.—Bulb globose, 2½—3 inches in diameter, with a tuft of cylindrical root fibres, stoloniferous. Leaves 3—4, produced on a short spotted stem, contemporary with the flowers, sheathed lower down with many deltoid rudimentary leaves; blade bright green, oblong, acute, nearly a foot long, 3—4 inches broad when fully developed, narrowed gradually at the base to a short broad-channelled petiole, furnished with nine or twelve indistinct vertical ribs on each side of the midrib, which are connected by obscure cross-bars about a line

apart, dying down in November or December. Scape arising from the bulb on one side of the leaf-stem, about 1 foot long, much spotted with purple, produced in April or May. Bracts of the spathe lingulate, 1½—2 inches long, green, flushed with red, soon reflexing and withering, the dense expanded globose umbel half a foot in diameter. Pedicels 1½—2 inches long, mixed with many linear bracts. Flowers as many as a hundred in an umbel; ovary oblong, ¼ inch long; perianth deep red; tube cylindrical, ⅜—½ inch long; reflexing bright red segments, 1 inch long, 1/12—⅛ inch broad. Filaments bright red, erecto-patent, 15—18 lines long; anthers linear-oblong, versatile, ⅛ inch long. Style bright red, protruded nearly a couple of inches from the perianth tube. Fruit a scarlet berry.

This has been cultivated in our greenhouses for more than 250 years, and is figured by Vallet in his *Jardin du Roy Henri Quatre*, which was published in 1608. The wild specimens which I have seen have been gathered at Sierra Leone by Borone, Barter, and others, and at Fernando Po by Barter, the latter at an elevation of 5000 feet above sea-level.

2. *H. abyssinicus*, Herb. Amaryll., p. 238; Kunth, Enum., vol. v., p. 587; *H. delagoensis*, Herb. Amaryll., p. 243; *H. tenuiflorus*, Herb. in Bot. Mag., t. 3870; Kunth, Enum., vol. v., p. 587; *H. multiflorus*, A. Rich, Fl. Abyss., vol. ii., p. 312.—Habit entirely of H. multiflorus, the leaves being produced upon a separate stem after the flowers expand, and the scape lateral. Fully-developed leaves not seen. Bulb of the year globose, a couple of inches thick, with many membranous tunics; the old bulb represented by a short thick tuber beneath it. Scape a foot or more long, much spotted in the lower half. Umbel very dense, reaching a diameter of 5—6 inches when fully expanded. Bracts of the spathe linear or lanceolate, 1½—2 inches long, fugacious. Pedicels 1—1½ inch long. Ovary globose, 1/12 inch long; tube cylindrical, ¼—⅜ inch long; reflexing linear segments ⅜ inch long. Filaments bright red, 1 inch long; anthers oblong, 1/12 inch long. Style protruded from the perianth tube 1¼ inch.

Spread through tropical Africa from Mozambique and Delagoa Bay (Forbes), to Zambesi Land (Kirk, Meller, Waller), Abyssinia (Salt, Quartin-Dillon), the White Nile country (Petherick), and Guinea (Barter, E. Vogel). It is obviously very near H. multiflorus, but I have never seen the fully developed leaves. According to Dr. Quartin-Dillon, its Abyssinian name is Hamboha ambassa, or lion flower, and the natives attach the bulbs to their garments as an amulet.

3. *H. rupestris*, Baker, n. sp.—Bulb of the year 1 inch thick, with many tunicated coats, the bulb of the previous year remaining attached at its base as a short firm tuber. Leaves on a special stem, lateral as regards the scape, not fully developed till after the flowers fade. Fully developed leaf with a petiole and membranous lamina each ½ foot long, the latter oblong, spotted, rather obtuse, 3—4 inches broad, rounded at the base, with indistinct vertical and transverse veinlets, the central main veins ½—⅔ inch, and the transverse veinlets under half a line apart. Scape slender, lateral, ½—1 foot long. Umbel dense, 3—4 inches in diameter, bracteated by 3—4 oblong-lanceolate reflexing leaves 1—1½ inch long. Pedicels ½—1 inch long. Ovary globose, 1/12 inch long; tube cylindrical, ¼ inch long; perianth-segments narrow, linear, ⅛ inch long. Filaments as long as the perianth-segments; anther oblong, 1/12 inch long. Style protruded from the perianth-tube ¾ inch.

A native of rocky places near Nupe, in Guinea, discovered on the Niger Expedition of 1859 by Barter. It is a close ally of H. multiflorus, but the umbel is not more than half as large; all the parts of the flower are smaller, and the leaf has a different veining and shape, and a petiole as long as the lamina.

4. *H. Katherinæ*, Baker, n. sp.—General habit entirely of H. multiflorus.—Leaf-stem reaching a length of 1 foot, bearing 3—4 produced leaves contemporary with the flowers, with a petiole 2—3 inches long, and an oblong lamina 1 foot long, 4—5 inches broad, rounded at the base, and rounded at the point to a small cusp; main veins 9—10 on each side of the distinct costa, the central ones ½—⅔ inch apart, the transverse veinlets half a line apart, simple or anastomosing, both veins and veinlets very much more distinct than in H. multiflorus. Scape above 1 foot long, lateral as regards the leaf-stem. Umbel dense, 6—7 inches in diameter when expanded, bracteated by 5—6 fugitive green spathe-valves 2 inches long. Pedicels 1—1½ inch long. Ovary oblong, ⅛ inch long; perianth-tube cylindrical, ⅔ inch long; segments lanceolate, reflexing, deep red, ⅔—⅞ inch long. Filaments erecto-patent, above 1 inch long; anther oblong, 1/12 inch long. Style protruded from the perianth-tube 1½ inch.

A native of Natal, discovered by Mrs. Saunders and Mr. Saunderson, as already stated. It differs strikingly from multiflorus in the veining of the leaf and in the proportion in length which the tube of the perianth bears to its segments.

5. *H. cinnabarinus*, Decaisne, in Van Houtte's Flore des Serres, tab. 1195; Hook. in Bot. Mag., t. 5314; Floral Mag., new series, t. 245.—Rootstock of the year hardly at all bulbous, that of the year before present at its base as a large oblique oblong tuber, from the top of which issue the copious cylindrical root-fibres. Leaves about four in a radical rosette, from the centre of which the scape springs, fully developed at the same time as the flowers, with a channelled petiole 2—8 inches long, and an oblong, subacute membranous lamina, 6—8 inches long, about 3 inches broad at the middle, which is narrowed gradually to the petiole; veins moderately distinct, those of the centre of the leaf ½ inch apart, the transverse veinlets ⅜—1 line apart. Scape slender, about 1 foot long. Umbel 20—40 flowered, 3—4 inch in diameter when fully developed, bracteated by 4—5 lingulate fugacious bracts about an inch long. Pedicels ½—1 inch long. Ovary globose, 1/12 inch long; perianth tube ½—⅔ inch long; reflexing deep red lanceolate segment ⅔—¾ inch long. Filaments as long as the perianth segments; anthers oblong, 1/12 inch long. Style protruding about an inch from the perianth-tube.

Gathered by Mann at Ambas Bay, on the banks of the Bagroo River, and at an elevation of 4000 feet on the Cameroon Mountains. Easily to be distinguished from all the preceding by its long-petioled leaves which spring direct from the rootstock and by its central scape.

6. *H. rotularis*, Baker, n. sp.—Bulb of the year little thickened, that of the previous year remaining at its base in the form of a large, hard, oblong tuber. Leaves springing direct from the top of the root-stock, fully developed at the same time as the flowers, with a channelled petiole about 4 inches long and an oblong sub-acute membranous lamina 7—8 inches long, 3—4 inches broad at the middle, narrowed gradually to the base; veins and veinlets both very distinct, the central veins ⅓—½ inch apart, and the transverse veinlets above half a line apart. Scape central, slender, under a foot long. Umbel dense, about 4 inches in diameter when expanded, bracteated by about half-a-dozen lanceolate bracts 1½ inch long. Pedicels ½—¾ inch long. Ovary oblong, 1/12 inch long; perianth-tube cylindrical, ⅜ inch long; segments lanceolate, deep red, twice as long as the tube. Filaments as long as the segments; anther oblong, 1/12 inch long. Style protruded from the perianth-tube ½—⅔ inch.

A native of the forests of Yomba, in Guinea, discovered by Barter in the Niger Expedition of 1859. Allied to H. cinnabarinus, from which it differs in the bracts and leaves.

The following key may help to show the general relationship of the species:—

Subgenus NERISSA. — Spathe of 5—6 fugitive valves. Segments of the perianth spreading widely when expanded.

- Scape lateral. Leaves produced on a special stem.
  - Perianth-segments twice as long as the tube. Expanded umbel 6—7 inches in diameter. → 1. H. MULTIFLORUS.
  - Perianth-segments lanceolate; anther ⅛ inch long → 2. H. ABYSSINICUS.
  - Perianth-segments linear; anther 1/12 inch long. Expanded umbel 3—4 inches in diameter → 3. H. RUPESTRIS.
  - Perianth-segments half as long again as the tube → 4. H. KATHERINÆ.
- Scape central. Leaves produced direct from the root-stock.
  - Bracts shorter than the umbel. Leaf-veinlets not very close nor distinct → 5. H. CINNABARINUS.
  - Bracts as long as the umbel. Leaf-veinlets very close and distinct → 6. H. ROTULARIS.

I have also seen two other species of the group in a state too incomplete to describe at present. *J. G. Baker.*

Notices of Books.

Theorie des Gartenbaues. Von Max Kolb, Inspector am Königlichen Botanischen Garten zu München. (Theory of Horticulture, &c.) 1 vol., 8vo, 388 pp., with woodcuts. Ulmer, Stuttgart.

This is one of a series of volumes devoted to scientific horticulture in course of publication by the firm named above; and for several reasons it possesses a great interest for horticulturists of all countries. In the first place it is now nearly forty years since Lindley's celebrated work on this subject first appeared, and although its high character soon gained for it the position of a standard text-book wherever horticulture was practised, and caused it to be translated into nearly all the principal languages of Europe, it has in some respects long been out of date, nevertheless it has never been replaced by any special work, and the scattered literature of the discoveries and researches of the last forty years is practically out the reach of all those having little leisure time, even if they are so fortunate as to have access to a good library. The want of a work embodying the results of recent research was common, we might say, to all the countries which have been using Lindley's book; and our author appears to have undertaken to satisfy this want for his own country at least. How far he has succeeded can better be proved by actual use of the book than by a hasty examination of its contents. The perusal of certain passages suggests the desirability of the compiler of a work of this nature having the co-operation of colleagues in other countries, especially in those countries whose literature is little known to him, in order to enable him to execute it thoroughly; otherwise there is a danger of its being too highly tinged with the writer's nationality to become a generally accepted standard authority on the subject on which it treats, because in many cases he has to depend upon others for his information of what has been done abroad. This may be complete and trustworthy, or it may be imperfect and distorted. We shall presently give an illustration of our meaning; but let us first describe the plan and scope of the book before us. Following a short preface is a systematic table of contents, which embraces not only the primary divisions and chapters, but also the headings of each paragraph and reference to the pages where they commence. This occupies nearly eight pages, and is so complete that it compensates to some extent for the absence of an index; but an index in a work of this description is of inestimable service. The headings of the principal sections will give some idea of the scope and plan of the work, which opens with an introduction in which the importance of combining scientific knowledge with practical experience is insisted upon. The sections comprise the following points:—history of the theory of vegetable nutrition; morphology of the cell and tissues; external organs; vital processes; nutrition; metals found in the ash of plants and their importance; plant-ash and soils; absorption of the nutrient substances; course of the substances taken up; assimilation and metastasis; products of assimilation; influence of light on plant life; heat and cold in their relations to vegetation; mould and subjacent rocks and formations; origin of soils; physical properties; absorption of nutrition from the soil; root-formation of cultivated plants; condensation of gases by particles of soil; temperature of the soil; observations on some of the less important properties of the soil; moisture in the soil; climate and situation; plant diseases; the theory of compensation; of manuring; manures, natural and artificial. Many of these sections are divided into a dozen or score or more chapters and paragraphs, so it will be understood that with less than 400 pages of rather large print, some of the questions are very briefly discussed. Indeed, in some cases considerable previous knowledge is assumed. However, brevity with perspicuity is of the first importance, and if the writer has sometimes sacrificed the latter, it is perhaps to those only who know nothing of the subject at starting. Sachs' *Text-Book of Botany*, of which an English edition exists, has been, as might be expected, very largely drawn upon; and most of the cuts illustrating morphology are derived from this work. The chemistry of plant life is pretty fully discussed, even to the descriptions of the elements; and forty pages are devoted to the products of assimilation. We do not say this is too much, but more space, in our opinion, should have been given to experimental investigation directly bearing upon a rational theory of horticulture.

Of course it would be impossible to describe in detail the mode of conducting every experiment that has led to an important discovery, or furnished some useful fact of interest to the practical cultivator of plants; but something more than an ascertained fact or a generalisation is required by the beginner to give him an interest in the subject. This brings us to the explanation of our meaning with regard to what has been done in foreign countries. In the chapter on the "mineral theory" the author quotes the late Baron von Liebig's distorted and puerile objections to the distinctions recognised by Dr. J. B. Lawes between the artificial manures employed in his experiments, because for convenience he restricted the term mineral to the incombustible or ash-constituents. In quoting

this, and in what he says respecting the theory altogether, Kolb appears to be quite ignorant of the magnitude and importance of the experiments which have been carried on at Rothamsted by Dr. Lawes for about thirty-five years. In spite of his grand discoveries Liebig was wrong in his original theory of the nutrition of plants, and it was the experiments at Rothamsted that proved its fallacy. Liebig held that the presence of ammonia in the manures was unnecessary; this was disputed by Dr. Lawes, and his experiments, which are still being continued, conclusively prove in all cases that in the absence of ammonia from the manures the produce is very little above that of the unmanured plots. In one of his early works, Liebig maintained "that the supply of ammonia is unnecessary for most of our cultivated plants, and that it may be even superfluous, if only the soil contain a sufficient supply of the mineral food of plants, when the ammonia required for their development will be furnished by the atmosphere."

Subsequently he changed his opinion on this point and sought to cover it by claiming ammonia as included as a mineral element in his mineral theory. Strictly speaking, of course, ammonia salts are mineral substances, but Baron Liebig distinguished between mineral manures and ammonia, as the above quotation shows. But all this has been so fully explained in several of the reports on their experiments, drawn up by Messrs. Lawes and Gilbert, that it is sufficient to mention it here. Here we quote Kolb:—"As Lawes' investigations and observations led him to the conclusion that ammonia and phosphates are the favourable manures, he set up a theory which culminated in the proposition that manures should be divided into two classes, organic and inorganic. The organic, to which ammonia was referred, were those which by decomposition supplied the plants with carbonic acid, water and nitrogen; whilst the inorganic manures furnished the mineral substances only. In this way the practical man Lawes endeavoured to explain the doctrine of vegetable nutrition, but Liebig, nevertheless, held fast to his views, combated this theory, and sought proofs of his own. Still he was unable to account for the failure of his manures. Liebig contended that the atmosphere was sufficiently rich in ammonia, that plants could easily obtain all they required, whilst Lawes considered the addition of ammonia as indispensably necessary. Moreover, if Lawes' theory were correct, it would be impossible to maintain the ever-decreasing fertility of a field, for in no case could ammonia have been applied in quantity at an outlay that would permit of its being employed as manure. Finally Liebig succeeded in finding the cause of the inefficiency of his artificially compounded manure. After submitting step by step all the new facts to a careful and searching trial, he discovered the law of the power of absorption by the soil of plant nourishment. As already observed, Liebig had thought that the alkalies must be offered in an insoluble form, or they would be carried away by water into lower layers of soil out of the reach of most plants. But, on the contrary, the soil possesses the highly remarkable property of being able to fix chemically and physically all the elements requisite for vegetable nutrition. Let any one who would obtain an insight of this fact try the simple experiment of allowing water mixed with a nutrient solution to percolate through a layer of earth, and the water which has passed through will be almost pure, whilst the nutrient substances will be held fast by the particles of soil." From the foregoing extract it will be seen that the author is imperfectly acquainted with the present position of the theory of vegetable nutrition, not only in this country, but also as embodied in the later views of his eminent countryman. This appears again further on, where he treats of the theory of manuring. In fact, in our opinion, too little is said respecting the practical application of theoretical knowledge, and the apparent contradictions which practice furnishes. Theories dogmatically set forth, without any saving clauses, and without a careful examination of the various modifying conditions to which they may be subjected, do little good, because it frequently ends in their being altogether rejected. Had our author been aware of the results of the numerous series of experiments carried on at Rothamsted, he would have perceived the necessity of giving some of them, even if he could not accept them as facts himself. Thus, for instance, it is found that field results with Barley, as well as with Wheat, grown for twenty years in succession on the same land, are entirely inconsistent with the mineral theory as first put forward by Liebig and explained by Kolb. Then with regard to the general statement that land manured with farmyard dung only will gradually deteriorate and finally become exhausted. At Rothamsted the average annual crop of Barley for twenty years on the same land, manured with farmyard dung, at the rate of 14 tons per acre, is not far short of 50 bushels of grain (or more if reckoned at only 52 lb. per bushel) and 30 cwt. of straw. It is a noteworthy fact, too, that with this kind of manuring there has been the greatest increase of produce, and especially of corn, over the second, as compared with the first ten years. It is true that mineral and nitrogenous manures together, gave for twenty years in succession on the same land, rather more of both corn and straw than farmyard manure. On the other hand, mineral manures alone gave very poor crops, and the quantity fell off considerably during the later years, whereas with nitrogenous manures alone there was a much higher yield, less decline in the later years, and fair, though not full, crops were obtained

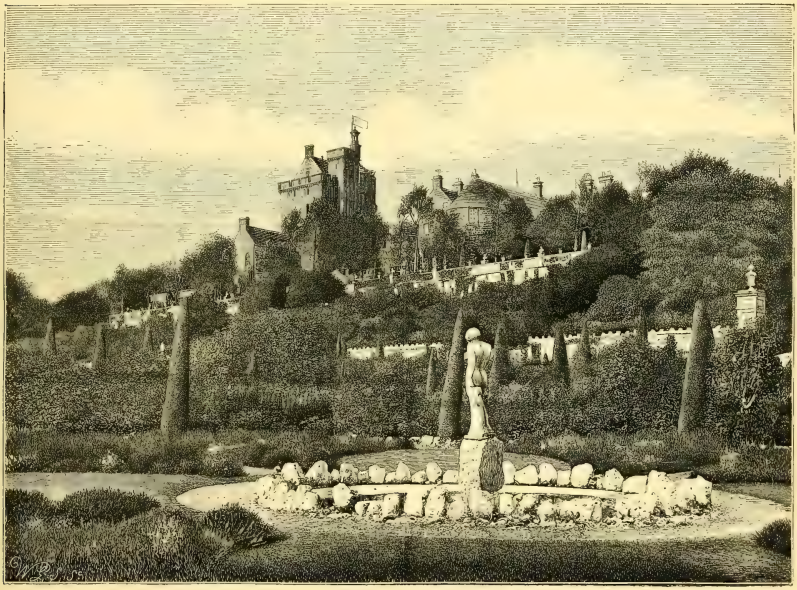


FIG. 106.—VIEW IN THE FLOWER GARDEN AT DRUMMOND CASTLE. (SEE P. 660.)

for twenty years in succession. Finally, with regard to the particles of soil fixing the elements required as food by plants, this statement needs qualifying, as we are taught by an examination of the analyses of the drainage water collected at Rothamsted. Now, although we have considered it our duty to expose what we look upon as the weak point in this new *Theory of Horticulture*, we have much pleasure in saying that in most other respects we believe it will be found to meet the requirements of practical men. *W. B. Hemsley.*

Apiary.

LIGURIAN, OR ITALIAN BEES.—One great obstacle in keeping these bees is the difficulty of preserving them pure. I prefer either to have pure black or pure Italian stocks; hybrids, if my limited experience is worth anything, are exceedingly irascible insects, but the pure-bred bees I consider very peaceable. The only method to keep the breed select is to have the apiary at least 3 miles away from the black bees; and there are many districts where this could be done with ease.

I have seen it stated on good authority that the Ligurians are longer lived than the common bees; if this be so, it will not only account for the stronger stocks, but for their excellent swarming properties. It is generally admitted that as a rule they swarm earlier and later than the black stocks. A friend assures me his hybrid stocks even send out good swarms three weeks in advance of the other bees. I can generally promise swarms at least a fortnight before my neighbours, but on the other hand I am compelled to watch them most jealously towards the close of the honey harvest, when swarms issue, as they frequently do quite unexpectedly. To prevent my stocks becoming too weak from this over-swarming propensity, I again return them back into the hive. This, however, should be regarded as a great point in their favour. I am quite aware there are some writers who look upon the Italians as mere novelties, which like other new things will soon wear out, and under this poor plea they declare they do not swarm earlier or more frequently. I have often heard it said, "the proof of the pudding is in the eating:" I think a little observation, side by side with our common bees, will convince any one that they are much superior in this respect.

Another point is worthy of notice—they are much less sensitive to cold and damp weather. I cannot speak so clearly upon this subject, though Langstroth and Neighbour, after many and very careful experiments, both unhesitatingly believe them to be far hardier. In exposed districts they would be more profitable, from the fact of their being less sensitive to the variable weather we often experience.

It is not a difficult thing to Italianise the whole apiary, after a pure queen is once secured, though I would not recommend any bee-keeper to be over anxious to do this, unless his apiary is isolated and at least a considerable distance away from any stand tenanted by black stocks.

Having stated these few points in their favour, viz., their incessant activity, constant diligence in making the most of every favourable moment, excellent swarming qualities, peaceable behaviour, and their being less sensitive to cold, &c.—this is sufficient to induce every enthusiastic bee-keeper to give them a fair trial—I may now be allowed to say a few words, not exactly in their favour, for I must in justice confess they are determined thieves and burglars. About the first intimation I ever received about this was during the first autumn they were in the neighbourhood.

A friendly bee-keeper came hastily one day to request my attendance in her garden. Upon reaching her bee-stand I discovered a terrible slaughter going on. Such a fierce battle I never witnessed before or since, for I speak justly when I say many thousands of the common bees lay strewed on the ground dead and dying, whilst in the air they closely resembled a swarm just after emerging from the hive. Making inquiries, I learned she had most injudiciously been feeding her stocks with liquid honey, some of which had been spilled over her straw hives. This had naturally excited her own stocks, and in the end led to the robbery and consequent slaughter. For a few minutes I could do nothing to stop the fray, for my friend caused me to laugh immoderately by seeing her excitedly dancing, and exclaiming "Oh! the yellow rascals. Oh! the dirty wasps. Wasps always live by thieving!" In a short time I succeeded in diminishing the crowd of combatants by closing up the entrance to all the hives, leaving only room sufficient for one to pass at a time. When quietude was restored in the evening we found two stocks out of the three completely depopulated—certainly not a hundred bees remained alive. This is scarcely credible when I assure the reader that the Ligurians had come a distance of half a mile, and had finished their task most thoroughly in, perhaps, six hours, for very little honey could be found in the two empty hives after the fight.

I am sorry, after giving them all the praise I think they deserve, to give them so bad a character to finish up. Where a mixed apiary is kept, it is not pleasant to be always in fear of a war coming on at any moment, though if the hives have a small entrance it is the only and best protection that can be given them; generally, if the stocks are strong, they will take care to jealously guard their treasure.

In conclusion, I may be permitted to give a short history of this bee, taken from M. Hermann's pamphlet.

"The Yellow Italian Alp bee is a mountain insect. It is found between two mountain chains to the right and left of Lombardy and the Rhœtian Alps, comprising the whole territory of Tessina, Vetlin, and South Granbundun. It thrives up to the height of 4500 feet above the level of the sea, and appears to prefer the northern clime to the warmer, for in the South of Italy it is not found. The farther one goes from the Alps the less handsome they are found, as, for example, in Nice, until they are entirely lost in lower Italy in the black species. We must, therefore, look for the original in Switzerland, and we can call them with as much right Apis helvetica, as the Genoese call them Apis ligustica. Some learned men have called them Ligurian bees, but that name has neither historical nor geographical claim, and not one bee cultivator of the whole district of the Italian Alp bee knows what kind of insects Ligurian bees are. The Alps are their native country, therefore they are called yellow Alp bee, or tame house bees, in contradistinction to the black European bees, which we might call common forest bees, and which on the slightest touch fly like lightning into your face.

"The Italian yellow bee differs from the common black bee in its longer, more slender form, and light chrome-yellow colour, with light brimstone-coloured wings, and two orange-red bands, each ⅛ inch wide. Working bees as well as drones have this mark. The drones are further distinguished by the bands being scalloped like the spotted water serpent, and obtain an astonishing size, almost half as large again as the black drones. The queen has the same marks as the working bees, but much more conspicuous and lighter; she is much larger than the black queen, and easy to be singled out of the swarm, on account of her remarkable bodily size and light colour. The bees are almost transparent when the sun shines on them.

"This race has nothing in common with the black bees, which can be instantly seen by their ways and manner of building. The cells of the Italian bees are considerably deeper and broader than those of the black bees. Fifteen cells of the Italians are as broad as sixteen cells of the black kind."

Dzierzon says: "I am so firmly convinced that the Italian bee is the *ne plus ultra* in beauty, good nature, industry, and ability to defend herself, that for this reason I would exchange her for no other. That she may be maintained thriving and pure in our climate is manifested by thirteen years' experience, during which she has been improved by careful breeding."

I hope the day is not far distant when the Italian bee will be more generally known, when I am satisfied it will maintain its position. *R.*

Natural History.

GOLD FISH.—I bought in the Bayswater Road yesterday some gold fish about 2 inches long. The vendor assured me that they would always remain small, say 3 inches. They were from Japan. Is he justified in so promising? It tells much for the sense of the present generation that this large and respectable shop, containing solely aquaria and similar things, should be able to exist so far west as Bayswater, near Queen's Road. *East Somerset, Winscombe, May* 19.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Specimen hard-wooded plants flowering during the coming month will require slight shade in the middle of the day, not only to prolong the duration of their bloom, but to preserve the colour of the flowers. Even such subjects as Aphelexis and Phœnocoma, if fully exposed to the sun for a few days, take on a bleached, faded appearance, and it is worth while to keep them in good condition as long as can be, even when only required for ordinary decorative purposes. All plants that have done blooming, and that seed to any great extent, should, immediately the flowers are faded, be picked over before the seeds are formed. It is no uncommon occurrence to see such things as Acrophyllum venosum, Epacrises, Eriostemons, Heaths, and others of similar character left for weeks after blooming expending their energies in the useless production of seeds, where every day so lost is a serious drawback. Azaleas differ from many plants in the time at which they require potting, inasmuch as there is rarely the slightest movement of the roots until after flowering, although if in good condition they will have made 2 or 3 inches of young growth, and as it is unadvisable to pot them before root-action has fairly commenced, the time of potting should be regulated by this. Where, as in most places, they are required in flower to form a succession, the potting will need to be done at different times. Those that bloomed a few weeks ago and want more root-room should now be potted. Azaleas that have got to anything like the size they are required do not need repotting so often as many things, as they can be induced to make strong growth by the assistance of manurial stimulants during the growing season, yet it is not well to let the roots get stunted. Young plants that are being grown on quickly with the intention of getting them up to effective size should without loss of time, should have plenty of root-room given them during the the early stages of their existence. Where they have been kept on growing from last autumn in a little warmth, many will have their pots now very full of roots; and if such receive a moderate shift at once, and are kept in a warm moist atmosphere, there is yet plenty of time for them to make considerably more growth. In the case of young or quarter specimen plants, such as those under consideration, there is often a great mistake made in their early stages by the shoots being stopped with the intention of producing a bushy habit, which would be better deferred until the groundwork had been laid for the future specimen on a larger scale, by confining the plants to fewer branches, keeping them more open in the centre. Plants so treated will live much longer than such as have been brought, by persistent stopping, into a fully furnished condition before they have arrived at more than a fourth the size they are required to attain. We frequently hear objection taken to any bending or twisting of the shoots of these and other hard-wooded subjects, on the plea that it gives the plants an unnatural appearance, but if the strongest shoots are not in the early stages of the plant's growth bent down near the base all the art of the cultivator can never afterwards maintain equal strength and blooming capabilities betwixt the base and top. It is through this cause that three-fourths of the hard-wooded pot plants we see are much weaker at the bottom than the top, and ultimately become bare and naked; for if the strongest naturally most vigorous branches are allowed to hold an erect position up to the top of the plant, no amount of cutting or stopping will prevent them having more than their share of the sap, and in this way starving the weaker and lower shoots. Half or full-sized specimen plants that are in a somewhat weakly condition, yet produce a great number of shoots, will be improved by at this time thinning-out from one third to one-half of the weakest; those that remain will be thereby strengthened; at the same time the leaves will get more light, and be correspondingly stouter in substance, and better calculated to perform their allotted functions, many fewer falling off in the autumn. If any trace of thrips or red-spider exists they will now increase apace unless means are taken by dipping and syringing with tobacco-water or insecticide for their destruction. Wherever Azaleas are expected to grow and flower in the way they are capable of, I must again urge the necessity of keeping these two most pernicious insects completely under. The want of success and unsatisfactory condition so often complained of with Azaleas in the great majority of cases owes its existence to the injury done to the leaves by these insects. A daily free use of the syringe, with plenty of moisture in the atmosphere, and never allowing the plants whilst growing to get dry at the root, are amongst the best means of keeping them down. Both old and young plants that are now making growth, will be benefited by the application of Standen's manure, which, after trying everything I have heard recommended in the shape of

liquid or solid stimulants, I have found to be unequalled for these Azaleas. *T. Baines.*

ORCHIDS.—That the plants in these houses may now make and perfect all the increasing growth it is desirable they should do, it will be advisable to increase the temperatures during the night and early morning to the maximum readings they should have at any time. The length of daylight also being now nearly at its greatest, it will be necessary to draw all the aids together we can command, so that with increasing heat and moisture and a well-regulated atmosphere, the young growths as they push up may be assisted, and thus develope the strength and vigour which is apt to be only, as it were, partially developed. These remarks refer chiefly to the several divisions when all are treated in a regular, and what may be described as the usual and ordinary, method; there are times, however, when for purposes of exhibition, or from causes of a private nature, some few plants may be required at an earlier period than that in which they would come under the usual manner of treatment. When such is the case it will be necessary to take them from the house in which they have always been grown and place them in one where the temperature is a few degrees warmer, and where during the day 10° to 15° of extra heat is given; sometimes, however, it happens that a few plants from the East India-house are required a little sooner; if these, they should be stood in a house of small dimensions by themselves, and treated to a higher range of temperature, it will be found that such a course is much more satisfactory and safe than to subject the whole of the plants in the house to an excess of heat, that a few may be brought on just a little sooner. The night, or rather early morning temperatures, must now be as nearly as follows:—East India-house, 70°; Dendrobium-house, 65° to 70°; Cattleya-house, 65°; Odontoglossum-house, 55° to 60°. The houses when left for the night must be several degrees above these numbers, the temperature gradually falling to those just stated; the fires in the morning must then be put on so that the heat may be advanced 10°, and if the day be bright and clear several degrees extra by sun-heat must also be permitted. Thus with a healthy and brisk-growing temperature the plants will come on in a healthy and flourishing condition. At the time of writing (May 21) the advice to keep up the fires may seem to be somewhat out of place, but with a keen cutting north-east wind, so different to what is expected at this period of the year, one must take account of what the present circumstances and weather is, and use all precautions that common prudence may dictate. The Pleiones will now be making rapid growth, broad leaves of a deep shining green indicating a good and vigorous action at the roots. Give these now plenty of water at the roots, and about once a week rinsing them to some liquid manure, and occasionally sprinkling them overhead with clear tepid water. The Masdevallias—Veitchii, Lindeni, Harryana, &c., will now be ablaze with their singularly formed and richly coloured flowers. It is surprising and also very pleasing to notice the distinct varieties that are to be found among them, and when one of unusual richness of colour is obtained it is much to be preferred to those of a lighter and therefore less striking colour. M. Harryana is especially likely to be met with where the shade and shape are so dissimilar that one feels almost inclined to think they should be grown under distinct names. The singular Restrepia antennifera, the flowers of which, both in colour and form, bear a striking resemblance to a beetle or fly, should be if possible in every collection where Masdevallias are grown, for the treatment required for the one suits the other exactly. The short spike of this should not be cut off, for, like M. tovarensis, it will push out flowers the second year, and thus add to the number of blooms the plant appears likely to produce. Give these now plenty of water at the roots, air at every favourable opportunity, and carefully protect them from the direct rays of the sun. *W. Swan, Fallowfield.*

FRUIT HOUSES.

PINES.—The spring-started plants which have been placed in fruiting pots will, if the roots be in a satisfactory state, be making growth very freely. To ensure its being of a sturdy robust habit the plants should be placed about 2 feet apart every way, and common every-day requirements should be attended to properly; if propitious weather prevails ventilate betimes, and by solar influences and a free admission of air keep the heat about the plants up to its minimum point of 85°, and close up finally for the day with a moderate degree of sun-heat in the house. If, on the other hand, the weather be unpropitious, be content with about 65° at night and 70° in the daytime; under these circumstances such a variation in temperature will not be injurious if the heat at the roots be kept uniformly at from 80° to 90° or 95° for Queen plants, these degrees of heat being estimated for the base of the pots; many vexatious disappointments in the way of defective fruit would undoubtedly be avoided if due attention was paid to this important matter. In the fruiting department the lack of that indispensable element—sunshine—with its natural consequences, will be the means of retarding in some degree the ripening of forward fruits. It will be necessary, however, to use artificial means commensurate to the purpose, of about 75° to 80° constantly, and in proportion to the supply of fire-heat a corresponding amount of moisture should be applied under any circumstance. Lightly dew the plants overhead with clear tepid water whenever the axils of the leaves become dry. In the case of vigorous plants, the suckers are very apt to disturb the erect position of the fruit; this matter should be seen to and obviated by means of a small stake, as nothing is more objectionable to its appearance than a one-sided crown. All offset shoots which may appear round the base of the crown should be removed as soon as they appear, and also any superfluous suckers beyond the one reserved for stock. Plants which are swelling off the fruit freely will need much care in regard to watering. This matter should be managed by a practised hand, as water should be given copiously whenever it is required, using with it some stimulating agent, and applying it at the same temperature as advised for the roots. In the case of these plants every advantage should be taken of solar heat to keep the temperature about the plants at its maximum point, 90° to 95°. Close up the house with it at 85° or 90°, and at all times when there is a prospect of a sunny day slightly open a back house betimes in the morning. *G. T. Miles, Wycombe Abbey.*

ORCHARD HOUSE.—Fruit trees in the unheated orchard-house are later than I have seen them for some years, and up to the present time have a very unpromising appearance of a continuation of dark, cold, sunless weather. Where root-action is good, and the earliest Apricots and Peaches are swelling kindly, disbudding and thinning of the fruit may be proceeded with, but where the young fruit make a stand when they have reached about the size of gooseberries, this matter had better be deferred, as it is more than probable that many of them are imperfectly fertilised, and will, as a matter of course, fall off. The use of the syringe may also be regulated by external conditions, particularly in the afternoon, when the foliage should be fairly dry, as we were left a house betimes on the 5th inst., when the thermometer marked 45° of frost. Let all watering be performed with tepid water early in the day. Ventilate with care on the south or west side, and if the sun does shine endeavour to raise the temperature a little by its aid early, early. Late trees, whether in pots or planted out, may now be mulched; the compost for the pot trees should consist of rotten dung, old turf, and lime rubbish, thoroughly mixed and laid on lightly. For the borders half-decayed manure is best, as it always and freely affords water, it finds its way down to the roots, instead of running off to the sides. Stop all gross shoots, and encourage those of intermediate strength, as they always form and mature the most perfect blossoms. Watch closely for the usual enemies, which will be numerous and troublesome until we have a change to milder weather. Handpick grubs from Apricots, Plums, and Cherries. Dress Peaches and Nectarines with Pooley's tobacco-powder for the destruction of black or brown fly, and fumigate with tobacco-paper for the ordinary green aphis. *W. Coleman.*

CUCUMBERS.—With the atmosphere constantly charged with thick black vapour sufficiently dense to veil the sun, the influence of which is not accompanied by a keen wind from the north-east, attention to the fires is as important as it was in December, and in proportion to the amount of fire-heat so must be the supply of atmospheric moisture, to keep the plants in a free growing state and clear of red-spider and thrips, which will so fast as this season left only for a few days in undisturbed possession. Keep the growths thin and orderly by going over the house at least twice a week. Remove a few of the old leaves on which the enemy lurks, at each dressing. Syringe occasionally late in the evening with a solution of Gishurst Compound, half an ounce to the gallon of water. Give plentiful supplies of liquid manure to plants in full bearing, particularly if growing in pots, and sprinkle the flowers at night with the same, the ammonia from which will greatly stimulate the young growths, and so enable the plants to distance their insect enemies. If a steady supply of fine straight fruit is the object, over-cropping must not be allowed, neither must the fruits hang too long on the Vines. Shade as little as possible, providing the young fruits do not get caught by the sun; in some houses this scalding is very troublesome, as it mars the appearance, and so affects the value of the fruit. The best remedy is early ventilation with very slight shading until condensed moisture has passed away. Make fresh sowings for succession as pits become vacant. Young plants raised about this time soon come into bearing, are more pleasing to the eye, and produce much finer fruit than those which have passed through a dreary spring. Plants in frames must be kept in healthy growth by regular attention to the linings and covering at night. Let the supply of moisture be regulated by the weather, and keep rather on the dry side until it becomes more genial. *W. Coleman.*

KITCHEN GARDEN.

In the general department constant attention must be given to the complete stirring of the surface amongst all advancing crops; this most important operation is one of the greatest aids to successful cultivation which the kitchen gardener can put in force, for by it not only may the incipient weeds be kept in check, but by the breaking up of the surface the soil is exposed to the beneficial influence of the sun and air, and a much more vigorous growth results. As a rule I do not hold with moulding-up where it can be avoided. Many of the root crops are ready to be thinned out, and attention should be paid to them at once. Parsnips are ready, and should be thinned out to 9 inches apart, possible vacancies being filled by transplanting. Turnips on warm borders are also progressing well, and must be thinned to 6 inches. The earliest sown Early Horn and French Forcing Carrots may stand at 4 inches apart, and in all these crops, either during the process of thinning out or after it is finished, the ground must be thoroughly disturbed, taking care to leave no footmarks. The surface soil of the beds of spring planted Cabbage will require to be loosened up either with a three-pronged tormentor or pricked over with a steel fork. I am a great advocate for the latter tool, as, although taking a trifle more time, it makes neater and more effective work. The main crops of Potatos will now be ready for a final earthing-up, taking care to leave the ridges with broad tops. The principal crops of Broccoli and Cauliflower for autumn and early winter use should now be got in at once. The Walcheren may be considered the first in importance, as it generally comes in first and by successional plantings gives a continuous supply until the advent of frost, when it is no longer to be depended upon; and here it is that Veitch's New Self-Protecting Autumn becomes most valuable, as from its habit of growth it requires a frost of some severity to reach the young heads. Veitch's Snowball Cauliflower is a most excellent auxiliary to the early supply. Veitch's Autumn Cauliflower, a grand sort not to be dispensed with, not having a protecting habit of growth requires to be watched and protected in case of early morning frosts in the autumn; and to complete the list, Snow's Winter White when treated will come in about Christmas, and in mild weather carry on a good supply for some time—indeed with such a grand force at command the only obstacle to a supply of Broccoli all the year round is the want of sufficient manual labour, or space, and proper conveniences for storing during the winter months. Now is a good time to go over the beds of Seakale, and thin out the crowns, taking care also to cut back all crowns which are throwing up flower.

No delay must now take place in planting out Tomatos in any warm places on the walls, either with an east, west, or south aspect; Capsicums and Chilies, on the contrary, must be planted at the foot of a south wall in the most sheltered parts of the garden, as also must Bush and Sweet Basil. Early spring Cauliflowers will be much benefited by liberal applications of liquid manure at weekly intervals. If not already planted, a row or two of the earliest Celery should be got in at once for very early culinary purposes, and the trenches intended for the main crop should be marked out at once, and the soil thrown out on each side, so that spaces between may be planted with Lettuces or Early York or Little Pixie Cabbages, all of which will come off before the final earthing of the Celery. The richest and fattest dung which can be secured must be kept in preparation for the trenches for the main crop to be got in early next month. The late sowings of Lettuce will now be ready, and should be pricked out at once. Frequent sowings, thinnings, and transplanting of Lettuces are requisite to keep a good supply, as are also liberal applications of water in dry weather. In the matter of blanching also it is best to tie up a few at a time as they are quite dry. See also that they are free from aphides, which are often a very troublesome pest at this season. The sowing of Radishes and small salading at frequent intervals must not be omitted. Radishes come very tender, crisp, and succulent when watered in the early morning when the sun is shining hot upon them. Sow a pinch or two of Walcheren Cauliflower for late succession, also white and purple Cape Broccoli. Another batch of dwarf French Beans should be got in at once, also another good row of Scarlet Runners for late purposes before the fortnight is expired. Due necessary sowings of Peas of late sorts, such as Ne Plus Ultra, British Queen, and Knight's Tall Marrow, must not be omitted. Advancing crops must have the necessary attention paid to stirring the surface of the soil, watering, mulching, and staking such as are forward enough. When on the subject of planting I omitted to recommend particular attention to planting out the main crop of Brussels Sprouts in well prepared ground, giving them plenty of room. *John Cox, Redleaf.*

THE

Gardeners' Chronicle.

SATURDAY, MAY 26, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, May 28 { Sale of Stove and Greenhouse Plants by Messrs. Arlingstall & Hind, at Old Trafford, Manchester.

FRIDAY, June 1 { Opening of Mr. Anthony Waterer's exhibition of Rhododendrons, &c., at Regent's Park.

SOME letters which have lately appeared in our columns draw attention once more to a subject often alluded to by us—the HIGHER EDUCATION OF GARDENERS. There is assuredly no country where horticulture forms a more important branch of enterprise, whether commercial or æsthetic, than in our own—we are afraid we must add, there are few where the education of its practitioners is less cared for than in our own. In Germany, in France, in Belgium, in America, the provision for the higher education in all branches of knowledge required by the agriculturist, the forester, and the horticulturist, is far in excess of what is provided here. This may be one result of the less paternal system of government under which we live—a system no one would wish to change. At the same time, daily experience shows us that we might do well to imitate, in such fashion as is most consistent with our national habits, the best features of some of those countries which we are apt in our insularity to consider as in many respects unsuitable for adoption here. There is no country in the world where practical gardening is better carried out than in our own. That will be readily admitted. At the same time it is equally indisputable that in no country does the well educated, well trained gardener hold socially so low a position as he does here. Where, for instance, would it be possible for any well-trained gardener—a man who has worked his way up from the position of crock-boy to that of head gardener—to be obliged on occasion to be beholden to the nurserymen for a slender pittance, while he patiently waits, often for months, sometimes for years, for something to turn up. Can this be right? On the one hand it condemns a man whose attainments justify a better fate, to labour at a common labourer's wages; on the other it keeps up a system of patronage, which may be injurious alike to the self-respect of the workman, and the interests of his future employer. Under existing circumstances, neither the workman, nor the nurseryman are to blame for this. They are obliged to conform to the system as it is, and it is not to either of them that we can fairly look to initiate a better one. To what quarters, then, can we look for improvement in this particular? It is not consonant with our habits to look to the Government for aid—we are far more disposed to look to private enterprise and individual initiative in these matters. But considering that gardening is chiefly looked on as a means of subserving the luxurious requirements of the wealthy, or as providing a most beneficial and engaging amusement for those of lesser means, it is obvious that neither to Government aid, nor to private aid, can we look for those means and appliances which are requisite to lift the practitioners of horticulture to a position commensurate with the higher requirements of the art. So long, too, as our horticultural societies exert themselves almost exclusively to conciliate the good-will of the fashionable idlers of the metropolis and other large towns, and promote flower shows as if they were the be-all and end-all of horticulture, so long will it be vain to look to them for substantial advance in the science and practice of horticulture. Far be it from us to undervalue gardening, either as a recreation or as a means of providing for the luxurious tastes of the wealthy. We should be false to our creed and our profession if we did anything of the kind. We simply plead that Horticulture has beyond this a higher duty to perform. It has to supply the actual physical needs of mankind, it has to minister to their bodily welfare, it has also to sweeten their toil, to lift them up who are floundering amongst the sordid cares of every-day life, to recreate them mentally and bodily. It is the parent of agriculture, and its business is to foster and promote the cultivation in the best and most suitable manner, in all climates and under all circumstances, of all those plants which minister to the needs of man, whether for food, for clothing, for medicine, for all the manifold uses which bodily comfort and mental improvement demand. Looked at from this point of view,



FIG. 107.—THE FLOWER GARDEN AT DRUMMOND CASTLE.

will any one say that the means at present available in this country for the education of gardeners are sufficient? Gardeners themselves are apt, when these questions are broached, and when a higher education is suggested, to ask, "Will it pay?" Our reply to this has in part been already given. Does it pay to remain as you are? A rank and file of ordinary gardeners there must ever be, and these cannot expect the prizes of the profession, though they may participate in the advantages which must accrue from the general advance of the whole body. And this general advance cannot be expected unless the working power of the mass be increased, and this cannot be, unless a more general and a higher system of education prevail. Does it pay? themselves, is not larger than in the much larger class who have not enjoyed even such advantages as have hitherto been offered. The letter of Dr. HOOKER in our last issue is eminently suggestive from this point of view, but the education of the gardener is, under present circumstances, only a very subsidiary part of the work done at Kew. Much is done there in a quiet way, but it is done of free goodwill for the most part, not as a part of a regular system. If it were discontinued to-morrow no one would have a right to complain. Whether the plan now followed at Kew could be developed into something more important, is not a question we care to enter upon at present. We would simply point out once again the urgent necessity that exists for

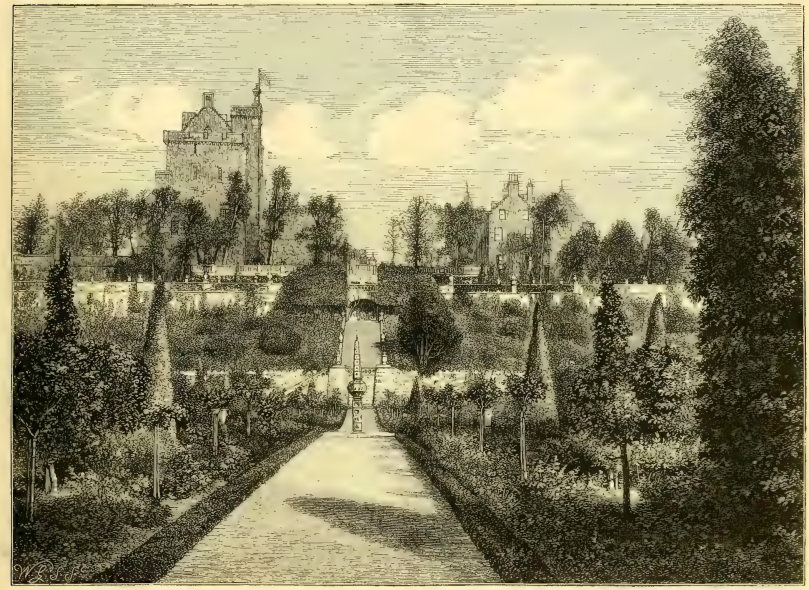


FIG. 108.—DRUMMOND CASTLE AS SEEN FROM THE FLOWER GARDEN.

Does it pay to remain all your life in a subordinate position, at a rate of remuneration not equal to that earned by other artizans who have not to exercise the forethought that you do, and who are not expected, as you are, to have knowledge at their fingers' end under every variety of circumstances? On the other hand, ask those who, by virtue of a superior training and a better education, have qualified themselves for better positions, whether it pays. Are they not better off? Do they not hold better social positions than those who have not enjoyed such advantages? Take the men who have had some sort of training beyond the rule of thumb as at Kew, at Chiswick, and elsewhere. Their numbers are indeed small, but see whether in proportion the number of those who have succeeded in life, and who have raised schools and colleges such as they have in Belgium, in Germany, in France, and in America, and wherein the agriculturist, the forester, the gardener might receive that thorough training, theoretical and practical, which are requisite to enable them to cope with the new and ever varying circumstances which are arising at home and abroad, to develope and extend our national resources and raise the social status of the practitioner.

—— In a recent number of the *Botanische Zeitung*, Dr. R. CASPARY describes a new African Water Lily, which he names NYMPHÆA ZANZIBARIENSIS. But it is not so much for the sake of the new species that we refer to it here, as for the opportunity of repeating his instructions respecting the best way of transmitting seeds of these beautiful aquatics for long distances, to preserve their vitality. For many years Dr. CASPARY has made the Nymphæaceæ, or rather the genus Nymphæa, his special study, and it has been his object to cultivate as many forms as possible in order to test the value of characters which can only be imperfectly seen and appreciated in dried specimens. In his endeavours to introduce different species he has gained some experience in the conveyance of their seeds which may prove useful to some of our readers. Sent dry from the tropics, and exposed to great heat on the journey, they are almost certain to lose the power of germinating; and sent in water they are quite certain to rot. Dr. CASPARY lost many valuable consignments from various parts of the world before he thought of the means described below. True, it is only in part new, and no more than the adaptation of an old idea. It is simply drying the seeds quickly after collecting, and then squeezing them into moist loam or clay in a tin box. When the clay or loam is dry the box is soldered down air-tight. In this way the seeds may be sent for any distance without losing their vitality. Dr. CASPARY has also frequently received good seeds sent from very distant countries, which had been embedded in moistened powdered charcoal, and otherwise treated as with clay or loam. J. M. HILDEBRANDT, who discovered and introduced seeds of the new species described by CASPARY, used white carbonate of lime (chalk), and when the seeds arrived they were in a solid mass of this substance. They were at once put into a basin of water, which was kept at a temperature of 22° R. (81°.5 Fahr.) They lay dormant for two months, and then germinated in numbers. Many plants were safely wintered in 1874-5, and in the course of 1875 seven strong plants in large bowls produced flowers. In 1876 one tuber was planted in a box 4 feet square, and this was sunk in a tank 23 feet

n diameter in a house in the Botanic Garden at Kœnigsberg. Treated thus it developed into a fine plant, and bore flowers up to 9 inches in diameter, and always two or three together; and the leaves were 2 feet in length. It proved to be a new species; and, more than this, the most beautiful of the genus—eclipsing even N. gigantea. The sepals are of a deep green, and destitute of spots on the outside, with a broad crimson margin, and of a deep violet-crimson within. Petals deep blue, with a whitish spot at the base, the outer ones crimson near the base; and the outer filaments yellow. Dr. CASPARY concludes with an appeal to those in a position to do so, to send him seeds of African species not in cultivation, especially the forms found in Lower Egypt in the inundated Rice fields; and he is willing to pay 30*s.* or 50*s.* or more, for good seeds of a species. He would be glad to get the N. coerulea *β* albiflora of SIEBER. Such fruits should be selected from which the parts of the flower have rotted away, and placed in a moist box. In the course of three or four days those containing mature seeds will have burst; and the seeds should then be placed in warm water to allow the coil to rot off, which will take place in a day or two. The seeds which have sunk to the bottom should then be taken out, slightly dried, and packed in the manner described above.

—— We have received from the Rev. T. C. BÉHAUT, Richmond House, Guernsey, some good examples of the BALDWIN and LADY APPLES, which go far to prove how well they can be grown in that island. The Baldwin is a famous American Apple, which, like most other of the Transatlantic varieties, does not do well in this country, and the fine, even-sized, and finely coloured samples before us are certainly the best that have come under our notice. The Lady Apple (Api, or Pomme d'Api) is better known to us, and a pretty little fruit it is for the table.

—— It has been proposed to present a testimonial in money to Mr. JAMES MITCHELL, on his retiring from the management of the gardens at Newbyth (Sir DAVID BAIRD'S, Bart.) Mr. MITCHELL'S friends will be sorry to learn that illness, of a nature which precludes the possibility of his resuming employment in future, has necessitated this step. Donations will be thankfully received up to June 8, 1877, by Mr. R. P. BROTHERSTON, Tyninghame, Prestonkirk.

— DARLINGTONIA CALIFORNICA is flowering in the open air at the rockwork near the T range at Kew. It has been in this position with the protection of a bell-glass for the last two years, and has grown from a small seedling during that time. There are about fifteen leaves, the largest of which is 7 inches long, and the scape is about the same in height. It is growing in a pot, with the same mixture as for Sarracenia, and plunged up to the rim.

—— A correspondent relates that in travelling from Petersfield to Midhurst, about a month since, he was much struck with what may be almost called a NATURAL ARRANGEMENT OF FLOWERS AND FOLIAGE. It appears that at the intermediate stations there are thin Quick Thorn hedges about 3 feet high and 9 inches through, in front of which are narrow borders for flowers. At one of the stations the hedge, at the time referred to, was richly ornamented with the common Wallflower, which had grown up between the thorns, and was in full bloom, the flowers harmonising very prettily with the apple-green of the young foliage of the Thorn. The Wallflower had, no doubt, been self-sown, and had gained strength previous to the Thorn coming into leaf. Moreover, the latter had proved an excellent support to the Wallflowers, the shoots of which had penetrated the whole of the south side and top of the hedge, and covered it with its fragrant flowers.

—— The last number of the *Illustration Horticole* contains a coloured figure of a new Aroid of so extraordinary a character that it is likely to attract much attention, and to be as popular as the Anthurium Scherzerianum. The new-comer, of which as yet we know nothing but what is told us in the publication in question, is an Anthurium of tufted habit with ovate lanceolate deeply cordate green leaves, and slender spadices surmounted by an open cordate-ovate orange-red leathery spathe, 3—4 inches across, placed at the base of a cylindrical spadix of a yello w colour, with a broad central band of white. M. LINDEN has appropriately dedicated this startling novelty to its discoverer, M. ANDRÉ, by calling it ANTHURIUM ANDRÆANUM. M. ANDRÉ, it appears, met with this plant in the province of Choco, in New Grenada, and does not hesitate to affirm that it is superior in beauty to A. Scherzerianum. We await the appearance of this remarkable plant with great interest.

—— The EXHIBITION of the ROYAL NATIONAL TULIP SOCIETY has been unavoidably postponed, owing to the lateness of the bloom. The show was originally fixed to take place during Whitsun week (May 25), in connection with the usual grand show of the Royal Manchester Botanical and Horticultural Society; but as it was found quite impossible to carry it out at that date, the executive committee have resolved to postpone the meeting till June 5, when the annual exhibition will be held in the same place (Manchester Botanical Gardens) and under the same conditions as those published in the schedule of prizes already issued.

—— We have received from Messrs. DICKSONS & Co., 1, Waterloo Place, Edinburgh, some flower-heads of DOUBLE CINERARIAS, which are very much superior to any we have previously seen, and which leads us to hope that these double varieties may yield us a distinct type of decorative plant. The flower-heads are of large size—1 inch to 1¼ inch across, and as fully double as the best forms of double Jacobæa. Pink Perfection and The Prince are different shades of magenta, and Queen of Violets is of a rich purple-violet hue. Such varieties as this must be very serviceable when grown for decorative purposes.

—— Mr. HARRISON, gardener to the Earl of DERBY, at Knowsley, has sent us a splendid raceme of flowers of ALPINIA NUTANS—a fine old plant not often seen in flower, though, as Mr. HARRISON remarks, no plant is more easy to manage. A tropical heat and a deep bed of rich soil is what it requires to grow in. After it has done flowering withhold water for a time, then thin out the old flowering stems, give a good soaking of water and start again. Treated in this way it will flower two or three times a year. The compound drooping raceme of waxy white flowers, with yellow and beautifully feathered crimson lip, is very striking.

—— We are requested to state that the ten-guinea cup offered for competition by nurserymen in the horticultural department at the forthcoming Centenary Show of the Bath and West of England Society at Bath is for twelve distinct varieties of Tea Roses, three blooms of each, and not as advertised in our last issue, for "twelve cut blooms." The amateurs' class is for twelve single blooms.

—— A general dealer of Shadwell was recently charged before Mr. LUSHINGTON, at the Thames Police Court, with having in his possession 4½ tons of tea, the duty on which had not been paid, and which the defendant accounted for by stating that he had a contract with Chamberlain's Wharf for their rubbish, of which tea-dust formed part, and a farmer from the Barking Road, who gave evidence on behalf of the defendant, stated that he had been in the habit of buying tea refuse from him at 2*l.* a load for Mushroom growing. This is something new in Mushroom culture—certainly new to us. Can any of our correspondents enlighten us as to the *modus operandi* of growing "buttons" in tea-dust?

—— The Royal Horticultural Society's Gardens at South Kensington were visited on Monday last by 6936 persons, who, paying an admission fee of 2*d.* each, contributed £57 16*s.* to the funds of the Society.

—— The FLOWER SERMON annually preached on Whit Tuesday at the parish church of St. Katharine Cree, in the City, attracted a crowded congregation last Tuesday evening. This sermon has, says the *Daily News*, marked in the City the advent of spring flowers for so many years, that the Rector, the Rev. Dr. WHITTEMORE, now sees the children who attended this annual service at its commencement bringing their own children to hear in their turn the lessons from the flowers which they cherish among the reminiscences of their youth. The service is altogether a happy and interesting one. The church is filled with children and young persons, each of whom has brought flowers of some kind. The preacher looks down upon a novel garden, and aided no doubt by the inspiration of happy juvenile faces and the fragrance of magnificent bouquets, discourses chattily to the little ones upon the text of the day, which is always chosen for its reference to some flower, or fruit, or tree, or to the flowery spring. A bouquet is placed in the pulpit by a hand that has recognised the preacher's good offices in the same way for many years, and always at the beginning of the sermon this little attention receives a passing word of thanks. The hymns sung speak of flowers in nearly every line, and some of them are composed specially for the service. Dr. WHITTEMORE preached this year on the Fig tree, founding his discourse on the words in the third chapter of Habakkuk—"Although the Fig tree shall not blossom, yet I will rejoice in the Lord." He announced at the outset that by next year the pews in the church will be modernised, so that then both flowers and children will be seen to better advantage. The Rector, in pressing home a great many lessons from the Fig tree, incidentally drew a refreshing picture of the now crowded neighbourhood of his church in the days when monastic gardens were there, in which the monks cultivated Fig trees. He reminded the older people in the congregation that trees used to grow in some of the City courtyards, which were supposed to be the remains of Fig orchards, though now the district was so altered that to some it would seem singular that a flower sermon should be preached in it. The name of Fig Church Lane, and old pictures of the neighbourhood showing ladies weaving garlands, conveyed an idea of the once rural aspect of the spot.

—— RUBUS DELICIOSUS is extremely pretty in flower on one of the walls at Kew. It grows in the form of a shrub, has very ornamental Currant-like leaves, and bears in profusion snowy-white flowers, 2½ inches across. Its fruit is about the size of a Blackberry, and is of agreeable flavour; but for the flowers alone its claim to a conspicuous position is indisputable. It grows best in peaty soil.

—— The use of iron for general purposes, as well as for strictly horticultural uses, is so large that any means of OBVIATING the destructive effect of RUST deserves attention. Rust is an oxide of iron, and as every one knows to his cost who has to do with iron buildings, it is peculiarly destructive in damp situations. But rust is not the only oxide of iron; there are others; and among them the black or magnetic oxide of iron, which is all but imperishable under ordinary agencies. Professor BARFF has ascertained that if any iron article be exposed to the action of superheated steam at a very high temperature, it will become coated with a film of this magnetic oxide, which is harder and more resisting than the original iron. Articles so treated resist any exposure to the weather, and are rendered for all practical purposes imperishable so long as not broken. Supposing all that is claimed for the process to be borne out, and there seems no reason to doubt it, this discovery will be one of the highest importance to all who have to use iron in any shape or form. For garden structures the new discovery will be of the greatest use, and the painter's bill will be correspondingly diminished.

—— The fifth part of Baron VON MUELLER'S descriptive notes on PAPUAN PLANTS has appeared. Many of the plants mentioned were collected by Mr. GOLDIE. Among them are two species of Nageia, the only Coniferæ yet known in New Guinea with the exception of a species of Araucaria, found by Signor BECCARI.

—— M. RIVIÈRE'S successor at the Luxemburg Gardens, Paris, is M. JOLIBOIS, the foreman of the houses under M. RIVIÈRE.

—— According to M. BOUCHARD, as cited in the *Press*, the precaution taken by TORTOISES against coming cold (in days or seasons) may give useful indications to farmers and others. For some years he has been guided by such indications in the management of his conservatory. At the end of autumn, when the winter is going to be severe, the tortoises bury themselves deeply, so as to be wholly concealed.

Before a mild winter, on the other hand, they bury themselves only a few centimetres, just protecting the apertures of their carapaces. In January last they ventured even to walk out, but on approach of the late cold of February they ensconced themselves anew. One day in March, the thermometer being at 10° C., M. BOUCHARD noticed his tortoises bury themselves; that night the mercury fell to 2° above zero C. Again on April 1, the thermometer being at 40° in the sun, his most sensitive subject went into the ground. On the 2d there was hoar frost. Several other like cases are given.

—— Dr. ENGLER, of Munich, has just published in the *Nova Acta* of the Imperial German Academy of Naturalists an important memoir on the comparative morphology of the ARACEÆ. This may be looked on as introductory to the monographs of the species about to be undertaken by the same author in the *Flora Brasiliensis* and in DE CANDOLLE'S supplementary series of monographs.

—— It is usually thought that Wheat is the most nutritious of all our cereals, and this opinion is current in almost all works relating to food. Recent investigations by Professor WANKLYN and Mr. COOPER, as quoted in the *Press*, appear to give the first place to Rye. Rye contains more gluten. It is pronounced by them one-third richer than Wheat. Rye, moreover, is capable of thriving in almost any soil.

—— Dr. LAUDER LINDSAY'S collection of LICHENS has been offered, with all the cabinets and fittings in which it is contained, as a donation to the ROYAL BOTANIC GARDENS OF EDINBURGH, on the conditions that (1), a small room be provided for its accommodation in connection either with the Government Herbarium, or with the Museum of Economic Botany; and that (2), it be kept in proper order for purposes of reference or study either by the curators of the said herbarium or museum, or by any of the numerous students of the Edinburgh School of Botany. But it is understood that no such donations can be accepted, by reason of the very inadequate accommodation provided by Government for the more essential requirements equally of students and teachers. There is urgent need, for instance (1), of a new commodious lecture-room; (2), of a greatly enlarged museum; (3), of botanical laboratories for microscopical, physiological, and other research; and (4), of extra special rooms attached either to the herbarium or museum buildings suitable for the reception and maintenance of such donations as that now referred to.

—— We understand that the Rev. Canon HOLE has consented to preside at the dinner of the NATIONAL ROSE SOCIETY, which will be held in St. James's Hall on the day of the Rose show.

—— Under the title "MALESIA," Signor BECCARI has just published in quarto form the first part of a publication intended to comprise the botanical results of his travels in the Malay Archipelago, Papua, &c., during the years 1865—76. In this first part some fifty species of Palms are described; also the process adopted by the natives of New Guinea for extracting sago from the stem of Metroxylum Rumphii.

—— We learn from Mr. CROUCHER, gardener to J. T. PEACOCK, Esq, that a plant of FOURCROYA LONGÆVA is now flowering in the Alexandra Palace collection of succulents. The flower-stem is 14 feet high, and branched as in Agave americana, but the flowers, greenish white in colour, are not very conspicuous. As fine-foliage plants the Fourcroyas are very handsome, but their flowers are of little interest.

—— From the *Basler Nachrichten* we learn that a course of practical and theoretical INSTRUCTION TO FEMALES ON VEGETABLE GROWING, &c., has just been concluded at Baden. From the nature of the instruction offered, it appears that the care and management of the garden is regarded as a part of the duty of the wives and daughters of the peasantry. But it was not limited to gardening and the preparation and preservation of garden produce, nearly every branch of housekeeping being taught. The most proficient in a subsequent examination received prizes of suitable books. Cooking is, perhaps, the branch in which our country housewives of the same class most need instruction.

—— We have received EUGEN ULMER'S catalogue of teaching apparatus and text-books for agricultural, horticultural, and other institutions. The diagrams, which may be procured of any dealer in foreign books in this country, at the same price, it is stated, as they are sold at in Germany, deserve the attention of teachers who have not the time or talent to draw their own. Among those interesting the gardening community we may note diagrams of the most important meadow grasses, and other plants, and fodder plants; also those explanatory of the raising and training of fruit trees, diseases of plants, and those illustrating the structure and development of the principle types of plant life. Reduced representations of an example of each set is given in the catalogue, and, judging from these alone, the diagrams are most faithfully executed. Some of the botanical diagrams we have actually seen, and we can vouch for their accuracy. Moreover, they are very cheap, and they are large enough for an ordinary class-room.

—— In the *Botanische Zeitung* of April 13 is the first part of a preliminary report on CINCHONA STUDIES, by OTTO KUNTZE. The writer has spent some time in the Dutch plantations in Java, and has visited some of the English plantations in India, and his studies should be read by all interested in Cinchona cultivation. He says the mode of cultivation now adopted by the Dutch in Java is more suitable and more productive than the system practised by the English in India. The trees are planted like our orchards, in rows, and the soil chosen for the purpose is cleared forest land, at an elevation of about 5000 feet above the sea, with a gentle slope, so that the rain does not flow away too quickly. Among the forms of Cinchona cultivated in Asia the writer distinguishes only four species, and all the others he regards as hybrids of various parentage. He states that the species of no genus intercross more freely and spontaneously than those of Cinchona, and he gives some curious information respecting the products of different classes of hybrids.

DRUMMOND CASTLE.

ABOUT 3 miles south of Crieff, the capital town of Upper Strathearn, and a place famous alike for the mildness of its climate and the highly romantic scenery which surrounds it, stands the noble pile of buildings, Drummond Castle, the ancestral home of the Drummonds, Earls of Perth, and the scene of many stirring events during the feudal ages. It is now the property of Lord and Lady Willoughby de Eresby, and is known amongst gardeners far and wide for the remarkable size and beauty of its flower garden, and as well amongst tourists as one of the glories of Upper Strathearn. Passing out of Crieff over the old bridge which spans the Earn on the south-western side of the town, the visitor to Drummond Castle turns sharp to the left and enters a magnificent avenue of trees some two miles in length and composed principally of Ash, Beech, Horse Chestnuts and Sycamores, which said avenue has been described as "finer than the Italian Boulevards of Paris, and grander than the Linden Alley at Berlin."

Be that as it may, it has certainly a grand and imposing appearance, and forms a noble approach to the entrance gate to the Castle, an elaborately decorated piece of workmanship brought from Italy, and supposed to be more than 300 years old. Passing through this massive and elegant piece of masonry, as every decently dressed person is allowed to do, in order to inspect the gardens, the visitor is at once struck with the curious appearance of the narrow avenue formed of Beeches of enormous size, and which, a mile and a half in length, leads up to the rock on which Drummond Castle stands. Enjoyable, indeed, is this drive from the entrance to the Castle, the ground on the left being beautifully undulated, and dotted here and there with noble trees, while the charming combinations of wood and water, hill and dale, form a series of panoramic views on the right, which must be seen to be appreciated. The Castle itself is not seen until almost the end of the avenue is reached, when it suddenly comes into view on the left.

Passing under an archway into a large courtyard a view of the flower gardens is quickly obtained from the top of a flight of steps, which is shown in the illustration on p. 661, fig. 108. The garden is situated some 30 or 40 feet below this point, and covers some 10 acres of ground. The view over the whole and its charming surroundings utterly beggars description. But the reader may obtain some idea of its singularly beautiful character by imagining himself as standing in the centre of the masonry shown in the foreground of fig. 107, the view in which consists of a portion only of the garden.

Before descending into the garden below, those who choose to ascend to the top of the highest tower, shown in fig. 106, p. 657, and fig. 108, can do so, and we may say that ample indeed is the reward for the labour involved, so fine is the scenery that greets the eye from this coign of vantage. The beautifully wooded park, with its varied undulations, forms a background to the noble garden. "On the west, at a distance of 2 miles, is Turleum, rising 1400 feet above sea-level, its top covered with Larch, while from its base to half-way up the hill a fine contrast is offered by the sombre Spruce. The bold Benchonzie, with the gull-like ravine of Glen Turrit, appears in the background far away. On the north is the town of Crieff, backed up by the Knock. On the east an inland sea, with branching Willow trees rearing their foliage above its surface, and rising, as it were, from out the deep, while beyond you see windings of the Earn gliding over the plain. Southwards the extended grounds, rising with a gentle acclivity, studded with trees of every hue and configuration, might well be supposed the haunt of Dryad nymphs and sylvan demigods." In our next issue we shall publish a plan of the garden, and must till then reserve our remarks on its contents.

Home Correspondence.

Hyacinthus candicans.—This little known but exceedingly beautiful plant has generally been treated as a greenhouse or conservatory plant. Two years ago, however, a notice in one of the horticultural journals stated that it had been flowered successfully in the Botanical Gardens, Dublin, and the inference was drawn that it might probably be found to be almost, if not entirely hardy. I have now to state that I sowed the seed of H. candicans in the summer of 1876 in the open ground, and that it germinated freely. In the early winter I protected the young plants slightly, but thinking that this was labour lost I afterwards neglected them, and left the little bulbs exposed to the severe frosts of the early spring, which totally destroyed the incipient blossom of the common Bay, and some Veronicas which survived the cold of December and January. On examination, however, I found the bulbs, of the size of white Spanish Beans, quite fresh, and throwing out roots in the month of March. This was an agreeable surprise. I am now taking care of my little treasures, and expect that by next season they will be flowering bulbs. This proves that the H. candicans is not only hardy, but more hardy than most of our spring bulbs. Can you inform me what is the native country of this beautiful plant? *J. F., Stewartry of Kirkcudbright, Scotland.* [It is South African. EDS.]

Fungus Spawn from Garden Beds and Mushroom Beds.—During the last five or six years various correspondents have sent us long cord-like masses of spawn from the above beds. The cords are a little less in diameter than window cords, and almost as tough. In some instances they have been pulled out by the hands in large masses, and have been so abundant as to choke the beds, and totally prevent the plants from growing. When cleared away they come again in the same abundance the following year. Our correspondents never see anything above the soil. In every instance these cords when cultivated in moist silver-sand under bell-glasses produce Xylaria vaporaria, but they sometimes take a long time to perfect themselves—sometimes from one to two years. At times the same spawn, instead of appearing in long cords, takes the form of large irregular nodulose masses. Xylaria vaporaria is figured and described in the *Gardeners' Chronicle* for April 15, 1871, p. 482. *W. G. S.*

The Double White Narcissus.—Can any of your correspondents explain the cause of the double white Narcissus frequently failing to develope the flower when at the period of bloom? In a garden at Brighton, where bulbous plants in general give splendid results, I have rarely obtained one flower from quantities of these bulbs. They throw up a flower-stalk, and shortly before the time for blooming the bud becomes flabby, yellow, and fails. I have seen hundreds of these failures in beds not my own and though I have placed the bulbs in various situations relative to sun or dampness, cold or protection, I have seen the same effect result. I have given up

these elegant and late spring ornaments to a garden in consequence. *W. E. Heathfield, Arthur's, May* 21.

The Royal Ascot Grape.—I send to-day, per rail, a small box, containing a small bunch of the Royal Ascot Grape. It has done so well with me this season that it appears well adapted for early work and pot culture. The bunch sent is from a small two-year-old Vine ; it has borne six such, some of them larger, all well coloured and swelled. It is planted out in a small house with four other Black Hamburghs. It ripened quite a fortnight earlier. It does not show any signs of shanking. *Oliver Goldsmith, The Gardens, Polesden Lacey, Dorking, May* 23. [A very pretty sample, with finely-swelled, well-coloured berries, evidently adapted for early work. EDS.]

Protecting Seeds with Paraffin.—" R. W." in your last week's paper assumes that soaking Peas for two minutes in paraffin before sowing, destroyed the seed and caused them to rot in the ground. I can only say that is not my experience either last year or this year. I have now three rows of Maclean's Little Gem growing quite strong, and I soaked the seeds for twenty-four hours in paraffin before planting. Although I am quite a novice at gardening I have implicit faith in the paraffin to keep off the birds and also the grubs and caterpillars. Large seeds I soak in paraffin oil, small seeds I mix as follows : I first sow them and then I get some dry sawdust and slightly saturate it with paraffin and then sprinkle the beds liberally with the sawdust. The only objection to this mode of treatment is that, paraffin being a volatile substance, the effects of the oil disappear in about a week, and it is necessary for the ground to be again slightly sprinkled with either another coating of the sawdust or with water and oil mixed. Last year I syringed my summer Cabbage with a mixture of one wineglassful of paraffin to two gallons of water thoroughly incorporated by stirring, and the effect was to cause all the butterfly caterpillars to disappear. A Gooseberry tree covered with grubs I treated in the same way, with success. One week after the Cabbage had been so treated not the slightest trace of paraffin remained on the Cabbage. I can therefore vouch for the fact that paraffin oil does not injure vegetation, and I hope some of your readers who have tried the experiment will confirm what I have said. *G. D., Shrewsbury.*

—— Let not the public be alarmed or panic-stricken because " R. W." having " soaked his seed Peas in benzoline for two minutes" previous to sowing them, has lost his crop. I have this spring used paraffin oil for all save my first sowing of Peas, and the result has been that, whereas the mice and birds almost destroyed my first sowing, they have not touched the later sowings where paraffin was used, and not a Pea I believe rotted, for I have as promising crops coming on as I could wish. I merely placed the Peas in a shallow dish with a little paraffin, and then shook them till they were all smeared, when they were at once sown. I intend next year to adopt the plan for all field Peas, having at this year my shade coal-tar and lime instead, for both Peas and Oats, with perfect success, as far as keeping off rooks and other birds, but the process is attended with more trouble than in the case of paraffin, as with tar care must be taken to dry the prepared seeds well before it has time to stick. The winter Beans which were not so treated suffered much from the ravages of both wood pigeons and pheasants. But after using the tar we were able to dispense with bird-keepers entirely—a serious consideration in these days of compulsory education, as no small boys can now be employed as bird-keepers. The seeds, owing to the season, was some time coming out of ground, and I was rather laughed at by my neighbours, but I have the laugh on my side now. *Mervyn.*

—— If " R. W." had used paraffin instead of benzoline, he would have to look to other causes for his Peas rotting in the ground. Last season I had all the early Peas here eaten by slugs under ground, but this season, acting upon a suggestion made in the *Gardeners' Chronicle*, to try steeping the seeds in paraffin, I have tried it on several varieties with perfect success, as the slugs have touched none underground. I also steeped some Broad Beans and some Radish seed, which the birds did not touch. Paraffin can be used with perfect safety, and it is the best safeguard against mice and slugs that I have ever tried. *F. W. Sedgley, The Gardens, Manor House, Lyndhurst, Hants.*

Peach Setting.—It is no part of my duty to look over the back files of the *Gardeners' Chronicle*, to put " Vitis " right in this matter. He has got himself into an amusing dilemma by rushing into print on a subject upon which he is clearly ignorant as regards what has been said, and who said it. Let me, however, just inform him that he is not " quite correct," but entirely wrong, concerning " Mr. Miller's theory and practice" on the subject of setting Peaches. Here are Mr. Miller's own words in the *Gardeners' Chronicle* of February 19, 1876, p. 235:—" As to setting the fruit, I have not used any artificial means for a considerable time, but simply the common garden syringe, and this year, as in other seasons, I have applied the usual soft water as it stands in the house to the trees while in full flower," and, adds Mr. Miller, "our set this year appears to be as thick as hail ; " and further on he continues, " it is over twenty years since I tried my hand at setting early Peaches with the syringe, and found it successful." I think these declarations of Mr. Miller will convince " Vitis" himself that he has made " one big mistake" in citing Mr. Miller's practice—in fact a more amusing case of convicting a man out of his own mouth is seldom witnessed. In answer to " Vitis" question as to what advantages the advocates of the syringe claim for it, I again refer him to the back pages of the *Gardeners' Chronicle*, where these advantages are fully set forth. Clearly he needs to read rather than to write on such subjects, but at the same time the " advocates of the syringe " are by no means anxious to convert him (or any one else) to their views, against his will. *J. Simpson.*

Lilium Washingtonianum.—On looking over some back numbers of a well-known garden periodical I saw that there had been some dispute respecting the above Lily, and recollected that a friend of mine, who was out in California some twenty-five years ago, gave me on his return a England note-book a pencil-sketch portrait of this exquisite flower, which he had seen growing on the Sierra Nevada mountains. I send you the description, and shall feel pleasure in forwarding the figured bloom if you would like to see it.

" The flowers of the Lilium Washingtonianum, or Lady Washington Lily, are white when they first expand, with scarcely a discernible blush of pink ; this blush deepens with age (her ladyship is unlike other ladies in this respect—it is the young ones who blush, and even with them the habit seems going out of fashion), until it becomes almost a lilac-purple before it fades. A few drops of crimson spots upon the midrib, which is smooth and shining. Stem erect, glabrous, 3 to 4 feet high, two or more flowered, on peduncles 4 to 5 inches long. Flowers patent, open, tubular, funnel form ; petals recurved from the middle of the claw to somewhat narrow lanceolate lamina, finally becoming revolute ; claw linear unguiculate (slender claw, about ¾ inch long), deeply channelled, the three outer divisions of the perianth quite distinct, neither ridged nor crested ; lamina plain, parallel veins or striæ regular."

Such is the technical description given me, and I believe my friend had it from Dr. Kellogg, who, if I am not mistaken, first introduced this Lily to the notice of the California Academy of Natural Sciences. *Helen E. Watney, Berry Grove, Liss.* P.S. " This Lily will not bear the glare of the sun well. It loves like our own Lily the shade and retirement ; too much heat and light dwarfs it." Thus wrote my friend, but his remarks may only be applicable to its culture in California. *H. E. W.*

Lady Ann Grimston's Tomb at Tewin.—As far as I recollect, the trees growing out of this tomb are Sycamores, and not Ash. The winged seed of the Sycamore is well adapted for insinuation in the crevices of stone when cracked by the weather or accident, and there is of course nothing marvellous in the fact. It is not impossible that Lady Ann's heretical speech may have been invented after the Sycamores had intruded upon the privacy of the resting-place—not the last, if the trees are to be taken as evidence. *T. F. R.*

Wild Trees.—Will the writer of the notice on the nutrition of fruit trees be good enough to give his reasons for the statement that the root apparatus of a cultivated tree differs from that of a wild tree, and also the meaning of the term " wild tree ?" In common with many others, I should be heartily thankful to Dr. Goeppert for the discovery of a less cumbrous " nutrition " than farmyard manure, which alone at present answers the wants of a fruit tree. *T. Francis Rivers.* [Try Pasteur's solution, or some other solution such as the German chemists employ in their " water culture" experiments, only we can't say they will pay commercially ! EDS.]

Carnation Souvenir de la Malmaison.—In answer to " W. C. B.'s" inquiry respecting the *modus operandi* followed here with the above plant, I must say it is very simple, yet successful. First, I find that cuttings taken about the end of July, after being well ripened out-of-doors, make the best plants. These cuttings taken and inserted in good loam and leaf-mould, with sufficient road-drift, or river-sand, to keep the whole open, and afterwards placed in a cold frame, to be allowed to root at pleasure, will make fine, sturdy stuff, capable of producing large flowers the following April and succeeding months. Secondly, having a stock of plants to perform upon, the requirements of the establishment is the next consideration ; but, as " W. C. B." states the " dull seasons " of the year, I must confine myself to that period. For this object I take in March the points from plants that have been standing in a cool house all the winter, and strike them in heat. When rooted, I pot them on, and again give a little warmth until they are established. About May they are placed in a cold frame, and grown on there throughout the summer. These, not being allowed to stand still, will flower from November onwards. The secret, if such it can be called, is that in the " dull seasons " of the year, when the buds of the plants are developed to, say, the size of a common Walnut, to apply fire-heat. A dry corner of an intermediate-house, or the like, will answer very well. It is useless to attempt to force this plant until its buds are developed, as above stated ; it is likewise quite as absurd to think that this fine Carnation can unfold its many petals in a greenhouse in any other than the " warm seasons " of the year. *Walter Johnstone, Gr. to the Marchioness Camden.*

Lessons to Young Gardeners at Kew.—I am very glad to learn that the lessons on scientific subjects connected with gardening, which Dr. Hooker procured for the young gardeners at Kew, are now appreciated by them. But I still think that the fact that in the first instances the majority of them were not willing to attend them, shows that the Horticultural Society can hardly undertake work of this kind until they see their way very clearly to its not being a failure. The experiment was made at Kew with the help of money from Government, and amongst a considerable number of young men who were learning gardening as their profession. At the same time I should be very glad to see the Horticultural Society undertake this kind of work ; it no doubt is work that it is perfectly legitimate for it to undertake, and if Dr. Allbutt will tell us the number of gardeners who might be expected to attend a class of the kind at Leeds, and what they would pay for instruction in scientific horticulture, I shall be very glad to promote the taking it up by the Horticultural Society. And I must again say that I think that if country horticulturists wish the Society to undertake such work for them, that they ought to become members of the Society to enable it to do so. I suppose when Dr. Allbutt says that this strikes him differently, he means that the Society would have more support if they did such work ; but I think that this is something like saying that a railway company should make the railway before asking any one to subscribe to it. *C. W. Strickland, Hildenley, Malton.*

Vine Leaf.—A neighbour started a house of Vines at the end of January, and on one of the Black Hamburghs is a leaf measuring 14½ by 14 inches, on a stalk 8½ inches long. Is not this unusually large ? *W. T. T.* [Yes. EDS.]

Wild Lily (see p. 630).—I regret to find how much your education must have been neglected ; had you been brought up in one of our southern counties you would have learned, at the same early age at which you made the acquaintance of Primroses and Bluebells, that what you pedantically call Convolvulus arvensis are the Lilies of the field. *K.* [A correspondent from the New Forest kindly gives us the same information, and Mr. Walter W. Reeves, King's College, states that the same plant is called a Lily in West Sussex, so that Dr. Prior and the Editor of the *Treasury of Botany*, and others who make records of plant names, must add Convolvulus arvensis to the rest of the Lilies ! Certainly it has as much right to be so called as most of those we cited last week. Supposing the Bindweed to be the plant really intended, we should decidedly prefer to have a Lily in a gravel path, for it would be easier to remove it if necessary. Repeated salting of the path at intervals, or a dose of carbolic acid, may keep it under, but if it is very troublesome we should advise the path to be picked up, and every visible bit of the " Lily " carefully removed and burnt before the gravel is rolled down again. EDS.]

Late Grapes.—We used the last of our old Grapes (Lady Downe's) on the 14th inst., and, as they did not keep either so well or for so long a time as usual, a few words, giving what I consider the cause of our failure, may be of service in preventing others making the same mistake. Usually we have made a point of cutting and placing them in bottles by the first or second week in January, but for certain unavoidable reasons this could not be done this year, and they were, therefore, left to hang on the Vines till the third week in February, and in consequence of the mild moist winter, and the large amount of firing used to keep damp at bay, though the Grapes kept perfectly whilst on the Vines, yet within four days of

placing them in bottles dozens of berries cracked. My theory with regard to the failure is that by reason of the mild winter and the firing necessary to expel damp, the atmosphere had been so warm as to prevent the sap from ever getting thoroughly set, hence, as soon as the wood came in contact with the water, the sap was suddenly excited, and, lacking an outlet, it burst the skins of the Grapes. My theory derives confirmation from the circumstance that as soon as taken out of the water cracking ceased, but having to be left out for a fortnight the footstalks got shrivelled. Hence one had to choose between sacrificing plumpness of berry, or losing the whole of the Grapes by keeping them in water. *W. Wildsmith, Heckfield.*

Ivy on Damp Walls.—If Mr. Rust can name a building that has been made dry with Ivy growing on it, I will gladly go the length of the country to see it, and should it please him to visit this neighbourhood I will show him examples in proof of my statement, that Ivy causes buildings to decay and become damp, despite the many precautions taken in putting good damp courses, spoutings, and good eaves projecting over the wall into the bargain. I believe the Ivy was destroyed on Arundel Castle after many years' growth on account of its destructive nature. Some buildings, if immersed in water, will dry in a few hours, while others, apparently equally well-built, remain damp for months, as was experienced in Derby, Burton, Notts, and elsewhere, after the great flood eighteen months ago. *J. H. Goodacre, Elvaston.*

Macrozamia Mackenzii.—In our number for January 13 last, p. 49, we gave an illustration of two new Australian Cycads growing in the open air under the care of Mr. Walter Hill in the Botanic Garden at Brisbane. One of these was the subject of this note, Macrozamia Mackenzii, which, thanks to the kindness of Mr. Bull, we are enabled to illustrate in a more striking manner (fig. 109). The trunk is slightly downy, the leaves, including the glabrous leaf-stalk, are 2—3 feet in length, rigid, and slightly arching. The leaf-pairs are about sixty in number, the lower ones alternate, remote, but gradually approximating towards the middle, and from thence to the apex of the leaf. The rachis is more than half an inch wide at the base, narrower above, rounded on the lower surface, slightly flattened above. In some cases it is slightly downy. The lower leaf-segments, to the number of eight or nine pairs, are imperfect, more or less spiny, the middle ones are about 10 inches long by a quarter of an inch wide, ascending, linear-lanceolate, many nerved, spine-pointed, entire, oblique at the base, which is thickened and of a pinkish colour. The uppermost segments are shorter and flat. The male spike which we saw in Mr. Bull's collection lately measured 6 inches in length by 1 inch in breadth. It was cylindric, oblong, pointed; the lower scales were leathery, obovate, obtuse, thickened at the free end; towards the upper part of the spike the scales were stalked, obovate, and prolonged at the free end into a long, slender acumen. Mr. Bentham, in his *Flora Australiensis*, vi., p. 253, refers this to M. Miquelii, which, in its turn, is said by Regel to be synonymous with Macrozamia tridentata. The present plant, however, does not justify such an allocation. These are, however, technical questions, which do not affect the great value of the plant for decorative purposes. *M. T. M.*



FIG. 109.—MACROZAMIA MACKENZII.

Reports of Societies.

Royal Manchester Botanical and Horticultural: *May* 18—25.—The present Whitsun show of the Manchester Botanical Society has been, as well befitted a jubilee year, the best of the series which has yet been held in the Old Trafford Gardens. Many of its predecessors have been emphatically good, and even superlatively good, and though now one now another particular class of subjects may have been brought out as well or better than on this occasion, yet never before has there been so grand a tournament of Roses, never before a closer or better appointed phalanx of Orchids, never before such specimens of Ferns, though the latter were not numerous. Taking therefore into account the fact that most other classes of exhibits beyond those named were fully up to the average, the high quality of the show will be evident. Unfortunately on the first and second days the weather was most unfavourable, and must have debarred many of the upper-class visitors the pleasure of witnessing the exhibition in its opening freshness. We trust the Whitsun week has proved more propitious; indeed, we learn that up to Wednesday 25,000 visitors had been admitted—a number which may be doubled during the ensuing days.

ORCHIDS.—These occupied the entire front portion of the staging in the glazed exhibition house, and nearly 200 specimens were shown in the various collections, the chief honours being carried off by O. O. Wrigley, Esq., of Bury (Mr. Habbersty, gr.), who was placed first in all three of the amateur classes of sixteen, eight, and three plants respectively. The large group was one of the grandest and most finished which we have ever seen set up. Its contents were Cypripedium niveum, a pan 3 feet across, and carrying nearly eighty of its pure snowy flowers; Angulos Clowesii, with three dozen of its bright yellow cups; Masdevallia Harryana sanguinea, with about thirty expanded flowers of enormous size; Odontoglossum crispum, with thirteen flower-spikes; Vanda suavis, a noble plant with eight flower-spikes; Masdevallia Lindeni, with about sixty flowers; Thunia Marshalliæ, about 3 feet high, with four drooping spikes of its pretty flowers, which are white with a crimson-pencilled yellow lip; Anguloa eburnea, with a score of its quaint-looking flowers; Cypripedium caudatum, with seven fine long-tailed flowers; Thunia Bensoniæ, a mass about 2 feet high bearing twenty-seven racemes of its rich rosy-purple flowers; Saccolabium guttatum, with five spikes; Masdevallia Harryana violacea, much more purple than the other form shown, with eighteen very large flowers; Calanthe veratrifolia, with about forty spikes of its snowy blossoms; Ada aurantiaca, with fourteen spikes, a charming bit of colour; with grand masses of Lycaste Skinneri and of Odontoglossum Phalænopsis. The 2d prize fell to Dr. Ainsworth, Higher Broughton (Mr. Mitchell, gr.), in whose attractive collection was the charming hybrid Dendrobium Ainsworthii, figured by us as a small seedling plant in April, 1874, p. 443, and now a specimen 2 feet broad by 2½ feet high, and entirely smothered with its beautiful crimson-tipped white flowers; with this was another deeper coloured variety of the same batch, D. Ainsworthii rosea, in which the sepals and petals have a slight rosy tint, and the lip is almost covered by the rich mulberry-crimson spot. In this group there was also a Phalænopsis grandiflora, with nearly sixty flowers; a good Dendrobium crassinode; and Vanda suavis Pescatorei, with eight flower-spikes. R. Aders, Esq., Whalley Range (Mr. Board-

man, gr.), who was 3d, showed, amongst other things, a neat specimen of Odontoglossum triumphans, with about two dozen flowers; the broad rosy-lipped Aerides Lindleyanum; the buff Dendrobium Dalhousianum; and a neat plant of Odontoglossum vexillarium. In the class for eight Orchids, Mr. O. O. Wrigley's 1st prize lot contained the purple-flowered Dendrobium lituiflorum; the orange and white D. Schroederi; the pretty striped-stemmed, yellow-eyed, purplish-lowered D. crepidatum; a fine large D. Falconeri; a neat Odontoglossum vexillarium, with eight spikes and twenty-four expanded flowers; Lycaste Skinneri, a pale variety, with a richly marked crimson and yellow lip; Aerides Lobbianum and Cypripedium villosum. J. Broome, Esq., Ditsbury (Mr. A. Williams, gr.), was placed 2d. He had a good Vanda tricolor, with four flower-spikes; Masdevallia Veitchii and M. Harryana with seven and thirteen fine flowers respectively; Cattleya labata with seven flower-spikes, four having the blossoms well expanded; Laelia purpurata, a neat plant with about twelve flowers; a large Cypripedium barbatum, and a smaller C. villosum. Dr. Ainsworth, who was 3d, had a large Vanda suavis; a fine plant of the thick-stemmed form of Dendrobium Wardianum, Saccolabium ampullaceum, Cypripedium niveum, and the curious two-ranked Oncidium pusillum. Mr. Wrigley's 1st prize plants in the class for three were Masdevallia Harryana with about fifty flowers, Calanthe veratrifolia with about two dozen spikes, and Anguloa Clowesii with over thirty of its brilliant yellow cups. J. Fildes, Esq., Shirley-common Hardy (Mr. Bruce, gr.), was 2d with Dendrobium nobile, D. densiflorum, and Cattleya Mossiæ, all well-flowered; and J. Taylor, Esq., Newton Heath (Mr. Hunt, gr.), who was 3d, had a good Dendrobium nobile. An extra prize was given to W. Leech, Esq., Fallowfield (Mr. Cypher, gr.), for three exceedingly well-flowered specimens of Dendrobium Falconeri, trained into bushy masses of about 2 feet high.

The prizes in the nurserymen's class for twenty Orchids went to Mr. B. S. Williams and Messrs. W. Rollisson & Sons in the order named. In Mr. Williams' lot were Masdevallia ignea, the stiff-spiked, rigid-branched Oncidium leucochilum, with its two-ranked flowers; Cattleya Mendelii and Warneri, Vanda tricolor insignis and suavis, Oncidium concolor, Phalænopsis Luddemanniana, Dendrobium Falconeri and densiflorum, and Cypripedium villosum, with two dozen flowers. Messrs. Rollisson had Oncidium concolor, a bright-looking plant now rarely seen; Odontoglossum vexillarium, with four spikes of very fine flowers; Dendrobium Parishii and crystallinum, Laelia majalis and elegans Schilleriana, Cattleya Skinneri, Saccolabium curvifolium, and Oncidium ampliatum majus. In the class for ten Messrs. Rollisson were placed 1st, and in this group was, perhaps, the most beautiful small plant of Odontoglossum vexillarium ever seen, with much more flower than leaf: there were six vigorous and mostly six-flowered spikes, the whole number of flowers being thirty-four; with it were Odontoglossum nævium, a small plant with six-teen spikes; O. hastilabium, Epidendrum vitellinum, with eight of its showy flower-spikes; Oncidium Marshallianum, and a good Dendrobium Devonianum. Mr. Williams, who stood 2d, had Oncidium Marshallianum, Odontoglossum nævium majus, with eight spikes; Masdevallia Lindeni, with fourteen flowers; Dendrobium densiflorum, with twelve spikes; and Cypripedium niveum, with twenty-four flowers.

Two rather extensive mixed groups of Nepenthes, Sarracenias, Darlingtonias, Dioneas, and Droseras were shown by O. O. Wrigley, Esq., and J. Fildes, Esq., and equal prizes were awarded to them. Most of the Sarracenias were in blossom, and the whole group was exceedingly interesting. In Mr. Fildes' group was again shown the large form allied to S. flava mentioned last year, and which is now called S. Fildesii; the pitcher-like leaves are twice the size of those of S. flava, and strongly marked with red veins on the lid, and in the upper part of the tube or pitcher.

NEW AND RARE PLANTS.—At these shows groups of new or rare plants are invited—twelve from nurserymen and six from amateurs; and they form a notable feature of the show. In the nurserymen's class the prizes went to Mr. B. S. Williams, of London, Messrs. Rollisson & Sons, of Tooting, and Mr. J. H. Ley, of Croydon, in the order named—Messrs. Thyne of Glasgow being also exhibitors. Mr. Williams' group consisted of a large Tree Fern called Cibotium nigrescens, with a black woolly stipe, but not yet fructified; Cycas intermedia, Artocarpus Cannoni, Dracæna terminalis alba, Maranta Massangeana, Dracæna Elizabethæ, Croton splendidus, with rich orange centre and veins and red petiole and rib; Æchmea Mariæ reginæ, Hydrangea Thomas Hogg, Croton Prince of Wales, a long-leaved variety, with yellow blotched variegation, the leaves flat, undulate, or tortuous in different parts; Dracæna Rebeccæ, and the Californian Palm, Brahea filamentosa. Messrs. Rollisson had a group of small neat plants consisting of Dieffenbachia illustris, Curmeria Wallisii, Coleus multicolor, Maranta Massangeana, Aralia filifolia, Phyllanthus roseo-pictus, Croton nobilis and Sackeanus arthurii, Dracæna Sidneyi, terminalis alba and specciosa, and Encephalartos cycadifolius latifolius. The 1st prize lot of six plants from T. M. Shuttleworth, Esq., Preston, consisted of a 3 feet pyramid of Croton Disraeli, well coloured; C. majesticus, nearly as large; a dense mass of Panllinia thalictrifolia, Adiantum gracillimum, Veitch's long-spathed variety of Anthurium Scherzerianum, and Aralia elegantissima, with handsome seven-rayed palmatifid leaves on spotted petioles.

STOVE AND GREENHOUSE PLANTS.—In many cases the classes included both flowering and foliage plants, so that we necessarily notice them together. The great contest in this department of the show was under class 1, for twenty plants, ten foliage and ten flowering, between E. Pilgrim, Esq., Cheltenham, and T. M. Shuttleworth, Esq., Preston. Both lots were exceedingly fine, but Mr. Pilgrim's had certainly the advantage, especially as regards the stage of development of some of his flowering plants. In this group there was a splendidly-bloomed Erica Victoria, 4 feet through, and not too tightly trained; Acrophyllum venosum, 5 feet through, and perfect in foliage and flower; Tetratheca ericoides, 6 feet through, a mass of flower; Pimelea spectabilis, 4 feet through; a splendid Erica Cavendishiana, a fine Clerodendron Balfourianum, and two good Azaleas. These were backed up by two large Palms, two large Cycads, Phormium tenax, a finely-coloured Croton eximium, and two Crotons, Cocos Weddelliana, and Geonoma Seemanni. Mr. Shuttleworth had an Erica Victoria as large as Mr. Pilgrim's, but weakly-bloomed, closely-tied, and not sufficiently advanced; also an E. Cavendishiana not nearly expanded, and a white Azalea showing signs of debility. These were, however, a fine Anthurium Scherzerianum, with about fifty spathes; a charming clump of Dendrobium nobile, 4 feet by 4 feet; Aphelexis macrantha rosea, fully 4 feet through, in capital trim; Gleichenia Speluncæ and dichotoma, 7 to 8 feet through, both very fine specimens; Croton undulatum, well coloured; Aphelexis macrantha purpurea, too much trained, and not at all comparable with the variety previously mentioned; Cycas circinalis, large and fine; Cordyline indivisa, in average condition; Dion, Cocos, Phormium, and Phœnicophorium, and finally good specimens of Croton pinnata, Statice profusa, and Dracophyllum gracile. In the class for twelve plants, six foliage and six flowering, the 1st prize was won by H. Sampson, Esq., Bowdon (Mr. Lingard, gr.), who showed Cocos Weddelliana, nice fresh plants of Gleichenia flabellata and rupestris, Livistona chinensis, Cycas revoluta, a good Croton variegatus; Hedaroma tulipiferum, a grand plant 6 feet across; Erica Cavendishiana, well flowered; a good Aphelexis sesamoides? Ixora coccinea; a rosy-pink Azalea, and a moderate sized Hedaroma fuchsioides—all finely grown plants, in good health. This was another worth were here also placed 2d. In this collection were Erica florida, well flowered; Boronia pinnata, 5 feet through; two large Gleichenias, Cycas revoluta, Croton majesticus, Hedaroma tulipiferum, Azalea A. Borsig, a fine double white variety; Anthurium Scherzerianum, Cordyline indivisa, and Dracophyllum humile elegans. In Mr. Pilgrim's collection, which was 3d, was a specimen of Ixora Pilgrimi, a fine sort with salmony-orange flowers in the way of I. Williamsii. There were five collections of twenty miscellaneous plants, the 1st prize lot coming from J. Rylands, Esq., Stretford (Mr. Smith, gr.), who had good plants of Alocasia metallica, Thrinax elegantissima, Lomaria gibba, Adiantum farleyense, Pandanus Veitchii, Cocos Weddelliana, and of the two forms of Aphelexis macrantha, rosea and purpurea.

In the nurserymen's class for twelve stove and greenhouse plants Messrs. Cole & Sons were 1st, with not over-large but neatly grown plants, amongst which we noted Ixora Williamsii, a fine variety with immense bands of salmony-orange flowers; I. coccinea, with the flowers of a more decided orange hue; and I. aurantiaca, intermediate in colour between the other two; Azalea Stella and Charmer, splendidly bloomed; Franciscea conferta, well furnished; and Clerodendron Balfourianum.

Azaleas were fewer and less effective as a whole than they were some years since, but a group of eight shown by Mr. Turner, and deservedly placed 1st, were strikingly beautiful specimens, of small size comparatively, with single stems, roundish heads, and large, vigorous, brightly coloured blossoms. They were Charmer, Duc de Nassau, Duchesse de Nassau, Etendard de Flandres, Reine des Fleurs, Cedo Nulli, Madame Louis Van d'Hamale, Comtesse de Flandres. Messrs. E. Cole & Sons, and H. T. Broadhurst, Esq., Prestwich (Mr. Miller, gr.), were also exhibitors.

Heaths were, as is now usual at flower shows, rather scanty in number, a circumstance which is greatly to be regretted, as there is no more beautiful or varied family of plants grown. The 1st prize for six went to E. Pilgrim, Esq., who had, amongst others, neat specimens of E. affinis, elegans, Lindleyana, Victoria, and profusa. The prize for eight went to Messrs. E. Cole & Sons, in whose group the most noticeable examples were E. Lindleyana, Cavendishiana and Spenceriana, the latter a pretty soft lilac variety, with curved somewhat clavate tubular flowers.

FOLIAGE PLANTS.—For ten plants, T. H. Birley, Esq., Pendleton (Mr. Elkin, gr.), was 1st. In this group was a grand Fern, Cyathea insignis (princeps), with a stem 6 feet high; a fine Cocos Weddelliana, and a Croton Weismanni. The 2d prize went to S. Schloss, Esq., Bowdon (Mr. Cardwell, gr.), in whose group were noble plants of Gleichenia dichotoma and G. Speluncæ, with the handsome but seldom seen Eurya latifolia variegata.

The prize for four Palms was worthily won by J. Broome, Esq., who had Geonoma Schottiana, 10 feet high; Cocos Weddelliana, 8 feet; Thrinax elegans, 8 feet; Latania altissima, 6 feet—all in good fresh condition.

Several collections of Dracænas were shown both by amateurs and nurserymen. For six, J. Broome, Esq., was 1st; he showed good plants of D. amabilis and Chelsoni. For ten, Messrs. Rollisson were 1st, showing several of the newer kinds and Mr. B. S. Williams, Messrs. Thyne, and Mr. J. H. Ley followed. One of the most striking in Messrs. Rollisson's group was a new sort with fiery orange variegation, named Salmonea, the colouring of which is both novel and effective.

ROSES.—These formed one of the grand features, in which probably this exhibition has never been approached, far less excelled, at any provincial gathering. The culture and the consequent display were as perfect as well could be, and admiring eyes lingered long over these triumphs of skilful cultivation. The main contest was in the class for forty distinct plants, and magnificent they were. Mr. Turner, Slough, was 1st, with a splendid lot; in the back row stood Paul Perras, supported right and left by Madame Victor Verdier and Edouard Morren, and with Céline Forestier in front; John Hopper and Madame de St. Joseph completed the group at one end, and Mdlle. Thérèse Levet, Charles Lawson, Miss Ingram, La France, and Beauty of Waltham at the other. Opposite them, parted by the central avenue of the annexe in which these subjects were accommodated, stood Messrs. Paul & Son's 2d prize lot, which also had a highly meritorious exhibition. In the back line of plants here consisted of Souvenir d'un Ami, Céline Forestier, Charles Lawson, and Victor Verdier; and in front of these Madame Thérèse Levet, Madame Margottin, Camille Bernardin, Edouard Morren, and La France.

A class was provided for thirty Roses, and here Mr. Turner and Messrs. Paul & Son competed, with the like result. These were beautifully grown half-specimen plants, and were much admired. In Mr. Turner's group we noted as particularly attractive Edouard Morren, J. S. Mill, La France, Princess Beatrice, François Michelon, Paul Néron, Madame Willermoz, Royal Standard, and Madame Lacharme. In Messrs. Paul's corresponding group the most attractive were Madame Lacharme, Princess Beatrice, André Durand, Annie Laxton, Madame Margottin, Anna Alexieff, Mrs. Bosanquet, Souvenir d'un Ami, Caroline Kuster, and Madam Thérèse Levet. Mr. Turner staged another group of twenty-five, including eight of the large-sized specimens, some of the finer sorts here represented being President, Duke of Edinburgh, Captain Christy, Madame Mermet, Perfection de Montplaisir, Mdlle. Marie Finger, Marie Baumann, Rev. J. B. Camm, La France, Souvenir d'un Ami, and Céline Forestier.

PELARGONIUMS.—There was the best and most varied display of these showy and highly popular flowers we have seen at Manchester for a long time, the nurserymen taking the lead. For eight show sorts Mr. C. Turner was 1st, with Scottish Chieftain, Duchess de Morny, Prince Bismarck, Claribel, Isabella, Triomphe de St. Maude, Maid of Honour, Protector. For eight fancies, Mr. C. Rylance, Ormskirk, was 1st, with Jewess, Mrs. Hart, Delicatum, Ellen Beck, Lucy, Roi des Fantaisies, Juliet, and Miss-in-her-Teens. For eight zonals Mr. Rylance was again 1st, with Wellington, Mrs. W. Paul, Jean Sisley, Madame Vaucher, Rev. H. Jombrain, Queen of Beauties, Vesuvius, and Lovelines. Mr. Rylance also had 1st prize for eight Tricolor Pelargoniums. In the amateurs' class of six zonals, Miss Ashton, Didsbury (Mr. Royle, gr.), was 1st, with Master Christine, Mrs. W. Paul, Dr. Koch, La Dame Blanche, Rose Bradwardine, Acme; while in the 2d lot, from H. J. Leppoc, Esq., Sheep Broughton (Mr. Hastings, gr.), Florence Durand, pink, and Glow, a light scarlet, were very effective. The plants were all grown in the low convex or cushion-shaped style.

FERNS.—Tender Ferns were not numerous, but a group of nine, shown by O. O. Wrigley, Esq., to which the 1st prize was awarded, contained some of the finest examples of cultivation we have ever witnessed. The group consisted of a tall Cyathea insignis (princeps) and C. dealbata, Gleichenia rupestris, 6 feet through; G. Speluncæ, 7 feet; G. flabellata,

S feet; and G. semivestita, somewhat smaller. Besides these, which were dense masses of vegetation in the rudest health, there was Davallia Mooreana, 8 feet through; D. polyantha (divaricata), 10 feet through; and a lovely feathery specimen of D. tenuifolia at least 7 or 8 feet through, forming a dense mass of drooping feathery fronds of inconceivable beauty.

The finest pair of Tree Ferns, both Dicksonia antarctica, came from Messrs. J. Dickson & Sons, of Chester. Several groups of six Adiantums were shown. Those from Mrs. Leech, Staleybridge, were placed 1st, and consisted of a large example of A. formosum, good massive plants of A. farleyense and A. trapeziforme, and smaller but respectable masses of A. cuneatum, excisum multifidum, and gracillimum. T. M. Shuttleworth, Esq., who came in 2d, had large flat pans, 4 feet across, filled with A. tenerum, excisum multifidum, a beautifully-grown plant; Capillus-Veneris var. Dawsoni, a form with very large pinnules; glaucophyllum, assimile, and cuneatum, finely grown, but presenting too much sameness of character. The 3d prize went to R. Aders, Esq., Whalley Range, who had good plants of A. farleyense and concinnum latum, a neat gracillimum, a ragged cardiochlæna, a large formosum, and a good cuneatum.

Collections of six Fern-leaves were shown both by nurserymen and amateurs, the plants from the former being the best. Messrs. Standish & Co., Ascot, had the finest lot, and were placed 1st, the collection including a very fine Todea superba, Hymenophyllum demissum, 2d feet through, and H. flexuosum, 1½ foot through, all the plants being dense masses of fresh-looking pellucid fronds. Mr. B. S. Williams, who was 2d, had a very good lot, including Todea superba and Fraseri, Hymenophyllum demissum, and Trichomanes radicans, trichoideum and auriculatum. J. Rylands, Esq., Strefford (Mr. Smith, gr.), obtained the 1st prize in the amateur class, showing, amongst others, Todea superba and T. Wilkesiana; Mrs. Leech, who was placed 2d, had four Todeas in her group.

Lycopods or Club-mosses were very well shown, four collections, all creditably grown, being staged. T. H. Birley, Esq. (Mr. Elkin, gr.), obtained the 1st prize for a set of low convex plants, averaging 3 feet across. They consisted of S. cæsia and cæsia arborea, the true names of which—uncinata and lævigata—gardeners seem to persist in burking; S. caulescens, Mariensii, microphylla, and Willdenovii, the latter again an erroneous name persistently used in gardens for S. pubescens, which was the plant exhibited. The other prize lots came from J. Kershaw, Esq., Cheetham Hill; and J. Taylor, Esq., Newton Heath.

Two finely-grown collections of twelve hardy Ferns were shown by Miss Pearson, Higher Broughton (Mr. Handley, gr.), who was 1st; and H. Crowe, Esq., Greenhays, who was 2d. A fine example of Osmunda cinnamomea just in perfection was very conspicuous in the 1st prize lot; while in the 2d prize lot Osmunda spectabilis was shown under the name of gracilis.

ALPINES.—These were quite a feature, three lots of eighty plants being staged, and two lots of twenty-four. The 1st lot of eighty came from Messrs. J. Dickson & Sons, Chester; the 2d, from Messrs. W. Rollisson & Sons; the 3d, from Mr. R. S. Yates. They formed a very interesting exhibition, but unfortunately being set on the ground level, owing to exigencies of space, they could not be so readily inspected as many visitors may have desired. In this case an adjacent circular bed might have been raised for them with advantage. The class is defined as "alpine and herbaceous plants, in 8 inch pots," and we noticed that two of the exhibitors included hardy bulbs, while one did not. As this certainly makes a difference in the competition, it would be well another year either expressly to admit or exclude bulbs; and we should be rather inclined to admit them, especially in so large a class, as they give a nice variety of colour, and there is no very definite line to be drawn between them from the cultural point of view.

GROUPS FOR EFFECT.—In the schedule £50 was set apart for three prizes for plants arranged for effect, to fill a space not less than 22 feet by 15 feet. Four lots were set up, and they nearly filled a large supplementary tent, and made a very good exhibition of themselves. We would, however, suggest that if these prizes are repeated the space to be filled should be exactly defined, in the interest of equal competition. The 1st prize was awarded to Messrs. J. & R. Thyne, of Glasgow, who occupied a large space, considerably more than the minimum of the schedule, and effectively filled it on the banking system, having large Palms at the back, mixed plants with flowering Azaleas and market Pelargoniums set in groups on tables in the middle ground, while the front at the ground surface was fringed with Ferns, Pelargoniums, Lily of the Valley, Isolepis, &c. Mr. R. S. Yates was 2d, with an openly set group, in which some grand plants of Polygonatum multiflorum were very striking, and the front was freely set off with Forget-me-Not and Lily of the Valley. The 3d lot, also a very creditable one, came from Mr. J. H. Ley; and a 4th lot, which received an extra prize, came from Messrs. Caldwell & Sons, Knutsford.

MISCELLANEOUS SUBJECTS.—Prizes were offered for three pots of Lilium auratum, and were taken by R. Hildes, Esq., whose fine specimens only wanted a little more time for expansion; and by J. Heywood, Esq. A group of Clematis not quite up to the exhibition standard, came from J. Heywood, Esq. A group of fine seedling Hippeastrums came from Mr. Anderson, of Uddingstone, near Glasgow. Mr. R. S. Yates, Sale, put up a showy group of twenty-five hardy Rhododendrons; Messrs. Standish & Co., Ascot, had a pretty group of Japan Maples, with some exceedingly well-grown samples of Adiantum gracillimum amongst them. Mr. R. Smith, of Worcester, had a group of interesting hardy plants, in which was a plant of the new Clematis Madame Grangé, just commencing to flower; in this partially developed state the colour is a very rich maroon-crimson, with a remarkably velvety surface.

FRUIT, &c.—The best collection of fruits was shown by Lord Carrington, Wycombe Abbey (Mr. Miles, gr.), and consisted of two Queen and two Black Jamaica Pine-apples, excellent Elton and Black Circassian Cherries, two sorts of Grapes, Strawberries, a Melon, and a very good dish of Brown Turkey Figs. The 2d prize collection (Mr. Milne, gr.), which was placed 2d, were some very good Black Hamburgh Grapes. For two bunches of black Grapes, the Earl of Crawford, Haigh Hall, Wigan (Mr. Jamieson, gr.), was 1st with some very good Hamburghs; Lord Bagot, Blythefield (Mr. Bannerman, gr.), was 2d, with very fine small bunches, well coloured; and Lord Delamere was 3d. For two bunches of white Grapes, Lord Bagot was 1st, with fine samples of Duke of Buccleuch, and Foster's Seedling; W. Blinkhorn, St. Helen's (Mr. Smith, gr.), was 2d, with Muscats; and T. C. Antrobus, Eaton Hall, Congleton (Mr. Heaman, gr.), 3d, with Foster's Seedling. For twelve pots of Strawberries the 1st prize went to Mr. R. Gammon, Whitington, who showed President; the 2d to J. Rylands, Esq.; and the 3d to the Earl of Ellesmere (Mr. Upjohn, gr.), who showed Viscomtess Hedel and Dr. Hogg. Eight brace of Cucumbers were shown in the class provided for them, the 1st prize going to J. Rylands, Esq., and the 2d to T. H. Birley, Esq.

IMPLEMENTS, &c.—There was as usual a very large and useful display of garden implements, garden furniture, boilers, heaters, model houses, &c., all which, in turn, prove interesting to the visitors.

Edinburgh Botanical.—The Society met on the 10th inst., in the lecture hall at the Royal Botanic Garden, Sir Wyville Thomson, LL.D., F.R.S., Vice-President, in the chair. Mr. Buchan, Secretary of the Scottish Meteorological Society, submitted a list of fifty-four species selected from Balfour and Sadler's *Flora of Edinburgh*, with the view of their being examined by the committee lately appointed by the Society to determine the manner in which the distribution of plants is affected by the influence of the sea. The following communications were read:—

I. Notes on the Character of the Vegetation of Fuegia and Southern Patagonia. By Sir Wyville Thomson.

Sir Wyville stated that in the course of the passage of the *Challenger* through the Straits of Magellan he had ample opportunity for making observations as to the flora and fauna, and had landed almost daily at different points along the coast. The vegetation of that region was certainly about the most curious he had ever seen. It was impossible to penetrate into the country at most of the landing points on account of the dense wall of low vegetation which met them, and also of the endless expanse of dead and decomposing vegetable matter, into which one would every now and again sink to the armpits.

The trees were not very large nor very close to one another, but there was no appearance of a forest. Beeches were most commonly associated with, and they were not very long-limbed, owing to the vast *débris* of old vegetation. When he visited the district it was Christmas time, and consequently the depth of summer, and the plants were in full bloom. Among the creeping plants he noticed large bunches of Mistleto (Myzodendron punctulatum and M. brachystachum) growing on the branches and trunks of the trees. The ends of the Straits, he mentioned, were remarkably distinct in the character of their vegetation. The islands at the west end were exceedingly rich in plants, consisting mainly of a jungle of brush; while in the east the land was very low, and covered with grasses and low herbage, the trees being not nearly so tall. The general features of the vegetation of Fuegia were extremely like those of the southern parts of Norway and Sweden, but there was a marked difference in species. The temperature only changed by a few degrees, and vegetables from our own country would not seed, owing to the few degrees of summer heat. In answer to questions put, Sir Wyville said he did not think the vegetation of that country was of any value, as it was generally stunted; and if they tried to introduce there anything from this country it would not hold, simply because there was not a sufficient degree of summer heat. The climatic conditions there were absolutely different from what prevailed here. In conclusion, Sir Wyville presented to the herbarium a large and valuable collection of specimens which he had made in the course of his observations in the country in question.

II. Plants Used in New Year Celebrations by the Japanese, by Mrs. Chaplin Ayrton, communicated by Mr. Sadler. Mr. Sadler stated that the paper had been sent to Professor Balfour by Mrs. Ayrton, who wrote that she did so because her interest in botany was due to the tuition he had given her on the subject in the brief period during which the Faculty of the University of Edinburgh admitted women to the medical curriculum. The following is an abstract of the paper:—

"The most striking feature of New Year's Day in Japan is the decoration placed with more or less completeness before every portal. Every object of which the decoration is composed has, as might be supposed, a symbolic meaning. Suppose the spectator to face the green arch—on his right will be a Me-matsu (Pinus Sinensiora) with its reddish stem, and on his left will be the black trunk of the O-matsu (Pinus Thunbergii or Massoniana). Although Pines are monœcious, fancy has attributed to the black-trunked tree a masculine, and to the lighter tree a feminine, sex. Further, these hardy trees symbolise a stalwart age that has withstood the storms and struggles of existence.

"Immediately behind the Pines rises on each side the graceful stem of the Take-no-ki, or Bamboo, of which any kind that is convenient is selected. Its erect growth and succession of knots marking its increase during succeeding seasons, render it a symbol of hale life and a fulness of years.

"The distance of usually about 6 feet between the Bamboos is spanned by a grass rope (*nawa*). Although convenience requires this rope to be sufficiently low to allow of passage beneath, it should, to accord with its symbolic meaning—debar all bad and unclean things from crossing the threshold.

"In the centre of the arch thus formed of Pines, Bamboos, and rope, is a group of several objects. The most conspicuous is the scarlet *yebe*, or lobster, whose crooked body betokens the back of the aged bent with the weight of years. It is also embowered amongst Yusuri branches. In this Yusuri (Melia japonica), when the young leaves have budded, the old leaves yet remain unshed. So may the parents continue to flourish, while children and grandchildren spring forth.

"In the centre also are the graceful fronds of the Shida, or Urajiro, the Polypodium dichotomum. This Fern symbolises conjugal life, because the fronds spring in pairs from the stem. Even from graceful leaves might suggest dangerous ideas of the equality of the sexes, but the simile has not in Japan been pushed to so desperate a length. Between the paired leaves nestles, as offspring, the little leaf-bud. Here and there are quaintly cut scraps of white paper, the *gohei*, or offering to the gods; the form of the paper is said by some to be a conventionalised representation of a human form—that of the offerer—devoting himself thus in effigy to the deities.

"Almost as conspicuous as the lobster is the orange-coloured Daidai, a fruit of the Citrus Bigaradia. It enacts a pun, the second meaning of the word *daidai* being 'generations,' thus intimating a wish that the family pedigree may flourish. The juice of the Daidai is much prized as a remedy against vomiting. This is interesting, because the juice of Lemons, also an aurantiaceous plant, is often considered by Europeans a palliative for sea-sickness. Also in the nature of a pun is the piece of charcoal, *sumi*, that word signifying the homestead.

"The Honta-wara or Zimbaso (Halochloa macrantha) is a seaweed that is a memorial of good fortune, for once upon a time, about A.D. 200, when Queen Jingo-kogo reigned, she, returning from the conquest of Corea, the troops should be discouraged, headed a campaign against Corea. Her troops, stationed at the margin of the sea, were in danger of defeat on account of the lack of fodder for their horses. However, she ordered this Honta-wara to be plucked from the shore, and the horses, invigorated by their meal of seaweed, rushed victoriously to battle. At the close of the war Jingo-kogo gave birth to a son, Hachi-man, who, appropriately to the circumstances of his birth, became the Mars of Japanese mythology.

"Another seaweed decoration is the Kobu, or Laminaria saccharina. The word is a pun bearing on the verb *yoro-kobi*, which means to rejoice, to gladden.

"The last of this group of decorations is the Fukusutsumi, a square piece of white paper tied up as a bag by a red and white string: *omedetsu-sumi* is what marks a present. It may be considered as a lucky bag, for its contents are offerings suitable to the season, as:—*Kochigari*, roasted Chestnuts; *kazoe-no-ko*, the roe of the herring (*nishin*); *kaya-no-tane*, the seeds of the Torreya nucifera (fam. Coniferæ), used in the making of sweetmeats; *kushi-goki*, the fruit of the Kaki (Diospyrus Kaki—fam. Ebenaceæ), dried on a stick or *kushi*.

"The New Year arches are cut down in Tôkiô on January 7, and in some places on January 3."

III. Notice of the Tsi-shu, or the Varnish-tree of China. By Dr. John Falconer, communicated by Mr. Sadler. The author pointed out that the celebrated Chinese varnish was not an artificial concoction, but obtained direct from a tree, a small living specimen of which he placed on the table and presented to the Royal Botanic Garden.

IV. Notes on Open-air Vegetation for April, at the Royal Botanic Garden. By Mr. McNab, Curator. (This paper appeared at p. 631.)

V. Miscellaneous :—1. Professor Balfour called attention to two pots of Wheat plants on the table. The plants had been grown from grains of Wheat sent by Captain Sir George Nares, which he had picked up in Polaris Bay, and where the grains lay from 1871 to 1876, in N. lat. 81°.30, exposed to all the rigours of the climate. Out of twelve selected grains six, or fifty per cent., germinated, and out of fifty unselected, eighteen, or thirty-six per cent.—2. Mr. Dunn exhibited a splendid flowering branch of Cochlostema Jacobianum, and also a fruit of Sobralia macrantha, ripened at Dalkeith.—3. Mr. Sadler called attention to specimens of Elaphomyces granulata, one of the tuberaceous order of fungi, which had been met with in abundance in woods near Guthrie, Forfarshire, by Mr. Hariman Skae, of the Geological Survey. The specimens exhibited were forwarded for the museum by Professor Geikie.—4. Messrs. Dickson & Co. exhibited plants of a new hybrid Saxifrage, and Iberis sempervirens superba, an early flowering variety.

The Villa Garden.

CELERY.—Next to being proud of his Cucumbers—when he happens to realise a crop, however small—the joyousness of the Villa gardener reaches the second degree when he is able to produce some good Celery. If Celery be not tender, sweet and crisp, it is worth nothing. Tough, pipy, stringy Celery is simply abominable; it might pass in a besieged city with provisions scarce, but when one has a freer choice of food, the bad is rejected and the good devoured with avidity. Therefore the Villa gardner should and does endeavour to the best of his ability to grow the most satisfactory article he can.

Indifferent Celery is often the result of a bad stock, that is to say, the seed has been saved from a strain so bad that all the cultivation in the world fails to convert it into an eatable and nutritious production. On the other hand good stocks of Celery, if badly grown cannot be else than bad; and the seedsman often falls in for much censure that should have come to the lot of the cultivator. The virtuous sometimes have to bear and expiate the sins of the wrongdoer.

The fine fertilising rains which have fallen during the past ten days have led to the planting out in trenches of a good deal of Celery. It is somewhat late to do so, but gardening operations are generally late this season, some gardeners say a month or more behind the usual time.

The method of planting out Celery in trenches is a good one, because Celery is a moisture-loving plant, and water can be given to it when growing in a trench without danger of any being lost. The best soil for Celery is a good black loam, deep, and not too light; but even if it be light, if well-manured (as it should be for Celery), it will be sufficiently holding if kept moist during the summer.

Ample manure is of the greatest moment, and it should not be long, fresh dung, but that from the centre of a bed which has served the purpose of a hotbed—manure so far decomposed that it is soon incorporated with the soil, and yet retains to the full its virtues. In making a trench for Celery 12 inches of soil should be dug out, and the subsoil deeply dug, and plenty of manure dug in with it. If finally forked over on a drying day the trench will then be ready to receive the plants.

It is a great gain to have good, strong, well-rooted plants to go out in the trenches as soon as they are ready for them. It is therefore always a good plan to sow the seed thinly in the first instance in pans, and then, as soon as the plants are large enough to handle, to prick them off into boxes of good, fine, rich soil, or, better still, to allow them to occupy a similar bed made up in a cold frame. The result will be that the plants will be stout and stocky, and they will also throw out roots in all directions, which form bunches with the soil adhering to them, and so they can be put out in the trenches without receiving any material check. When planted out a little fine and good soil should be placed about the roots, the earth pressed firmly down round the plants, and a sprinkling with water given, with frequent sprinklings when the weather is warm and drying, and good root waterings as often as necessary.

Never does Celery get so good a start as when planted out in what gardeners denominate "dripping," or showery weather. It gets a quick and decided start, and one great point in the production of good Celery is that it shall not receive checks in the course of its growth. If grown in poor soil, or if suffered to become dry, Celery suffers, and that delicious crispness which makes the eating of good Celery a positive luxury is in imminent danger of being lost. The grower need be in no great hurry to earth-up. It is well to keep adding some soil to the roots till it forms a little ridge, so that they be kept cool, and later on, if earthing-up be delayed, a mulching of manure will be found of great advantage.

What constitutes good Celery? We have advocated the growing of something worthy the labour of cultivation, and worthiness should be characterised by the indispensable quality of solidity. Ah! if it be solid, and crisp, and sweet, it is, indeed, well worth eating. The Celery that pipes, as some gardeners term it, that is, which has a hollowness of the stems, and a stringiness of character, is only fit to throw to the pigs. Another necessary characteristic is that it be crisp and sweet—crisp, but so deliciously tender that it falls to pieces smoothly under the action of the teeth, making mastication a pleasure and deglutition a luxury, and so ravishing to the palate as to kindle in the whole inner frame of the man the highest enjoyment! Further, a good Celery should remain long in perfection, be, in fact, a good keeper. In this respect much depends on the quality of the stock, meaning thereby the value of the sort, and much on the judicious cultivation given to it.

Whether a red Celery is better than a white, or a white variety to be preferred to a red, is a matter of taste. So long as the sort be good, the colour is of small moment. There are several assumed varieties, both white and red, and there are pinks as well; that is, Celeries so delicate in tint as to be natural compromises between the white and red, and they have their admirers also.

But who shall undertake to name a sort combining all these excellent qualities? We think instinctively of Incomparables, Imperials, Champions, Matchless, Superbs, Mammoths, Solid Reds, Conquerors, &c., without number, every one of which has been recommended as abundantly possessing all these qualities, as no doubt they do; the difficulty appears to be in drawing them out when the various sorts are grown. Not a single one shall be denounced by us; for, lo! is it not written in the chronicles of horticulture in page after page of testimonials, that they are all that can well be desired.

Florists' Flowers.

POTTING AURICULAS.—The long continuation of cold northern and easterly winds retarded the blooming of Auriculas, and the later the bloom the later will be the time for potting. Those who do not care to save seed can repot their plants earlier than those who save some seed and do not care to disturb their plants till the pods are sufficiently ripe to be gathered. Early potting is to be commended, in order that the plants may get well established in the soil. "As soon as the beauty of the bloom is over, the plants should be repotted," is advice that has frequently been given; but many do not care to risk the chances of a little seed. There used to be much difference of opinion as to the proper time to repot Auriculas, many preferring the month of August. Experience has, however, proved that May is on the whole the best time, inasmuch as the plants have time to thoroughly establish themselves in the soil, which is of great assistance in producing superior blooms. As early in May as possible advantage should be taken of leisure hours to have ready for use the clean pots, crocks, tallies, soil, &c., required for the purpose.

The greater portion of the old compost should be taken from the roots, and the tap-root examined to see if it be quite healthy and free from trace of decay. It should then be cut back to a length varying from ½ inch to 2 inches, according to the number of roots to the stem. The roots may have the soil pretty well shaken from them, as when potting takes place at the end of May or beginning of June, it is at a time when the activities of the plants have ceased for a time till renewed after repotting has taken place.

The compost ought to be in a proper condition for potting—neither too wet or too dry. The following is a very good test of the state of the soil: If a handful be squeezed firmly together, and it crumbles to pieces when gently pressed with the fingers, it may be considered fit for use, and will not shrink in any material degree from the sides of the pots. In the act of repotting, the roots should be so distributed as that the soil can fall between them, and they should be spread out so that they can reach the sides of the pots as quickly as possible. The practice of placing the roots in a ball or mass is one to be deprecated. The soil should not be too fine: it is better to be a little rough than the other extreme. A large crock should be placed over the hole at the bottom of the pot, over this a layer of small pieces of crocks, and over this again a little charcoal broken to the size of split-peas. Auricula pots can scarcely be too well drained, especially those containing weak-growing varieties, and it is a good plan not to overpot. A 48-sized pot will be found large enough for the strongest plants, and of the two extremes Auriculas will be likely to do better when underpotted than when over-potted.

The young plants need not be shaken out entirely; but the balls reduced a little and then placed in pots according to their size. *R. D.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, MAY 23, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading reduced to 32° Fahr.	BAROMETER. Departure from Average of 19 years.	TEMPERATURE OF THE AIR. Highest.	TEMPERATURE OF THE AIR. Lowest.	TEMPERATURE OF THE AIR. Range.	TEMPERATURE OF THE AIR. Mean for Day.	TEMPERATURE OF THE AIR. Departure from Mean from Average of 6 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Humidity. Degree of Saturation = 100.	WIND. Average Direction.	RAINFALL.
May	In.	In.	°	°	°	°	°	°		S. :	In.
17	29.61	−0.13	56.0	48.2	7.8	50.6	−2.2	49.4	96	S. SW.	0.31
18	29.78	+0.04	65.7	44.2	21.5	52.7	−0.5	41.3	65	W. WSW.	0.00
19	29.66	−0.07	57.0	45.6	11.4	47.8	−5.8	46.8	95	S. W. WNW.	0.31
20	29.70	+0.16	58.5	45.5	7.0	47.5	−6.2	42.2	83	N W.	0.09
21	30.01	+0.27	56.1	43.1	13.0	48.3	−5.6	41.4	77	NNE. NNW	0.00
22	30.03	+0.29	52.2	41.8	10.4	44.8	−9.3	43.0	94	N.N.E.	0.17
23	30.02	+0.28	51.6	39.4	12.2	44.2	−10.1	35.1	70	N.E. :	0.00
Mean	29.86	+0.12	55.9	44.1	11.8	48.0	−5.7	42.7	83	W. : N.	sum 0.88

May 17.—A dull miserable day. Rain till 3 P.M. Cloudless at night.
— 18.—Fine, partially cloudy, windy. Little rain fell at 10 P.M.
— 19.—Generally dull and cloudy with frequent showers of rain.
— 20.—A very dull cold day. Squally. Rain fell before 8 A.M.
— 21.—A dull cloudy day. Cold. Occasional gleams of sunshine.
— 22.—Overcast, dull, and raw cold. Rain fell before 9 A.M.
— 23.—Overcast, dull, and very cold throughout.

LONDON: *Barometer.*—During the week ending Saturday, May 19, in the vicinity of London, the reading of the barometer at the level of the sea increased from 29.61 inches at the beginning of the week to 29.73 inches by the night of the 13th, decreased to 29.64 inches by the afternoon of the 14th, increased to 30.13 inches by the morning of the 16th, decreased to 29.69 inches by the afternoon of the 17th, increased to 29.99 inches by the afternoon of the 18th, decreased to 29.79 inches by the afternoon of the 19th, and increased to 29.93 inches by the end of the week. The mean reading for the week at sea level was 29.85 inches, being 0.19 inch above that of the preceding week, and 0.07 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 65½° on the 18th to 56° on the 17th; the mean value for the week was 59½°. The lowest temperatures of the air ranged between 42° on the 16th and 49° on the 17th; the mean value for the week was 45½°. The mean daily range of temperature for the week was 14½°, the greatest range in the day being 21½°, on the 18th, and the least 7°, on the 17th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—13th, 50°.6, — 0°.5; 14th, 48°.6, — 2°.7; 15th, 52°.8, + 0°.9; 16th, 49°.7, — 2°.6; 17th, 50°.6, — 2°.2; 18th, 52°.7, — 0°.5; 19th, 47°.8, — 5°.8. The mean temprature of the air for the week was 50°.4, being 1°.9 below the average of sixty years' observation.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 128½°

on the 15th, 116° on the 16th, and 121° on the 18th; on the 17th the reading did not rise above 60°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 36½° on the 16th, and 38½° on the 14th; on the 17th the lowest reading was 49°.

Wind.—The direction of the wind was variable, and its strength moderate. The weather during the week was dull and showery, and the sky generally very cloudy.

Rain fell on six days during the week; the amount collected was 1 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 70° at Portsmouth, and 67° at Manchester; at Bradford 60½° was the highest temperature in the week; the mean value from all stations was 63¾°. The lowest temperatures of the air observed by night were 32¾° at Manchester, and 37½° at Cambridge; at Portsmouth 46½° was the lowest temperature; the general mean from all stations was 41¼°. The range of temperature in the week was the least at Liverpool, 15¾°, and the greatest at Manchester, 34½°; the mean range of temperature from all stations was 22½°.

The mean of the seven high day temperatures was the highest at Manchester, 62½°, and the lowest at Bradford, 53¼°; the mean value from all stations was 58°. The mean of the seven low night temperatures was the lowest at Manchester, 39°, and the highest at Portsmouth, 48½°; the mean from all stations was 45°. The mean daily range of temperature was the greatest at Manchester, 23½°, and the lowest at Bradford, 9½°; the mean daily range from all stations was 13°.

The mean temperature of the air for the week from all stations was 49¾°, being 1½° higher than the value for the corresponding week in 1876. The highest was 52° at both Truro and Plymouth, and the lowest 47° at Bradford.

Rain fell on every day in the week at Nottingham, Eccles, and Bradford, and on six days at most other places. The amounts measured varied from an inch and seven-tenths nearly at Truro, Plymouth, Sheffield, Manchester, and Eccles, to about eight-tenths of an inch at Portsmouth, Cambridge, and Southend. The average fall over the country was 1¼ inch nearly.

The weather during the week was generally dull and showery. A *thunderstorm* occurred at Bradford on the 16th inst.

SCOTLAND: *Temperature,*—The highest temperatures of the air varied from 62° at Edinburgh and Leith to 56° at Aberdeen; the mean value from all stations was 60°. The lowest temperatures of the air ranged from 38° at Aberdeen to 41½° at Glasgow; the mean from all stations was 40¾°. The mean range of temperature from all stations was 19¾°.

The mean temperature of the air for the week from all stations was 49°, being 1° lower than the value for the corresponding week in 1876. The highest was 50½° at Glasgow, and the lowest 47½° at Aberdeen.

Rain.—The amounts of rain measured during the week varied from 1¼ inch nearly at Edinburgh, Aberdeen, and Leith, to six-tenths of an inch at Greenock and Paisley; the average fall over the country was 1 inch.

DUBLIN.—The highest temperature of the air was 66½°, the lowest 40½°, the range 26°, the mean 53¼°, and the fall of rain 1.12 inch.

JAMES GLAISHER.

Variorum.

THE COLORADO BEETLE.—Professor Riley's ninth annual report on the noxious, beneficial, and other insects of the State of Missouri, contains an interesting section on the Colorado beetle, from which we gather that during the past year the insect has swarmed in most of the New England States, and especially on the seashore. At many places in Connecticut the beetles were washed ashore in such numbers in September as to poison the air, and the captain of a New London vessel found that they boarded him in such numbers while at sea that the hatches had to be closed. A map is given showing its eastern progress, the line of most rapid spread from Colorado being along the line of greatest human travel and traffic. When the beetle was first studied, it was calculated it would not reach the Atlantic till 1884; but it has undoubtedly availed itself to no inconsiderable extent of every means of transportation afforded to other travellers, and often got a lift on Eastern-bound trains, and most probably crossed the more barren plains bordering its native confines through man's direct agency,—*i.e.*, by being carried. It has travelled in a direct eastern line 1500 miles since 1859 There are reasons why it has not spread so rapidly along its southern as it has along its northern line of march. The first is, the Potato is not in such general cultivation along the southern line; the second is, that the insect is northern rather than southern in its native habitat. The next reason stated is of greater interest to Europeans—viz., that, while it cannot thrive where the thermometer ranges near 100° F., the intensity or length of winter will hardly affect it, except in reducing the number of annual broods, and, consequently, its power of multiplication. The state of dormancy once entered into, it may continue a month or two without harm. Mr. Riley has noticed that as the insect has spread over the country it has become modified in habit and has increased the number of its food plants. It has also undergone considerable modification, so that old descriptions of the species no longer hold good in all cases. This is very important where, in the accident of its travelling on ships, it is necessary to decide whether a specimen is Doryphora decemlineata or not. Mr. Riley says that he has seen hosts in their north-easterly spread through Iowa and Wisconsin, in which the ground colour is white rather than yellow, and the size not more than a half that of typical specimens. The ornamentation of the elytra and legs has also varied, and the black line along the elytral suture is as obsolete as in Doryphora juncta. In discussing the probability of its introduction into Europe, Mr. Riley replies to the paper by Mr. Bates published in the *Journal of the Royal Agricultural Society of England*, in which he argues that because no American beetles have been acclimatised in Europe, it is not likely the Doryphora will be. Mr. Riley mentions that Bruchus pisi and Tenebrio obscurus have been acclimatised, and further points out the especial powers of adaptation to new conditions the Potato beetle has shown. There are hundreds of North American insects—and some of the most injurious, too—which no one fears will ever establish themselves in Europe, because they are restricted, and have for years been restricted, to certain geographical areas. But the Potato-beetle has already shown that it is a remarkable exception. Should it ever reach England, it would enjoy the temperate climate and thrive.

Law Notes.

A CAUTION TO BORROWERS.—At the Bloomsbury County Court, on Tuesday last, the case of *White* v. *Hall* was heard before Judge Russell, in which the plaintiff, described as a grower, sued the defendant, an alleged money-lender, to recover the sum of £30 18*s.* for moneys had and received on account of a contract which had been entered into, but not carried out.

Mr. Charles Williams, who appeared for the plaintiff, elicited from his client that he, being anxious to raise the sum of £4000 for the purpose of extending his operations by purchasing some adjoining property, and not having sufficient capital of his own, was desirous of borrowing it, and seeing an advertisement of the defendant's in the *Bucks Herald* and other papers, he entered into negotiations with him, which terminated in the present action.

The plaintiff, in reply to the Judge, said in February last he called on the defendant, who resides in the Euston Road, and, in consequence of the representations then made, he was induced to give him a cheque for £25 for preliminary expenses, on the condition that a mortgage should be carried on. The plaintiff said he resided at Marston, near Winslow, in Buckinghamshire, and a few days after his return home the defendant requested him to send an additional £5 for the expenses of a surveyor to come to Marston. This sum was also sent by cheque, and three days afterwards a person from the defendant called and charged him (the witness) 18*s.* more for hotel expenses, which were paid, but the money promised to be advanced was never forthcoming.

By Mr. Williams.—Plaintiff had frequently called on the defendant when attending the market, but never saw the defendant after the first cheque was given, but had seen a clerk, who said his master was from home. He had written several times without receiving a reply. This was the plaintiff's case, when,

The defendant, being called, said he did not deny receiving the sums stated from the plaintiff, who said he was a large grower, market gardener, and farmer, and wished to extend his business, wanting £4000 in order to do so; but on investigation, and from the inquiries made he found he could not have a first charge on the property, which was already incumbered, and that the purchase of the adjoining property the plaintiff was about to make would not warrant the advance to be made. The defendant having called a witness in support of his case,

The learned Judge said he could not see how persons could so easily part with their money through the medium of advertisements, when so many respectable solicitors were at hand to assist in these matters. In the present case the *onus probandi* rested with the plaintiff, who had not proved any written or implied contract to support his case, which was one of oath against oath, as the defendant had sworn that the plaintiff had made a false representation of his property. His Honour should, therefore, nonsuit the plaintiff under the old Act, which would enable him to sue again if he could adduce further evidence in his favour, but as the case stood at present it would be a nonsuit without costs. — Judgment entered accordingly.

Answers to Correspondents.

ACORNS: *J. A. C.* Your gardener ought to know an Oak-gall when he sees it. The gall in question is the work of an insect (Cynips quercus-folii), which inflicts great damage.

ARTICHOKES: *W. J.* The Globe Artichokes quoted as English in our Covent Garden Market report are the heads of what is known in the market as the small English variety, grown in Jersey.

BOOKS: We are requested to state that *Artistic Decorations for Ball Rooms, &c.*, is a 2*s.* book, and not 1*l.*, as stated in a notice in our columns of the 12th inst.

CURRANTS: *W. G.* You can only protect them with nets just before they become ripe, to protect them from birds. You cannot keep them back for autumn use in any other way.

EAST LOTHIAN STOCK: *W. D.* About the beginning of August.

FUNGUS: *A. M., Elgin.* The name of the fungus which you fear will destroy your Swedish Junipers, whilst it leaves the Irish Junipers untouched, is Gymnosporangium juniperinum, a somewhat rare fungus. We are not able to recommend a curative. *W. G. S.*

GRAPES: *C. L.* The berries you have sent us are no doubt "scalded"—the result chiefly of inattention to ventilation at bright mornings.

HOW TO CROP VINES: *S. W.* It is impossible to lay down any fixed rules as to what crop a Vine should bear without exhaustion; it depends so much upon the condition of the individual plants, their management, &c. Could we see the Vines, we might be able to form an opinion, but not otherwise. From your statements we should say you have taken a full crop—probably too full.

INSECTS: *J. Taylor.* Caddis-flies—the larvæ of various species of Phryganeæ. *A. M.*

NAMES OF PLANTS: *A. B. C.* A seedling Alternanthera, which it is impossible for us to name.—*X. X.* We do not recognise the Moss.—*V. Z.* 1, Tradescantia discolor; 19, Sedum aizoideum variegatum; 11, Sedum acre aureum; 13, Thymus lanuginosus; 18, Aubrietia purpurea; 19, Rivina humilis. We cannot undertake to name more than half-a-dozen at a time, and florists' flowers not at all.—*F. Russell.* Medicago maculata.—*L. M. S.* Symphytum officinale.—*P. B.* Mackaya bella.—*F. Yates.* Dendrobium transparens, introduced from Nepal in 1848.—*W. D.* 1, Daphne pontica; 2, Ledum palustre.—*C. E. F.* Erinus alpinus.—*Thomas Hare.* 1, not an Epiphyllum, but Cereus flagelliformis. Had you sent a good specimen at first you would have saved yourself and us trouble. 2, Tradescantia zebrina.

PROPAGATING ROSES: *E. N.* Cuttings will strike in the greenhouse, if taken as soon as the bloom is over. Prepare the cuttings by taking them off with a thin slice of old wood at the heel, and cut off the top two or three eyes above. Insert them in a nice sharp sandy loam, and place the pots under hand or bell-glasses on a damp surface. You must do this, or success will be uncertain; and you must at all times be careful to shade them from the sun.

PROVINCIAL SHOW: *W. B. S.* There is no probability of the Royal Horticultural Society holding a provincial show this summer.

SALUS: *W. S.* It has been frequently advertised in our columns. Write to Mr. W. G. Smith, 15, Mildmay Grove, London, N.

VIRESCENCE IN THE PRIMULACEÆ: *F. C.* Yes. Partial virescence in the Polyanthus is frequently seen.

COMMUNICATIONS RECEIVED.—J. S. W.—J. Scott (next week).—N. E. B.—W. B.—J. V. & S.—P. H. G.—A. B.—L. H.—S. W.—P. H. G.—F. H.—J. S. C.—J. H. C.—W. H. (next week).—D. T. F.

DIED, May 2, WILLIAM COLLYER, Nurseryman, of Horsell Birch, Woking Station, aged 89.

Markets.

COVENT GARDEN, May 24.

Business was quiet in the early part of the week, the holidays having a marked effect upon prices, but a recovery has been well maintained during the last two days. We are now well supplied with all early forced fruits, as also with outdoor vegetables, prices being easier. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		*s. d. s. d.*
Apples, per ½-sieve	3 0- 8 0	Peaches, per doz.	..15 0-25 0
Cobs, per lb.	.. 1 0- 1 6	Pears, per doz.	..12 0- ..
Grapes, per lb.	.. 4 0-15 0	Pine-apples, per lb.	.. 4 0- 7 0
Lemons, per 100	.. 4 0-10 0	Strawberries, p. oz.	.. 0 6- 1 0
Melons, each	.. 8 0-12 0	Figs, green, each	.. 1 0- 2 0
Oranges, per 100	.. 4 0-10 0		

VEGETABLES.

	s. d. s. d.
Artichokes, per bush.	4 0 ..
— Eng. Globe, doz.	4 0 6 0
Asparagus, French, Giant, per bunch	8 0—20 0
— English, p. bun.	3 0 6 0
— Fr., natural bun.	1 6 2 0
— Sprue, per bun.	1 6 ..
Beans, French (new), per 100	1 3 2 6
— French, Long-pod, ½-bushel	8 0 ..
Beet, per doz.	1 0 2 0
Cabbages, per doz.	1 0 2 0
Carrots, per bunch	0 7-0 10
— New French, per bunch	1 6 ..
Cauliflowers, per doz.	2 0 6 0
— Eng., new, doz.	8 0 ..
— French, each	1 0 ..
Celery, per bundle	1 6 2 0
Chilis, per 100	3 0 ..
Cucumbers, each	0 0 1 6
Endive, per doz.	1 0 2 0
— Batavian, p. doz.	2 0 3 0
Garlic, per lb.	0 6 ..
Potatos (old). — Kent Regents, £4 10s. to £5; Kidneys, £8 per ton.—(New): Jersey Kidneys, 20s. to 30s. per cwt.; Rounds, 14s. to 20s. per cwt.	

The prices of all old Potatos have now advanced about £2 per ton on above quotations.

CUT FLOWERS.

	s. d. s. d.
Azaleas, 72 sprays	0 6 2 0
Blue Bells, 12 bunches	2 0 3 0
Bouvardias, per bun.	1 0 4 0
Camellias, 12 blooms	2 0 9 0
Carnations, per dozen	1 6 4 0
Cowslips, 12 bunch.	1 0 6 0
Eucharis, per doz.	6 0-12 0
Gardenia, per doz.	2 0 9 0
Heliotropes, 12 spr.	0 6 1 0
Lily of Valley, 12 spr.	0 6 3 0
Mignonette, 12 bun.	4 0 9 0
Myosotis, 12 bunch.	3 0-12 0
Narcissus, double, 12 sprays	1 0 2 0
Narcissus, Pheasant's-eye, 12 bunches	4 0-12 0
Pelargoniums, scarlet	2 0 3 0
— zonal, 12 sprays	0 4 1 0
Primroses, per dozen	0 6 2 0
Primula, double, per bunch	1 0 2 0
Roses, indoor, p. doz.	1 6-12 0
Sprays, 12 sprays	1 6 4 0
Stephanotis, 12 spr.	3 0 9 0
Tropeolum, 12 bun.	1 0 6 0
Tulips, per dozen	0 6 2 0
Wallflowers, p. doz.	3 0 9 0

PLANTS IN POTS.

	s. d. s. d.
Azaleas, per dozen	24 0-60 0
Begonias, per doz.	6 0-12 0
Bouvardias, do.	12 0-24 0
Calceolaria ..	9 0-24 0
Cineraria, per doz.	6 0-18 0
Clematis ..	24 0-60 0
Coleus, per dozen	3 0-9 0
Cyperus, do. ..	6 0-12 0
Dracæna terminalis	30 0-60 0
— viridis, per doz.	18 0-24 0
Ferns, in var., p. doz.	6 0-30 0
Ficus elastica, each	2 6-15 0
Fuchsias, per dozen	9 0-18 0
Heaths, variety, doz.	12 0-60 0
Heliotrope, per doz.	6 0-18 0
Hydrangea, per doz.	12 0-30 0
Lily of Valley, each	1 0-3 6
Mignonette, per doz.	3 0-9 0
Myrtles, do. ..	3 0-9 0
Palms in variety	3 6 21 0
Pelargoniums, scarlet, per doz. ..	4 0-12 0
Petunias, per doz.	2 0-24 0
Rhodanthe, per doz.	6 0-15 0
Richardia æthiopica, per doz.	9 0-18 0
Roses, per dozen	24 0 60 0
— fairy, per dozen	9 0-18 0
Spiræa, per doz.	12 0-30 0
Valotta purpur., doz.	12 0-18 0

SEEDS.

LONDON: *May* 23.—The seed market to-day presented quite a holiday appearance, and the business done was in the narrowest compass. In fact, the sowing wants of the present season are now about satisfied, and as yet there have been no large speculative purchases for holding-over purposes; consequently there is no quotable variation in the values of either Clover or Trefoil seeds. The reports to hand of the Clover plants are not encouraging, and in view of this holders manifest considerable firmness. There will, it is anticipated, be a large crop of Trifolium; if such should prove to be the case, quotations ought to open at a moderate level. More inquiry now prevails for Mustard and Rape seed, and rates for both descriptions are gradually hardening. Spring Tares, and also Lucerne, Sainfoin, &c., show at this quiet period no alteration. As regards Canary seed, the position continues the same as last week; although the sale is meagre, former terms are generally supported. Linseed is fairly steady. *John Shaw & Sons, Seed Merchants*, 37, *Mark Lane, London, E.C.*

CORN.

Monday being a statute holiday, no business was transacted at Mark Lane. Trade on Wednesday, so far from showing any improvement, was even more depressed than recently. Wheat in the absence of business was quoted nominally as before, but as compared with the rates of this day week a reduction of 2*s.* per quarter may be noted. Barley was cheaper to sell, while in Oats and Maize there was a fall of about 1*s.* per quarter. Malt was steady, but very quiet. Beans and Peas had a downward tendency in sympathy with other descriptions of produce. For flour there was very little inquiry, and still weaker prices prevailed.—Average prices of corn for week ending May 19:—Wheat, 68*s.* 9*d.*; Barley, 39*s.* 11*d.*; Oats, 29*s.* For the corresponding week last year:—Wheat, 44*s.* 11*d.*; Barley, 35*s.* 5*d.*; Oats, 26*s.* 5*d.*

POTATOS.

At the Borough and Spitalfields Markets on Thursday with continued short supplies, demand was steady, and late advanced rates were fully supported, and in some cases rather exceeded. Quotations:—Victorias, Dunbar, £11 to £12; ditto English, £10 to £11; York Regents, £8 to £10; Scotch, £7 to £10; Rocks, £6 10*s.* to £7 per ton; German reds, 7*s.*; Belgian kidneys, 7*s.* 3*d.* per bag.

COALS.

The market was closed on Whit Monday, and Wednesday's quotations were as follows:—Walls End—Hasweli, 20*s.*; Hetton, 20*s.*; Hetton Lyons, 17*s.* 9*d.*; Hawthorns, 17*s.* 9*d.*; South Hetton, 20*s.*; South Hartlepool, 18*s.*

DAHLIAS, Show and Fancy.—20,000 fine healthy Plants, in upwards of 250 newest and choicest varieties; also a splendid assortment of choice BEDDING PLANTS, PHLOXES, PENTSTEMONS, &c.

Priced and Descriptive CATALOGUE post-free on application.

DANIELS BROS., Seed Growers and Nurserymen, Norwich.

STRONG WATER LILIES.

A few Dozen of the above for Sale.

Price on application to

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THE CIRENCESTER NURSERIES, CIRENCESTER.

Two Hundred Thousand

CARPET and Other BEDDING PLANTS.—Including Alternantheras amœna, amœna spectabilis, magnifica, paronychioides, and all other varieties: Antennaria tomentosa, Arenaria balearica, Lobelia Emperor William, Mentha pulegium gibraltaricum, Sagina procumbens, from stores, at 8*s.* per 100, 70*s.* per 1000. Coleus Verschaffeltii, Kleinia repens, Leucophyton Brownei, 10*s.* per 100, 80*s.* per 1000.

Also a large stock of all kinds of Plants that are suitable for Subtropical and Carpet Bedding.

CATALOGUES now ready, free on application. Orders executed in strict rotation. Terms cash, package included.

WILLIAM MILES, West Brighton Nursery, Cliftonville, Sussex.

N.B.—Designs for Carpet Beds and Contracts for Planting same in any part of the country.

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THE DUKE OF EDINBURGH

(MOFFAT).

THE LAWSON SEED AND NURSERY COMPANY (LIMITED),

EDINBURGH and LONDON,

Have made arrangements with Mr. Moffat, Coldwells, to send out, for the first time, the above-named splendid Strawberry. Fruit very large, firm, and of excellent flavour, bright scarlet colour. A most prolific bearer, and as a main crop for market purposes it is unsurpassed.

Strong Plants, 42*s.* per 100; 25*s.* per 50; 15*s.* per 25; 9*s.* per dozen.

Trade Price on application.

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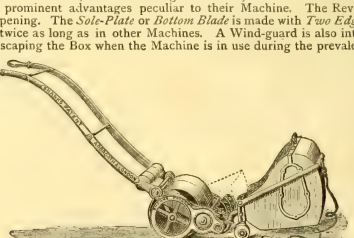
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LAWN MOWERS,

Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The *Sole-Plate* or *Bottom Blade* is made with *Two Edges*, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the Grass escaping the Box when the Machine is in use during the prevalence of wind.



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Including Carriage to any Railway Station or Shipping Port in the Kingdom:—

NEW HAND MACHINE.

10-inch Machine	£3 10 0
12-inch Machine	4 15 0
14-inch Machine	5 15 0
16-inch Machine	6 15 0
19-inch Machine	8 5 0
22-inch Machine	9 0 0
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The Hand Machines are all fitted with Silent Movement, and can be used either with or without the usual Front Rollers.

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25-inch Machine	£13 10 0
28-inch Machine	15 15 0
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The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

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48-inch Machine	32 0 0

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A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

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Are warranted to give ample satisfaction, and if not approved of can be at once returned.

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27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.

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PELARGONIUM Queen of Stripes, large flowered section, with Carnation-like striped flowers.
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MIMULUS, a collection of new colours, and double-flowered.
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ABUTILON DARWINII TESSELATA, useful.
SEED—the best quality that can be grown—of Calceolaria, Cineraria, Primula, single and double; Cyclamen, Pansy, &c.
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PEAT.—For Sale a quantity of good Brown fibrous and Black. For price, &c., apply to GEORGE HILLS, Tekel's Estate, Frimley, Farnborough, Hants.

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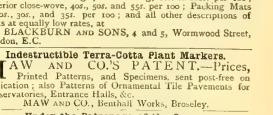
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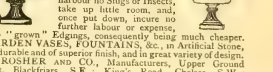


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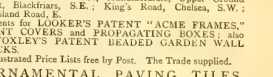
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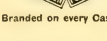
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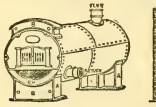
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STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to
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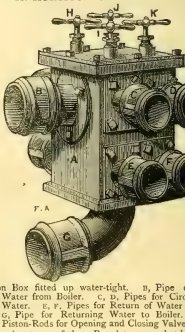
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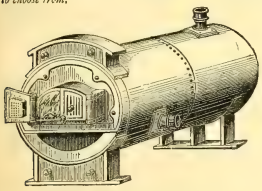
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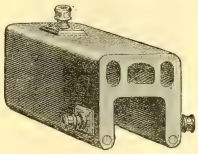
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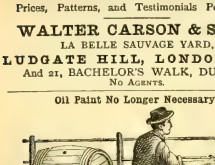
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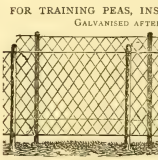
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GARDENER (Under), where three or four are kept.—Age 26. Four years' reference from late employer.—T. P., Post-office, Hagley, Lugwardine, Hereford-shire.

GARDENER (Under).—Age 23; five years' experience in Flower and Kitchen Gardening. Good character.—Address, stating wages, &c., GEORGE THORNHAM, London Road, Uckfield, Sussex.

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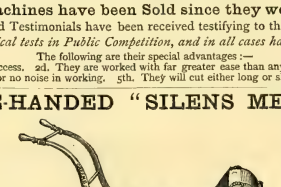
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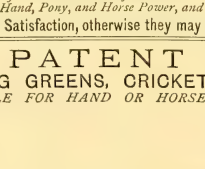
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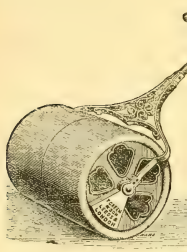
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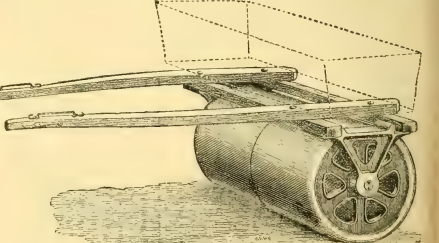
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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 179.—Vol. VII. { New Series. } SATURDAY, JUNE 2, 1877. { Registered at the General Post Office as a Newspaper. } Price 6d. or 5½d.

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NOTICE.—*A COLOURED PLATE of a beautiful new variety of CYCLAMEN PERSICUM will be presented (gratis) with the* GARDENERS' CHRONICLE *for next Saturday, JUNE 9.*—(See p 682).

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

The GREAT SUMMER SHOW under the Large Tent and ANNUAL SHOW by the Pelargonium Society, and EXHIBITION of New Plants for Silver Cups offered by Mr. William Bull, F.L.S., &c., on TUESDAY, June 19. Schedules on application. Band of the Royal Horse Guards.

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N.B.—On this occasion the Fruit and Floral Committees will meet in the CONSERVATORY, where exhibits will also be shown.

GRAND YORKSHIRE GALA, YORK.—Grand Fete, Flower Show, SIX HUNDRED POUNDS, and Four Medals, issued by the Royal Horticultural Society. ENTRIES CLOSE on JUNE 6.

May 23. JNO. WILSON, Secretary.

ALEXANDRA PALACE.—The GREAT ROSE SHOW will be held on SATURDAY, June 30. LAST DAY of ENTRY, June 23. Schedules and all particulars may be obtained on application to

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EXETER ROSE SHOW will be held on TUESDAY, JUNE 26. Schedules on application to May 21, 1877. T. W. GRAY, Hon. Secs.

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Mr. E. S. DODWELL, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W.; or Mr. E. BENNETT, Kaby Nurseries, Barnet, Herts; or Mr. W. W. ROBERTSON, Royal Aquarium, Westminster, S.W.

WESTON-SUPER-MERE and EAST SOMERSET HORTICULTURAL SOCIETY.

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The ANNUAL EXHIBITION in connection with this Society will be held at Weston-super-Mere, on WEDNESDAY, August 1, when Prizes amounting to TWO HUNDRED POUNDS will be offered for competition. Schedules and all particulars may be obtained on application to

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JOHN SCOTT, Merriott Nurseries, Somerset.

Primulas, Primulas, Primulas.

WILLIAMS' superb strain, 1s. 6d. per dozen, 10s. per 100; package and carriage free. CINERARIAS, choicest assortment, same size and price. The above are quite equal to those I have sent out in previous years. Cash with order.

JOHN STEVENS, The Nurseries, Coventry.

ROSE (H.P.), "MARIE LOUISE PERNET," a seedling from Madame Rothschild: the best Rose of its class. Splendid plants for present working or growing on, with from eighteen to twenty buds, 2s. 6d. each; Trade price, 18s. per dozen. All the best Roses of the year at the above quotation.

H. BENNETT, Manor Farm Nursery, Stapleford, Salisbury.

ROSES, choicest Hybrid Perpetual, strong, in 5-in. pots, 9s. per dozen; 60s. per 100 PELARGONIUMS, finest Show, French and Fancy in same price. DAHLIAS, 6s. per dozen, 35s. per 100. FUCHSIAS, select, 4s. to 6s. per dozen. CATALOGUES on application.

R. THORNHILL, Bowdon Nurseries, Bowdon, Cheshire.

PRICKLY COMFREY.—The most productive and permanent Forage plant known. Can be cut five times a year;—no time have been growth in one season. Strong plants £4 per 100; sets £3 per 100, carriage paid. The present is a good time to form plantings and to propagate.

FREEMAN, Nurseryman, Sedgeford, Norwich.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. PRICE LIST on application.

Mr. WEBB, Calcot, Reading.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

To the Trade.

ASPARAGUS, Giant, 1-yr. and 2-yr., fine.

JAMES BIRD, Nurseryman, Downham.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LIST for 1877.

Extra Strong SEAKALE, 2s. per dozen.

RICHARD SMITH, Nurseryman, Worcester.

To the Trade.—Turnip Seeds.

H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEED, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.

Seed Growing Establishment, Wisbech.

SALES BY AUCTION.

Important Notice.

GARSTON VINEYARD ESTATE, near LIVERPOOL.

MESSRS. PROTHEROE AND MORRIS respectfully announce that, having DISPOSED OF this FREEHOLD ESTATE by Private Treaty, the same will not be offered by Auction on Tuesday, June 5, as announced. The Clearance Sale of the Stove and Greenhouse Plants, and also of the Utensils-in-Trade, will take place, as advertised, on Wednesday, June 6, and following days. For particulars see below

Garston, near Liverpool.

CLEARANCE SALE of the whole of the Valuable Stock of STOVE, GREENHOUSE, and BEDDING PLANTS, UTENSILS-IN-TRADE, &c.

MESSRS. PROTHEROE AND MORRIS are directed to SELL by AUCTION, without reserve, on the Premises, The Garston Vineyard, Garston, near Liverpool, on WEDNESDAY, June 6, and following days, at 12 o'Clock precisely each day, by Order of the Cowan Patents Company (Limited), who, having disposed of the Freehold Estate, will confine their future operations to their London Establishment, the Entire Stock of STOVE and GREENHOUSE PLANTS, comprising handsome Palms, Gardenias, Crotons, Eechites, Anthuriums, &c., 800 Orchids in variety, a quantity of Choice Exotic Ferns, 50 very large Specimen Camellias, 500 fine Azalea indica, 20,000 Miscellaneous Bedding Plants, including 12,000 Geraniums, 5000 Fruiting and other Vines, 500 Tea and other Roses in pots: also a CART-HORSE, Two Covered SPRING VANS, Light Capital PONY-CART, DEAN'S SPRING CART, Glazed Sashes, IRON ROLLER, FLOWER-POTS, and other sundry articles connected with the Trade.

Catalogues may be obtained fourteen days prior to the Sale, on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, London, E.C., and Leytonstone, Essex.

Garston Vineyard, Garston, near Liverpool.

MESSRS. PROTHEROE AND MORRIS having SOLD the ESTATE, are instructed by the Cowan's Patents Company (Limited), to SELL by AUCTION, on the Premises, as above, on FRIDAY, June 22, at 12 o'Clock precisely, the entire STOCK-IN-TRADE of the Horticultural Building, Engineering, and Joinery Department, comprising about sixty new Boilers, Hot-water Piping, Screw, Throttle, and other Valves, several Mowing Machines, a nearly new Mortising Machine, and numerous other effects.

On view one week prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Periodical Sale of Poultry and Pigeons.

(Sale No. 4058).

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 5, at half-past 12 o'Clock precisely, LIGHT BRAHMAS and PARTRIDGE COCHINS, the Property of Miss Dickinson; Gold and Silver Spangled HAMBURGS, SPANISH, GAME and CARRIERS, from Capt. Gough; LIGHT BRAHMAS, BUFF COCHINS, Pheasants, and a great variety of other choice POULTRY and PIGEONS from the Yards and Lofts of well-known Breeders and Exhibitors. WHITE VIOLET TURBITS, &c.

On view the morning of Sale, and Catalogues had.

Important Notice of a great Clearance Sale of NURSERY STOCK.

MR. J. C. STEVENS has received instructions from Messrs. Lee to offer for SALE by AUCTION, on the Premises, Royal Vineyard Nursery, Hammersmith, W., on WEDNESDAY, June 13, and following days, at half-past 12 o'clock precisely each day, the second portion of the stock of STOVE and GREENHOUSE PLANTS, consisting of fine Palms of tall stems, including Dicksonias, Alsophilas, Cyathæas and Cibotiums; choice Ferns, amongst which are some nice pieces of Gleichenias, Dicksonia squarrosa and Davallias, beautiful specimen Tedea superba, Angiopteris erecta, and others; some useful Orchids, such as Arpophyllums, Dendrobes, Cattleyas, Lælias, Epidendrums, Lælyeas, Oncidiums, Leucochilus, Vandas, and others; Eucharis amazonica, fine examples; Pandanus, Epiphyllums, Cleredendrons, Anthuriums, and others; some choice Palms, including the two kinds of Phœnix, Chamærops, Caryota, Arads, and some nice examples of the beautiful Cocos Weddelliana; fine specimens of Cycas revoluta, and other choice Stove Plants. In Greenhouse Plants are some nice pieces of Acrophyllum, Genetyllis, Eriostemon, and Dracophyllum, Azaleas, Camellias, very many healthy home-grown Camellias and specimen Azalea indica, with the usual collections of the best kinds of Ericas, in fine health, and a large variety of Stove and Greenhouse Plants.

On view the day prior and mornings of Sale, and Catalogues had.

Hornsey, N.

(Close to the Crouch End Station.)

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION on the Premises, the Nursery, New Road, Hornsey, on SATURDAY, June 9, at 1 o'clock, by order of Mr. Downing—the ground being required for building purposes—the whole of the GREENHOUSE and BEDDING PLANTS, consisting of the usual assortment, five GREENHOUSES, HOT-WATER PIPING, and numerous other effects.

Catalogues may be had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from J. Hepburn, Esq., SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, June 20 and 21, at half-past 12 o'Clock precisely each day, the entire Collection of ESTABLISHED ORCHIDS formed by him at Sidcup Place, and Sold in consequence of change of residence, comprising, amongst many others, fine plants of the following well-known sorts, and many of which have been most successfully exhibited :—Angræcum sesquipedale, Cologyne cristata, Dendrobium Aggregatum, Vanda suavis Veitchi, large, three and four spikes each; Cypripedium caudatum, seven spikes, twelve to fifteen flowers each, Dendrobium Falconeri, large, ninety-three flowers last year, 3½ inches to 3¾ inches; Cattleya Mendelli, Odontoglossum Pholiogerum, good plants; O. Roezlii, twenty-five flowers, thirteen spikes; O. vexillarium, O. nævium majus, eight spikes; O. coronarium, Oncidium marcranthum, Dendrobium Devonianum, good variety; D. thyrsiflorum; Odontoglossum Alexandræ, O. Pescatorei, O pulchellum majus, O. cirrhosum, O. Madrense, good variety; O. Rossi Dawsonianum, O. Rossi Rubellum, Masdevallia Veitchii, M. Lindeni, M. Harryana, M. Lindeniæ Veitchii, &c.

On view the mornings of Sale, and Catalogues had.

Wills' New Hybrid Dracænas.

MR. J. C. STEVENS has received instructions from Mr. Wills to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 26, at half-past 12 o'Clock precisely, the entire stock of about twenty-four of the very finest of the above magnificent HYBRID DRACÆNAS, obtained by Mr. F. Bause, at the Melbourne Nursery, Anerley. Mr. Wills has determined to give the Trade an opportunity of purchasing the above magnificent Plants.

On view the morning of Sale, and Catalogues had.

The Collection of Established Orchids

of W. H. Michael, Esq., of Cholmeley Park, Highgate.

MR. J. C. STEVENS begs to announce that he has received instructions from W. H. Michael, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, July 4, and following day, at half-past 12 o'Clock precisely each day, the valuable COLLECTION of ORCHIDS, made and established by that gentleman, who is now removing from Highgate, consisting of some of the finest varieties. Amongst other good things will be found the following:—Aerides Fieldingii, Lobbii, &c.; Angræcum, Chysis bractescens, Cymbidium Masters-ii and eburneum; Cattleyas in great variety, including Mendelii, gigas, and Dowiana; Lælia elegans, Turneri, Schilleriana, purpurata, and a grand specimen of superbiens; Odontoglossums of all the principal kinds, including Alexandræ, Pescatorei, cirrhosum, Andersonianum, a magnificent variety; nebulosum, luteo-purpureum, Hallii, hystrix, citrosmum, Roezlii, and roseiflorum; Oncidium Marshallianum, Wentworthianum, albo-sanguineum, littiflorum, M'Carthiæ, &c.; Oncidiums splendidum, varicosum, Lanceanum, Weltoni, macranthum, &c.; Phalænopsis amabilis, Schilleriana, amabilis, Luddemanniana, and rosea; Saccolabium retusum, giganteum, Holfordii, &c.; Vandas Bensoniæ, Denisoni, coerulea, coerulescens, Batemanni, Cypripedium Veitchii, Dayanum, Argus, Stonei, Sedeni, caudatum, &c.; Angræcum eburneum, superbum, and sesquipedale; Burlingtonias, Brassias, Peristeria elata, &c.

On view the mornings of Sale, and Catalogues had.

FOR SALE, a good FLORIST and SEEDSMAN'S BUSINESS, with Small Nursery and Jobbing Connection. Population 2,000.

2, Swiss Terrace, St. John's Wood, N.W.

To Fruiterers and Greengrocers.

TO BE DISPOSED OF, a First-class FAMILY BUSINESS, in one of the most fashionable towns in the Midland Counties. Established 30 years. Apply to H. BERRELL, 33, Bull Street, Birmingham.

Worthing, Sussex.

TO BE LET, GRAPERIES and GARDEN.—The old-established Vineries and Nursery Gardens in the town of Worthing, consisting of handsomely-fronted Show-house and Shop, with three large span and four lean-to Houses, 600 feet run in all, with Heating Apparatus complete; a good Dwelling-house, Stabling, Forward ers' Premises, and Outbuildings. Plants and Utensils to be taken at a Valuation, and an agreed sum in respect of the cost of bringing on the Grapes since Christmas. Immediate possession. Rent, £105

GARDENER, The Graperies, Crescent Road, Worthing.

To Private Gentlemen, Head Gardeners, &c.

FOR SALE, Twelve large ORANGE TREES, in boxes, just coming into flower: also SMALL CONSERVATORY, 33 feet long, 10 feet wide, and 13 feet high, in excellent condition. Further information on application to

T. F. D., Mr. Chapman, Nurseryman, Weybridge, Surrey.

Special Notice to Breeders and Exhibitors.

THE GREAT POULTRY and PIGEON SHOW of the Season will be the Granville Show, open to England and France, to be held on the Granville Marina, St. Lawrence-on-Sea, Thanet, August 14, 15, 16, and 17. Two following days. Nearly FOUR HUNDRED VALUABLE PRIZES will be offered for competition.

It is proposed to make special arrangements for conveying Continental Exhibits and Exhibitors by Steamboat direct between Boulogne and Ramsgate Harbour.

Champion Prizes for Cups, Medals, or Winners from Smaller Shows can compete. Open Classes and Selling Classes. Prizes will be in cash, or full money value. Judges—Entries for name see future advertisements. Many particulars will be hereafter announced. For Schedules, Prize Lists, and Entry Forms, apply to

W. LANE CLEAR, Esq.

Granville Hotel, St. Lawrence-on-Sea, Thanet.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION, for the Relief of Decayed Farmers, their Widows and Orphans.

Patron: HER MAJESTY THE QUEEN.

President: HIS GRACE THE DUKE OF RICHMOND AND GORDON.

Allowances to Pensioners.

Married .. .. £40 per annum.
Male .. .. £26 ,,
Widows and Unmarried Orphan Daughters £20 ,,

Every information to be had of the SECRETARY, by whom Subscriptions and Donations will be thankfully received.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.

The SEVENTEENTH ANNIVERSARY FESTIVAL, in aid of the Funds of the Institution, will take place at Willis's Rooms, on WEDNESDAY, June 6, at 6 for 6.30 o'Clock.

The Right Hon. the EARL OF DUNMORE in the chair.

Dinner Tickets, 21s., application for which should be made to the SECRETARY, not later than June 4

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.

The ANNUAL GENERAL MEETING will be held at Willis's Rooms, St. James's, on WEDNESDAY, June 20, at 11 o'clock precisely: and the ELECTION OF PENSIONERS will take place on the same day, at 11.30 o'Clock.

All subscriptions shall be deemed payable on January 1 in each year; and no Contributor shall vote in respect of an Annual Subscription which the same is in arrear.

Offices of the Institution—26, Charles Street, St. James's, London, S.W.

BATH and WEST of ENGLAND SOCIETY

(Established 1777), and

SOUTHERN COUNTIES ASSOCIATION.

Patron: H.R.H. the PRINCE OF WALES, K.G.

President: The MARQUIS OF LANSDOWNE.

CENTENARY MEETING,

Bath, JUNE 4, 5, 6, 7, and 8.

GREAT EXHIBITION of LIVE STOCK, POULTRY, CHEESE, MACHINERY, IMPLEMENTS, WORKS of ART, and HORTICULTURAL SPECIMENS.

JOSIAH GOODWIN, Sec.

4, Terrace Walk, Bath, May, 1877.

Bedding Plants for the Million.

JAMES HUDER AND SONS GUINEA HAMPER consists of eight dozen plants, comprising scarlet and variegated Geraniums, Verbenas, Calceolarias, single and double Petunias, Dahlias, Ageratums, Lobelias of sorts, Gazanias, Salvias, Coleus, Irosines, Alternantheras, Heliotropes, Koniglas, Echeverias, Sempervivums, Campanulas, Tropeolums, Mesembrynthemums, Fuchsias, &c.; all strong healthy plants, in single pots.

Crown Nursery, Reading.

DOUBLE ZONAL PELARGONIUMS, New 1876.—Madame Amelis Foltet, Dame Blanche, both good double whites: Dupuis, Le Nord, Le Nord, Est, Madame Plaisançon, Michel Buckler, La Candeur, Meteor Flag, and Wonderful. The above set of ten splendid varieties for 10s. 6d. Post-office Orders to be payable at Lewisham Plants, or for Cut Flowers. Post-office Orders payable to

FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

REGAL PELARGONIUMS.—

BEAUTY OF OXTON	MARIE LEMOINE
CAPT. RAINES	QUEEN VICTORIA.

The above splendid varieties, strong plants, 6s. per 5s.

KONIG ALBERT, double Ivy-leaf, 6s. per dozen.

Trade price on application.

FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

Bedding Plants! Bedding Plants!

FAND A. SMITH beg to offer the following, in strong healthy plants, in single pots, suitable for immediate planting: Geraniums, Verbenas, Petunias, Centaureas, Campanula fragilis, Dahlias, Lobelias, Pyrethrums, Phloxes, Mesembrynthemums, Iresines, Coleuses, Cuphea, &c. Price LIST on application. Orders of 20s. and upwards delivered free within a radius of 6 miles from St. Paul's.

Nurseries, West Dulwich, S.E.

To the Trade. Tea Roses on Seedling Briar.

EDWIN HILLIER has to offer very fine Plants of NIPHETOS, DEVONIENSIS, and SOUVENIR D'UN AMI at 80s. per 100. Extra fine plants, in twenty-five of the best varieties, 25s. per dozen. Cash or reference to accompany all orders. New (1877) CONTINENTAL ROSES, from plants, 18s. per dozen.

The Nurseries, Winchester.

GERANIUM "ROBERT BURNS" (Gray).—A most luxuriant grower, yet never exceed-ng 3 or 4 inches in height. The leaf is of a bright golden colour, with a distinct chestnut zone. Without doubt one of the most golden bronze Bedding Geraniums ever introduced. Stout plants, in single pots, 9s. per dozen, 50s. per 100.

JAMES GRAY, Nurseryman and Seedsman, Maxwelltown, Dumfries, N.B.

Clearance Sale.

CHOICE AMERICAN and OTHER POTATOS.—Price 1s. per peck, or 8s. per cwt., free on rail, Nonsuch, Early Rose, Beauty of Hebron, Early Pinkin Flourball, Bresee's Fereless, Brownell's Beauty, Yorkshire Hero, Scotch Blue Regents, Wood's Scarlet Prolific, Alpha, &c. Orders will be executed in rotation as received.

DANIELS BROS., Seedsmen to the Queen, Norwich.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and will soon be completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. Plants of moderate size, 12s. per dozen, 80s. per 100 free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers. The new Nursery Descriptive List on application.

RICHARD SMITH, Nurseryman, Worcester.

Australian Plants and Seeds.

EUCALYPTUS GLOBULUS, PALMS, CYCADS, FERNS, and all kinds of PLANTS and SEEDS indigenous to New Zealand, Fiji, &c., supplied on the most reasonable terms. Priced CATALOGUES and Special Quotations on application.

SHERRY and CO., Nurserymen and Seedsmen, Darling Nursery, Sydney, New South Wales. (Established 1827.)

Agents: MESSRS. C. BARE AND CO., Cox's Quay, Lower Thames Street, London, E.C.

Bedding Plants, Bedding Plants.

JOHN SOLOMON offers VERBENAS, in White, Scarlet, Purple, and Pink; CALCEOLARIAS, Golden Gem; HELIOTROPES; AGERATUMS, Imperial Dwarf and Compact; DAHLIAS, in all the best bedding sorts; all the above at 12s. per 100. GERANIUMS, Vesuvius, Christine, and Flower of Spring, at 4s. per 100. All the above are good, strong, well hardened, and established in single pots. Cash to accompany all orders.

Islington Nursery, Park Street, Islington, N.

MIMULUS MOSCHATUS HARRISONII.—Well rooted Plants of the above splendid new Musk, post-free, 12 each.

DAHLIAS, VERBENAS, and GERANIUMS.—Dahlias, 3s. 6d. per dozen, 24s. per 100, all the undermentioned sorts to name. Verbenas, in single pots, good plants, 15s. per 100; turned out of pots, 12s. per 100; extra strong, well-rooted Cuttings, 6d. per 100. Bedding Geraniums in great variety, extra strong, 12s. and 15s. per 100.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

For Greenhouses, Winter Gardens, Terraces, &c.

STANDARD and PYRAMID SWEET BAYS (LAURUS NOBILIS).—More ornamental and of easier culture than Orange trees, their constant deep green colour being of a very pleasing effect.

The following are all grown and established in tubs, and fit for travelling to any distance :—

STANDARD BAYS—Height of stems, 3½ to 4½ feet : diameter of heads, about 2 feet, price £2 to £3 per pair.

„ „ with very strong compact heads, 3 to 4 feet in diameter, £4 to £8 per pair.

„ „ extra large and fine, £12, £16, £20, to £40 per pair, according to size and beauty.

PYRAMID SWEET BAYS.—Fine young Pyramids, 6 to 7 feet high, £2 to £3 per pair.

„ „ large, strong, 3 to 4 feet diameter at the base, £5 to £6 per pair.

„ „ extra large specimen Pyramids, 8 to 10 up to 15 feet high, price £8, £12 to £20, up to £40 per pair, according to size and beauty.

Hundreds of pairs to be disposed of. Apply at once to

JEAN DE SCHAFFELT'S Nurseries, Ghent, Belgium.

DAHLIAS, Show and Fancy.—20,000 fine healthy Plants, in upwards of 250 newest and choicest varieties : also a splendid assortment of choice BEDDING PLANTS, PHLOXES, PENTSTEMONS, &c.

Priced and Descriptive CATALOGUE post-free on application.

DANIELS BROS., Seed Growers and Nurserymen, Norwich.

To the Trade.

BEDDING PLANTS.—Fine, well grown, in separate lots.

VERBENAS, Eclipse (scarlet), Purple King, and Boule de Neige (pure white), in splendid stuff, 12s. per 100.

GERANIUMS, Zonal, in separate lots, 14s. per 100.

CALCEOLARIA, aurea floribunda, 14s. per 100.

AGERATUMS, HELIOTROPES, IRESINES, LOBELIAS, ALTERNANTHERAS, ALYSSUM VARIEGATUM, CINERARIA MARITIMA, COLEUS VERSCHAFFELTII, PYRETHRUM SPLENDENS, GNAPHALIUM LANATUM, MESEMBRYANTHEMUM, cord. var., NIEREMBERGIA GRACILIS, PERILLA, TAGETES SIGNATA, N. pl., GOLDEN THYME, VERBENA VENOSA, and VIOLA CORNUTA PERFECTA, 12s. per 100.

CENTAUREA RAGUSINA, 16s. per 100.

SALVIA PATENS, 2s. 6d. per dozen.

ACACIA LOPHANTHA, 1s. per dozen.

ARTEMISIA ARGENTEA, 2s. 6d. per dozen.

ABUTILON THOMPSONIÆ, 2s. 6d. per dozen.

COLEUS BLUMEI VARIEGATA, 4s. per dozen.

SEDUM GLAUCUM, 15s. per 100.

ECHEVERIA SECUNDA GLAUCA, 15s. per 100.

F. W. COOPER, Florist, Huntingdon.

Cheap Plants—Special Offer.

WILLIAM BADMAN offers the following cheap Plants :—

VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 10s. per 100 ; 1s. 6d. per dozen ; well-rooted Cuttings, 6s. per 100, 50s. per 1000 ; twelve choice named sorts, 1s. per 100.

CALCEOLARIA, Golden Gem and aurea floribunda, good plants from single pots, 10s. per 100, 1s. 6d. per dozen.

LOBELIA, Crystal Palace, Blue Stone, pumila grandiflora, good strong plants from thumb pots, 10s. per 100, 1s. 6d. per dozen ; from store pots, 3s. per 100, 20s. per 1000. Emperor William Lobelia, good plants, 12s. per 100 ; rooted cuttings, 5s. per 100.

PELARGONIUMS, Vesuvius, finest scarlet, from stores, 8s. per 100, 75s. per 1000 ; Jean Sisley, 10s. per 100 ; Madame Vaucher, fine white, 10s. per 100 ; Master Christine, 12s. per 100 ; Mrs. W. Paul and Bluebell, fine pink, 10s. per 100 ; all from single pots, and at 1s. 6d. per dozen.

TRICOLOR PELARGONIUMS, Mrs. Pollock, 20s. per 100, 2s. 6d. per dozen ; Flower of Spring and Prince Silverwings, 12s. per 100, 2s. per dozen.

GOLD-LEAF PELARGONIUMS, Crystal Palace Gem, strong, from single pots, 12s. per 100, 2s. per dozen ; Miy Queen (Turner's), fine silver variegated, 12s. per 100, 2s. per dozen.

CRIMSON PELARGONIUM, Waltham Seedling, good bedder, 10s. per 100, 1s. 6d. per dozen.

HELIOTROPE, finest dark, good plants, 10s. per 100, 1s. 6d. per dozen ; rooted cuttings, 6s. per 100.

AGERATUM, Imperial Dwarf, blue, fine bedding plants, from single pots, 10s. per 100, 1s. 6d. per dozen ; rooted cuttings, 5s. per 100, 40s. per 1000.

IRESINE LINDENI, best crimson-leaf bedding plant, strong stuff, 12s. per 100, 1s. 6d. per dozen ; from stores, 6s. p. 100.

CENTAUREA CANDIDISSIMA, fine silver-leaf, 3s. per dozen, 20s. per 100.

Package included. Terms cash.

Cemetery Nursery, Gravesend, S.E.

Two Hundred Thousand

CARPET and Other BEDDING PLANTS.—Including Alternantheras amœna, amœna spectabilis, magnifica, paronychioides, and all other varieties ; Antennaria tomentosa, Arenaria balearica, Lobelia Emperor William, Mentha pulegium variegata, Saginа procumbens, from stores, at 8s. per 100, 70s. per 1000. Coleus Verschaffelii, Kleinia repens, Leucophyton Browni, 10s. per 100, 80s. per 1000.

Also a large stock of all kinds of Plants that are suitable for Subtropical and Carpet Bedding.

CATALOGUES now ready, free on application. Orders executed in rotation. Item cash, package included.

WILLIAM MILES, West Brighton Nursery, Cliftonville, Seaford.

N.B.—Designs for Carpet Beds and Contracts for Planting same in any part of the country.

BEDDING PLANTS, BEDDING PLANTS.—Zonal and Nosegay GERANIUMS, 2s. 6d. and 3s. per doz., 18s. and 20s. per 100 ; Bronze do., 3s. and 3s. 6d. per dozen, 22s. and 25s. per 100 ; Silver-edged do., 3s. and 3s. 6d. per dozen, 22s. and 25s. per 100. CALCEOLARIAS, 2s. 6d. per dozen, 14s. and 18s. per 100. AGERATUMS, LOBELIAS, VERBENAS, IRESINES, HELIOTROPES, ECHEVERIAS, MESEMBRYANTHEMUMS, fol. var., Bedding PANSIES, VIOLAS, SALVIAS, 2s. 6d. and 3s. per dozen, &c., 12s., and 15s. per 100, according to size. DAHLIAS, 3s. 6d. per dozen, 25s. per 100. FUCHSIAS, CHRYSANTHEMUMS, and COLEUS, 3s. per dozen, 20s. per 100. Golden PYRETHRUMS and best SEDUMS, for carpet bedding, 1s. per dozen, 6s. per 100. Tuberous BEGONIAS, boliviensis, Sedeni Victoria, and magnifica, for bedding, 6s. per dozen.

CATALOGUES on application.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

CHOICE FLOWER SEEDS

For Present Sowing.

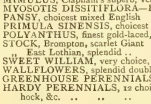
Our own superb strains, guaranteed of unsurpassable quality Post-free on receipt of P.O.O. or Stamps.

	Per packet—*s. d.*
AURICULA, choicest mixed, alpine	6*d.* and 1 0
CALCEOLARIA HYBRIDA, very choice, mixed	1*s.* „ 2 6
CINERARIA HYBRIDA, from named flowers..	1*s.* „ 2 6
CARNATION and PICOTEE, from stage flowers	1*s.* „ 2 6
HOLLYHOCK, Prize English	6*d.* „ 1 0
INDIAN PINK, splendid double, mixed	0 4
MIMULUS, Clapham's superb, very fine.. ..	1 6
MYOSOTIS DISSITIFLORA—Forget-me-not	0 6
PANSY, choicest mixed English	6*d.* and 1 0
PRIMULA SINENSIS, choicest mixed	1*s.* „ 2 6
POLYANTHUS, finest gold-laced, choice	1 0
STOCK, Brompton, scarlet Giant	0 6
„ East Lothian, splendid	0 6
SWEET WILLIAM, very choice, mixed..	0 6
WALLFLOWERS, splendid double, mixed ..	6*d.* and 1 0
GREENHOUSE PERENNIALS, 12 fine varieties ..	6 0
HARDY PERENNIALS, 12 choice sorts, Pansy, Hollyhock, &c.	4 6

DANIELS BROS.,

ROYAL NORFOLK SEED ESTABLISHMENT,

Norwich.



CHOICE

FLOWER SEEDS for 1877.

	Per packet—*s. d.*
BALSAM, Williams' Superb Strain ..	2*s. 6d.* and 1 6
BEGONIA FRŒBELII	2 6
BEGONIA SEDENI SEMI-PLENA	2 6
BEGONIA, Hybrid, finest mixed..	2 6
CYCLAMEN PERSICUM GIGANTEUM.—This is a great improvement on the old type, the flowers being thrown well above the foliage, each flower measuring from 2 to 2½ inches in length ; pure white, with a fine bold violet-purple eye	5*s.* and 2 6
CALCEOLARIA, Williams' Superb Strain,	5*s.*, 3*s. 6d.*, 2*s. 6d.*, and 1 6
CINERARIA, Weatherill's Extra Choice Strain,	5*s.*, 3*s. 6d.*, 2*s. 6d.*, and 1 6
GLOXINIA, Finest Drooping Varieties	1 6
„ Finest Erect Varieties	1 6
PRIMULA, Williams' Superb Strain, Red, White, or Mixed	5*s.*, 3*s. 6d.*, 2*s. 6d.*, and 1 6
PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance	5 0
SOLANUM, Williams' Improved Hybrids	1 6
STOCK, Williams' Improved Giant Scarlet Brompton	1 6
WALLFLOWER, Harbinger, Autumn and Winter flowering	1 0

Packets of Flower Seeds, excepting heavy kinds, Free by Post.

VICTORIA & PARADISE NURSERIES

UPPER HOLLOWAY, LONDON, N.

SPECIAL OFFER TO THE TRADE.

DELPHINIUM, nudicaule, 5*s.* per dozen, 25*s.* per 100.

MYOSOTIS, alpestris nana, fl. alba, 5*s.* per dozen, 25*s.* per 100.

„ alpestris nana, fl. cœrulea, 5*s.* per dozen, 25*s.* per 100.

PRIMULA, farinosa, 5*s.* per dozen, 25*s* per 100.

„ spectabilis, 8*s.* per dozen, 40*s.* per 100.

All grown in pots.

A. M. C. Jongkindt Coninck begs to call attention to the beautiful dwarf white and blue alpine FORGET-ME-NOT, which does not exceed 4 inches, and is equally well adapted for Rockwork as for Carpet Bedding.

A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvaart, near Zwolle.

RODGER, McCLELLAND AND CO. have still a few extra strong plants of

HYDRANGE OTAKSA, or SOLANDIFLORA, 1½ to 3 feet high, 12*s.* to 18*s.* per dozen.

CLEMATIS JACKMANII, 10*s.* per dozen.

PRINCE OF WALES, 5*s.* per dozen.

TROPÆOLUM SPECIOSUM, beautiful hardy climber, 6*s.* per dozen.

MUHLENBECKIA COMPLEXA, one of the most elegant of hardy climbing plants (like Maidenhair Fern), 6*s.* to 9*s.* per dozen.

61, Hill Street, Newry.

Cheap Bedding Geraniums.

ALFRED FRYER offers the following good Bedders at per dozen for cash :—Golden Tricolors : Peter Grieve, 12*s.* ; Prince of Wales, 6*s.* ; Lady Cullum, 3*s.* 6*d.* ; Sir Robert Napier, 3*s.* 6*d.* ; Mrs. Pollock, 3*s.* ; Sophia Dumaresque, 3*s.* ; Silver Tricolors : Lass o' Gowrie, 4*s.* 6*d.* ; Queen of Denmark, 3*s.* 6*d.* ; Miss Heath, 3*s.* 6*d.* ; Mrs. John Clutton, 3*s.* 6*d.* ; Prince Silverwings, 3*s.* Double flowered : Marie Lemoine, 3*s.* ; or one of each for 5*s.* No charge for packing. Plants returned in order also post-free for 6*d.* per dozen extra. For Priced LISTS apply to

ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

Presented (by post) on application,

NEW CATALOGUE for 1877.

MESSRS. CLIBRAN AND SON will have great pleasure in sending their PRICED DESCRIPTIVE LIST for this Spring, free by post on application. Their Stock of Florist Flowers, Herbaceous and Soft-wooded Plants generally, are surpassed by few, if any, either in extent or quality, all the newest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to Purchasers is that most of the plants offered are taken directly from a warm propagating house and sent off, but are all carefully hardened and most of them potted off singly, and are therefore fitted to travel either by rail or sea without the slightest injury. A great proportion are autumn-struck plants, and many of the undermentioned can be sent by post :—

Abutilons, in variety, 3*s.* per dozen.

Achimenes, in variety, 3*s.* per dozen.

Ageratums, in variety, 8*s.* per 100, 2*s.* per dozen.

Begonias, tuberous, 6*s.* and 9*s.* per dozen.

„ non-tuberous, 4*s.* per doz.

Caladiums, 30*s.* per dozen.

Calceolarias, Golden Gem, &c., 6*s.* per dozen.

Camellias, 30*s.* and 42*s.* per dozen.

Carnations and Picotees, 12 plants, 6*s.* ; 12 pairs, 10*s.* 6*d.*

Carnations, tree, in variety, 9*s.* per dozen.

Centaurea ragusina, 3*s.* per dozen.

Chrysanthemums, near 10,000 now ready, 20*s.* per 100, 3*s.* per dozen.

Cinerarias, 4*s.* per 100, 6*s.* per dozen.

„ to name, 9*s.* per dozen.

Clematis, in variety, 6*s.* per 100, 9*s.* per dozen.

Coleus, in variety, 20*s.* per 100, 3*s.* per dozen.

Cyclamens, in variety, 6*s.* and 9*s.* per dozen.

Dactylis elegantissima, 5*s.* per 100, 1*s.* per dozen.

Dahlias, 25*s.* per 100, 4*s.* per dozen.

Delphiniums, splendid sorts, 9*s.* to 12*s.* per dozen.

Epiphyllum, 9*s.* to 18*s.* per dozen.

Ferns, stove and greenhouse, 9*s.* to 18*s.* per dozen.

Fuchsias, 20*s.* per 100, 3*s.* per dozen.

Gardenia florida, 6*s.* to 12*s.* per dozen.

Greenhouse Plants, 9*s.* to 18*s.* per dozen.

Geranium, Tricolor, 3*s.* 6*d.* per dozen.

„ Bicolor, 20*s.* per 100, 3*s.* per dozen.

„ Silver-edged, 3*s.* 6*d.* per dozen.

„ Double, 20*s.* per 100, 3*s.* per dozen.

„ Zonals, for bedding, 15*s.* per 100, 3*s.* per dozen.

„ Zonals, for pot culture, 9*s.* to 6*s.* per dozen.

Gladiolus, in name, 6*s.* to 9*s.* per dozen.

„ splendid seedlings, 20*s.* per 100, 3*s.* per dozen.

„ Brenchleyensis, 6*s.* per 100, 1*s.* per dozen.

Helianthemums, 2*s.* 6*d.* per dozen.

Herbaceous Plants, 20*s.* per 100, 3*s.* per dozen.

Heliotropes, in variety, 2*s.* 6*d.* per dozen.

Hepaticas, 4*s.* per dozen.

Iresine Lindeni, 12*s.* per 100, 2*s.* per dozen.

Iris, German, 3*s.* per dozen.

Ivies, in variety, 6*s.* per dozen.

„ Irish, 3*s.* per dozen.

Lantanas, 3*s.* per dozen.

Lobelias, 6*s.* per 100, 1*s.* per dozen.

Mesembryanthemum cordifolium fol. var., 12*s.* per 100, 2*s.* per dozen.

Mimulus, in variety, 3*s.* per dozen.

Myosotis, 6*s.* per 100, 1*s.* per dozen

Pæonies, white, blush, crimson, and other splendid shades, 6*s.* to 9*s.* per doz.

Pansies, Show, 25*s.* per 100, 4*s.* per dozen.

„ bedding (about 20,000 to select from), 12*s.* per 100, 4*s.* per dozen.

Pentstemons, 25*s.* per 100, 3*s.* 6*d.* per dozen.

Phloxes, 25*s.* per 100, 3*s.* 6*d.* per dozen.

Pelargoniums, Show, Fancy, or French, 6*s.* to 9*s.* per dozen.

Pinks, 25*s.* per 100, 4*s.* per doz.

Potentillas, double, 9*s.* per doz.

Polyanthus seedlings, 5*s.* per 100, 1*s.* per dozen.

„ to name, 6*d.* each.

Primroses, double, 4*s.* to 9*s.* per dozen.

„ old double velvet, 1*s.* 6*d.* each.

„ single, assorted colours, 2*s.* per dozen.

Pyrethrums, double, 6*d.* to 9*s.* per dozen.

Roses, H P., from ground, 6*d.* to 9*s.* per dozen.

„ in pots, established, 12*s.* per dozen.

Rock plants, 15*s.* per 100, 3*s.* per dozen.

Salvias, in variety, 3*s.* per doz.

Saxifragas, in variety, 3*s.* per dozen

Sedums, in variety, 3*s.* per doz.

„ acre (stonecrops, glaucum, &c., 8*s.* per 100, 1*s.* 6*d.* per dozen.

Stove Plants, 9*s.* to 18*s.* per dozen.

Succulents, 4*s.* to 6*s.* per dozen

Tropæolums, 3*s.* per dozen.

Veronicas, 3*s.* per dozen.

Violas (a good assortment, stock of all the best sort), 8*s.* to 12*s.* per 100, 2*s.* per dozen.

Virgil, all the leading kinds fo planting and fruiting, 30*s.* to 60*s.* per dozen.

Strawberry runners—our collection contains sixty-five sorts : 2*s.* 6*d.* per 100.

Apples, Pears, Plums, and Cherries, pyramids, 12*s.* to 18*s.* per dozen ; dwarf trained, 18*s.* to 24*s.* per doz.

The Oldfield Nurseries, Altrincham.

NOTICE.

The Valuable PRIZES offered by

MR. WILLIAM BULL

Will be competed for at the Great Summer Show of the Royal Horticultural Society on June 19.

For Particulars *vide* Schedule of the Royal Horticultural Society, or Mr. William Bull's Catalogue for 1877.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

ZONAL GERANIUM.

With the New Dahlias,

JOHN KEYNES

is now prepared to offer one of the finest ZONAL GERANIUMS ever yet before the Public.

J. K. trusts his long experience and care will be sufficient guarantee for the quality and character of this splendid variety. It was raised by Mr. Wm. Dodds. A great truss of flower, splendid bedder, lively majenta colour, quite a new shade from any other. Has been the admiration of all in the beds at Salisbury.

"JENNIE DODDS,"

Price 18s. per dozen. One-third off where twelve or more are ordered.

SALISBURY.—April 22, 1877.

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18*s.* to 30*s.* per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12*s.* and 18*s.* per doz., or £5 per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded, £5 to £7 10*s.* per 100, or 18*s.* per dozen.

ANTHONY WATERER,
KNAP HILL NURSERY, WOKING, SURREY.



Pine-Apple Nursery, Maida Vale, London, W.

F. G. HENDERSON AND SON are now sending out the following plants—several of which are being offered for the first time. See the May Bedding and Soft-wooded Greenhouse Plant Catalogue for descriptions, which will be forwarded on application :—

PELARGONIUM Queen of Stripes, large flowered section, with Carnation-like striped flowers.
„ Ivy-leaved Nemesis, the finest coloured in the group.
„ „ Dame Blanche, very delicate colour.
BOUVARDIA ROZZII, new species.
LOBELIA Fine-apple Gem and Princess of Wales.
MIKANIA SCANDENS VARIEGATA, a useful plant.
CUPHEA MINIATA IGNEA, brilliant.
DACTYLLIS ELEGANTISSIMA AUREA, fine.
MIMULUS, a collection of new colours, and double-flowered.
VERBENAS and PETUNIAS, new colours and varieties.
SALVIA SPLENDENS BRUANTI, the finest.
ABUTILON DARWINII TESSELATA, useful.

SEED—the best quality that can be grown—of Calceolaria, Cineraria, Primula, single and double; Cyclamen, Pansy, &c. See Advertisement May 5, or our SEED CATALOGUE, for prices, &c.

QUANTITY and QUALITY.

NEW ROSES, IN POTS.

TEA and NOISETTE ROSES, IN POTS.

CLEMATISES, IN POTS, of best New and Old Sorts.

ORCHARD-HOUSE TREES, IN POTS.

VINES, IN POTS.

Also, by far the largest and most carefully grown Outdoor NURSERY STOCK in this part of England.

LISTS FREE.

EWING & COMPANY,
THE ROYAL NORFOLK NURSERIES, EATON, NEAR NORWICH.

STRAWBERRY,
THE DUKE OF EDINBURGH
(MOFFAT).

THE LAWSON SEED AND NURSERY COMPANY (LIMITED),
EDINBURGH and LONDON,

Have made arrangements with Mr. Moffat, Coldwells, to send out, for the first time, the above-named splendid Strawberry. Fruit very large, firm, and of excellent flavour, bright scarlet colour. A most prolific bearer, and as a main crop for market purposes it is unsurpassed.

Strong Plants, 42s. per 100; 25s. per 50; 15s. per 25; 9s. per dozen.

Trade Price on application.

1, GEORGE IV. BRIDGE, EDINBURGH; 54, BISHOPSGATE ST. WITHIN, LONDON.
April, 1877.

NEW DOUBLE WHITE VIOLET, "BELLE DE CHATENAY."

Awarded a First-class Certificate by the Horticultural Society of France.

We offer this magnificent Viola for the first time. The flowers are pure white, most delicately perfumed, of immense size, and very double; in fact, almost equalling in size the well-known white Aquilegia.

It is pronounced by French horticulturists to be the very best double white Violet in cultivation.

Trade price on application.



The raiser says: "This new Violet will be appreciated as a Market Gardener's and Florist's plant, as it blooms most freely and continuously."

The illustration is from some specimen flowers, which are of natural size. We can strongly recommend this Viola as a charming addition to the popular group of flowers.

Trade price on application.

Price, 4s. 6d. each (Post-free 5s.).

THE QUEEN'S SEEDSMEN, *Carters'* HIGH HOLBORN, LONDON, W.C.

NEW ENGLISH-RAISED SEEDLING ROSES.

MESSRS. PAUL & SON,
THE OLD NURSERIES, CHESHUNT, N.

(THESE NURSERIES ESTABLISHED IN 1806),

Have great pleasure in announcing as a continuation of the series of English Roses raised or sent out by them since 1860, inclusive of LORD CLYDE (Paul & Son), DUKE OF EDINBURGH (Paul & Son), CHESHUNT HYBRID (Paul & Son), ANNIE LAXTON (Laxton), DUKE OF CONNAUGHT (Paul & Son), &c., &c., and containing never a bad one in the lot,

TWO NEW ENGLISH SEEDLING ROSES.

H.P. EMILY LAXTON (Laxton), a large full flower with globular, pointed bud, opening into large globular flower. In the way of Monsieur Noman, but of a rich cherry-rose, deeper and fuller than that kind, and with strong vigorous habit, making a grand pillar Rose.

First-class Certificate Royal Horticultural Society; First-class Certificate at the Leeds and Crystal Palace Rose Shows, and 1st Prize at Exeter for twenty-four of any one kind.

H.P. MARCHIONESS OF EXETER (Laxton), clear, rose-flushed, light cherry-rose, large, finely built-up flower, very sweet, and of strong vigorous growth; a larger more double Annie Laxton, yet perfectly distinct from that kind.

Plants in pots of the above, ready early in June, 7s. 6d. each, 14s. the two varieties; Blooming Plants, in 24-pots, 10s. 6d. each, 20s. the two varieties.

The two kinds described above have been proved two seasons at Cheshunt, and can be recommended as continuing the race begun by this raiser with H.P. Annie Laxton.

PAUL & SON,
THE OLD NURSERIES, CHESHUNT, N.
(These Nurseries Established 1806.)

Chrysanthemums, Dwarf Summer-flowering VARIETIES.

ROBERT PARKER begs to announce that he can supply the above-named in twelve distinct varieties, by the dozen, 100, or 1000, price, 9*d.* per dozen: 50*s.* per 100. Special quotations for larger quantities. For lines, masses, or clumps in mixed borders, these take a first rank among flowering plants.

Exotic Nursery, Tooting, Surrey, S.W.

Come and See.

My Thousands of

FUCHSIAS, VERBENAS, GERANIUMS, PHLOXES, COLEUS, PENTSTEMONS, DAHLIAS, and BEDDING VIOLAS and PANSIES: they are now just right for shifting on, and will make a grand display all the season. H. CANNELL will send in good plants—

	s.	*d.*
50 FUCHSIAS, all distinct varieties, for	12	0
50 VERBENAS, finest Auricula-eyed and delightfully fragrant, for	7	6
50 GERANIUMS (Zonal), distinct varieties, for	12	0
50 GERANIUMS (mixed classes), distinct, for ..	12	0
50 PHLOXES, beautiful distinct varieties, for ..	15	0
25 PENTSTEMONS, all the best, for	6	0

COLEUS, the best twelve 2*s.* 6*d.*

DAHLIAS, the best Show and Fancy, 3*s.* per dozen, 20*s.* per 100. (All H. C.'s selection.)

LOBELIA ERIOR, the best of all, 2*s.* 6*d.* per dozen, 15*s.* per 100. All the best Bedding VIOLAS and PANSIES; names and prices per dozen, 100, and 1000, on application.

H. CANNELL begs to intimate that his FUCHSIA MISS LUCY FINCH is the most remarkable variety sent out for many years, and will afford the utmost pride and pleasure whenever seen. For description and illustration see H. C.'s FLORAL GUIDE, sent free for twelve stamps. Fine plants, post-free, 2*s.* each; established, 3*s.* This would create quite a sensation in any show, and its blooms are immense.

H. CANNELL has now many thousands of the various varieties of the family of FORGET-ME-NOT. Distitflora is now a splendid sight. Fine young plants, 12 inches across, full of bloom, 12*s.* per 100.

Grand addition for Carpet Bedding. MENTHA P. GIBRALTARICUM was greatly admired wherever seen last season, and pronounced by all to be a decided acquisition. 100 cuttings post-free, for 5*s.*; fine young plants, 7*s.* 6*d.*, strong established, 14*s.* per 100: special price per 1000.

	s.	*d.*
HARRISON'S NEW MUSK	1	6 each.
NEW DOUBLE WHITE LOBELIA ..	1	0 ,,
,, ,, MOTTLED ,, ...	1	0 ,,

The two for 2*s.* 6*d.* post-free.

H. CANNELL has probably the most complete collection of Bedding Plants in the Kingdom, and has had the honour of supplying the splendid public grounds at Brighton and Rhyl, and most of the finest gardens in England, and would be glad to give special quotations for any quantities.

Swanley, Kent.

CRANSTON'S NURSERIES.

ESTABLISHED 1785.

SPECIALITIES.

ROSES, FRUIT TREES, CONIFERS.

Address — CRANSTON & CO., KING'S ACRE, near HEREFORD.

TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.

WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above; also of his

MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

FOR SALE, Six large AZALEAS, and some STOVE and GREENHOUSE PLANTS, suitable for Exhibitors. Apply, by letter, to H. W. T., Crowe Hall, Bath.

New Plants for 1877.

B. S. WILLIAMS'S ILLUSTRATED NEW PLANT CATALOGUE for 1877 is now ready, and will be sent, post-free, to all applicants.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15*s.* to 18*s.* per dozen.

,, extra size, in 6-inch pots, for Greenhouse, set with buds, 24*s.* per dozen.

,, extra size, in 8-inch pots, for Greenhouse, set with buds, 30*s.* to 36*s.* per dozen.

,, Half Specimens, 5*s.* to 7*s.* 6*d.* each.

NEW FRENCH ROSES of 1877, 30*s.* per dozen.

HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36*s.* to 42*s.* per dozen.

CRANSTON'S NURSERIES, KING'S ACRE, near HEREFORD.

Address—CRANSTON & CO.

THE NEW SEEDLING ROSE, "QUEEN of BEDDERS" (NOBLE).

See Coloured Plate (after Mrs. Duffield), "Gardeners' Chronicle," May 5, 1877.

Perhaps the finest of all the English Seedling Roses of recent introduction. It is *par excellence* a really Bedding Rose in every sense of the word—requires no pegging down, support, or training of any kind, and is a continuous early and late bloomer.

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that a plant 18 inches high had eighty-four buds and expanded flowers upon it on September 6, 1876.

A constant supply of buds was obtained from early June to November of that year—over five months.

Good Plants are now being sent out in strict rotation at

10s. 6d. each.

Coloured Plates 12. each.

CHARLES NOBLE, BAGSHOT.

DAHLIAS.—The finest Show, Fancy, and Pompon varieties, all true to name, 4*s.* per 100.

J. JACKSON, Nurseries, near Kidderminster.

DAHLIAS, DAHLIAS, DAHLIAS.—2000 of the finest varieties, 4*s.*, 6*s.*, 9*s.*, and 12*s.* per dozen.

PELARGONIUMS, 2000, Show, Fancy, and French, 6*s.*, 9*s.*, and 12*s.* per dozen.

ROSES, 500, in pots, well established, 12*s.*, 18*s.*, and 24*s.* per dozen.

GERANIUM, Wonderful (Smith's), 9*s.* per dozen, strong plants.

An immense stock of STOVE and GREENHOUSE PLANTS of all the leading varieties.

CATALOGUES on application.

HENRY WATSON, Edge End, Briefield, near Burnley.

Cheap Bedding Plants.

H. J. HARDY has much pleasure in offering fine and healthy autumn-struck plants of the following:—

GERANIUMS, Vesuvius, Master Christine, Jean Sisley, Triumphant, Madame Vaucher, and other best Bedding sorts, at 8*s.* per 100 from store, or 10*s.* from single pots.

CALCEOLARIA FLORIBUNDA EARLEA, 5*s.* per 100 from stores.

Package free and carriage paid for 20*s.* worth. Terms Cash.

H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

Please note alteration of Address.

COCOA-NUT FIBRE REFUSE,

AS SUPPLIED TO

CARTER AND SONS, VEITCH AND SONS, WILLS, BULL, DANIELS, EWING, DICKSON, HENDERSON, LAING, &c., &c.

Testimonial from J. Wills, Esq., the great Horticulturist

"To Mr. M. H. BENTOTE. "May 9, 1877.

"Dear Sir,—I have very much pleasure in stating the Cocoa Fibre you have supplied me with, in large quantities, has always given me great satisfaction. Mr. Bause, my Manager at Anerley, considers it the best he has ever used, and the most useful material for propagating purposes, and uses nothing else. Please send me another truckload to Anerley and oblige,

"Yours very truly, "JOHN WILLS."

3d. per bushel; 100 for 20s.; Truck, 25s. Free to rail.

PEAT, LOAM, SILVER SAND,

LEAF MOULD, MANURE, RAFFIA, RUSSIA MATS, &c.

M. H. BENTOTE, NUNHEAD, S.E.

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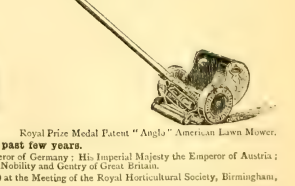
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MR. POSTANS'

PELARGONIUMS

For 1877.

NOW BEING SENT OUT.

Opinions of the Press.

The "Gardeners' Magazine," *April 29, 1876, speaks as follows:—*

"Mr. R. B. Postans' collection of Seedling Pelargoniums, Hybrid Perpetual and Tea Roses, &c., have passed into the hands of Mr. Charles Burley, of the Paradise Nursery, Brentwood. We have before us a box of flowers of Mr. Postans' latest Seedling Zonals, and they are certainly remarkable for quality. We see amongst them huge single flowers of faultless form, and of the most glorious crimson and scarlet colours, and a double white which ought—as we now judge it by trusses only—to sweep all other double whites out of the market. The name of this is Bridal Bouquet."

Editors, "Gardeners' Chronicle," *April 21, 1877.*

"Mr. C. Burley, of the Brentwood Nurseries, has sent us flowers of some very striking new varieties of Zonal Pelargoniums. Amongst them is one called Purple King, which is the most pronounced purple shade of any which we have yet seen, and, according to Mr. Burley's statement, is one of the most profuse of flowerers. It comes in fine large trusses, is of medium size and of good form, the colour a crimson-magenta, the under petals especially being flushed with purple. Its fine colour, neat zonal foliage, and free-flowering habit should make it welcome as a bedder. Magnificent is an exquisite flower, larger than the foregoing, better shaped and more refined, with a crimson flush more pronounced and predominant, though the purple is apparent. Beethoven is a very large, pure, dense crimson-scarlet, entirely self-coloured, and thus has an exceedingly rich effect. Sir Edward Landseer, said to be a fine bedder, is similar in colour to the last, and, like it, is a bold telling flower. Hogarth, Charm, and Mozart are fine rosy scarlets, not very different in the shade of colour. We have here a highly meritorious batch of novelties."

From "Gardeners' Magazine," *April 21, 1877.*

"ZONAL PELARGONIUMS.—CHARM AND MOZART.—Cultivators of Zonal Pelargoniums should not fail to secure Charm and Mozart, two varieties raised by Mr. Postans, and now being distributed by Mr. Burley, of Brentwood. Charm has flowers of large size, with broad overlapping petals, and trusses of goodly proportion; the colour is a rich shade of purple-crimson. Mozart has flowers of huge size and superb form, and of a rich maroon-crimson shaded with purple-magenta; the trusses, as in the case of the variety first-mentioned, are of large size, and very freely produced. Both varieties are remarkable for their compact free branching habit and adaptability for specimen culture. Several other varieties from the same seed-bed are offered, and are no doubt highly meritorious, but these are so exceedingly good that they will deserve to have special mention made of them."

"Gardeners' Magazine," *May 5, 1877.*

"MR. POSTANS' ZONAL PELARGONIUMS.—The splendid collection of new Zonal Pelargoniums purchased from Mr. Postans by Mr. Charles Burley, of Brentwood, have for some time past been flowering freely, and delighting, sometimes surprising, all who have seen them. It is sufficiently well-known that the raiser of these varieties secured, by his painstaking care, several special strains, of which the series producing the white-edged leaves and white flowers may be mentioned as an example. He was not less successful in establishing a race of true Zonals, combining flowers of immense size and substance, and of the most delightfully accurate form, produced in great globular trusses, with plants of neat habit, robust enough, but well within the bounds of free growing. These are now flowering finely in Mr. Burley's Paradise Nursery, Brentwood, and should be seen at home by collectors of Zonals, because of many of the kinds Mr. Burley has strong plants in which the characters are well developed, so that one can judge what they are capable of when fairly well-grown for the conservatory or exhibition stage. The following have been specially noted as distinct and splendid, such as amateurs of this useful flower would do well to become acquainted with quickly:—Beethoven, Charm, Magnificent, Polyphemus, Purple King, Mrs. J. C. Quennell. *S. H.*"

New Double White Pelargoniums.

"BRIDAL BOUQUET."

The *Gardeners' Magazine,* April 29, 1876, speaks as follows:—"Mr. R. B. Postans' collection of Seedling Pelargoniums, Hybrid Perpetual and Tea Roses, &c., have passed into the hands of Mr. Charles Burley, of the Paradise Nursery, Brentwood. We have before us a box of flowers of Mr. Postans' latest Seedling Zonals, and they are certainly remarkable for quality. We see amongst them huge single flowers of faultless form, and of the most glorious crimson and scarlet colours, and a double white which ought—as we judge it by trusses only—to sweep all other double whites out of the market. The name of this is 'Bridal Bouquet.'"

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"WHITE WONDERFUL."

A truss was sent to Mr. C. TURNER, who writes as follows:—"The Royal Nurseries, Slough, August 11, 1876.—Many thanks for truss of your double white Geranium, White Wonderful, a very good name, for it is a wonderful good variety, the best I have seen by far. Will be sent out next spring."

Mr. B. S. WILLIAMS, of Victoria and Paradise Nurseries, Upper Holloway, writes, August 10, 1876:—"Your box containing flowers of Geranium to hand. It is the best thing in that way I have yet seen. White Wonderful."

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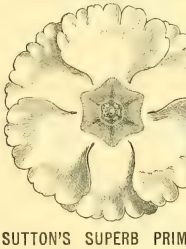
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From MRS. A. ALLERTON, *Prittlewell, May* 8.

"Our Cinerarias this year (from your seed) are splendid; they far surpass any I saw at the Botanical Gardens yesterday."

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From W. EDWARDS, Esq., *Wellington, January* 21.

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From A. E. RUSSELL, Esq., *Dalnabreck, July* 10.

"My Calceolaria plants, from seed purchased of you last year, are particularly fine, of very compact habit, and beautiful in colour."

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SATURDAY, JUNE 2, 1877.

BLAIR ATHOLE.

BLAIR ATHOLE'S green pastures lie alongside the Garry and the Tilt, midway between Birnam Hill and the Pass of Drumouchter. We propose to offer a brief description of the park and policies, preceding our account by a short historical notice, to remind the reader of the stirring annals of the country we are engaged upon. In the case of a residential property such as the above, this kind of narrative seems necessary to a correct appreciation of the subject. The market value of a place must be obviously dependent upon its position, and in some degree it is affected by its history. The house of Shakespeare, or any other great man, like mighty Cæsar, "dead and turned to clay," would fetch a long price, and Blair Athole, haunted as it is and teeming with historic memories, is the more valuable from its characteristic *genus loci*, which must influence all who visit this famous spot.

The district of Athole is unique in having preserved its name and boundaries from the earliest period of Scottish history. It was one of those seven ancient provinces which were ruled over, each by its own Maormor, or chief, before the Saxon title of earl had been introduced. Its first earl was Donald Bane, a cousin of Edgar Atheling. There were four earls of Celtic race, and after them three daughters of the last earl took the title in turn, with the estates, by a rule of female succession, which obtained then and is now rare. On the accession of the daughter of one of these three countesses she contracted a marriage with John de Strathbogie, which was followed by heirs male till 1314, when the twelfth in succession revolted against Robert the Bruce, and forfeited the earldom. There were then recreations and extinctions till the year 1437, when one of the political misadventures of the period befell this peerage in the forfeiture of Earl Walter, and the removal of his head from his shoulders. In 1457 James II. raised his half-brother, Sir John Stewart, to the vacant earldom, and in 1595 it passed by marriage to the Murrays.

The earls of the house of Murray became marquises in 1676 and dukes in 1703. They were Jacobites, as a rule, owing to their Stewart blood, and in 1689, at the period of the battle of Killiecrankie, 1200 of their men stood before the Castle, then the head-quarters of Dundee, and toasted King James in their Glengary bonnets, which, in the absence of whisky, they dipped in the Banovy, a burn running through the park. In 1745-6 the Government garrisoned the Castle, and Lord George Murray, the Duke's brother, and the devoted Lieutenant-General of Prince Charles, besieged it, and fired red-hot shot upon his father's roof from the park where, as a boy, he must have often sported.

It is supposed that at the close of the Rebellion the owners of the ancient fortress were desired by Government to modify its architecture, for in 1750 Duke James replaced the turrets, embrasures, and bartisans of his feudal residence by a modern roof, and converted it into one of the finest hunting *chateaux* in Europe. We may observe here that the original castle was erected by a member of that very energetic family of Comyns, who counted among their notabilities a Red Comyn, besides

unnumbered black and blue Comyns, battered in the wars. In an illiterate age this name was variously spelt, like that of Steward, Stewart, or Stuart; in modern English it is written Cumming.

To complete our short history. At a critical period towards the close of the last century, when the Highlands of Scotland came forward nobly in defence of king and country, the fourth Duke of Athole was one of many magnates who raised a regiment on his own lands. The present corps of Athole Highlanders originated in a body of men who were equipped by the late Duke, then Baron Glenlyon, to attend him at the Earl of Eglinton's tournament in 1839. Three years later, when he was almost blind, the same noble Duke once more summoned his men to meet the Queen, on the occasion of her Majesty's first visit to Dunkeld and Scotland. They encamped on that occasion, 870 strong, within the ornamental grounds of Dunkeld House. In 1844 the Athole men again guarded the person of the Queen during her residence at Blair Castle.

There are at least 7000 red deer in the Forest of Athole, and the hunting entertainments are historical. We pass on to an account of our walk with the deputy forester, to whose guidance the Duke's wood manager, Mr. McGregor, obligingly commended us after showing us the famous Larch woods of his own district, near Dunkeld.

Entering the park by the grand entrance in the village, where we admired the lodge and lofty iron gates and approach wall, but not the narrow avenue of Scotch Fir and Limes leading to the house, we turned into Tiltside Walk, and then through a circular lawn or bowling-green planted round with Larches of 50 and 80 cubic feet, and each standing on sufficient space to attain its natural growth. From this magnificent grove a turf walk through trees and the ever-popular Portugal Laurel, leads to the low southern wall of the kitchen garden. The Hercules Walk skirts this low wall, and leads on to the Castle by a broad walk, planted on each side with various ornamental shrubs and evergreens. There is about half a mile of pleasant turf walk from Tiltside to the lawn. The most interesting trees are some old Hornbeams of weeping habit, and a rampant Larch throwing out a great side limb at 15 feet from the ground. The kitchen garden with its curling-pond fills a gentle valley running east and west, and a high wall, with a vinery in the centre, shelters the garden on the north and affords a favourable aspect for fruit. Upon the lawn there is a Picea nobilis planted by the Princess of Wales, and a Pinus Nordmanniana planted by the Prince in 1872. A Larch candelabrum on the lawn forms an interesting example of the freaks of vegetation.

The Castle is a good house of three storeys, an excellent example of the Scotch baronial style, lately enlarged and improved, but unfortunately plastered over with a wash of sand and lime, in imitation of certain uncouth old buildings, such as Stirling Castle, which appears, from the carse below, the poorest palace in Britain perched upon the noblest site. We are here at the opposite extremity of the meagre Fir and Lime avenue, and it must be admitted there is an awkward huddling of the woods in the park, and a want of harmony between the near and distant landscape. The mountains and the home scenes have not, at present, been so skilfully linked together as a Loudon or a Paxton would desire. Blair is not perfect, but a good house on a noble lawn and bold slope, with woods and forests and the Grampians in the rear, cannot easily be spoilt, and the few surrounding defects only serve to show that every man is not his own best gardener, because the eye so soon becomes accustomed to blemishes about home. *H. Evershed.*

(To be continued.)

New Garden Plants.

STAPELIA GIGANTEA, *N. E. Br.* (fig. 112, p. 693).*

Stems 4—8 inches high, 1—1½ inch thick, somewhat clavate, pubescent, erect, shortly decumbent at the base, and there branching, four-angled, angles compressed, with short, erect teeth. Pedicels stout, pubescent, 1 inch long (in Gerrard's specimen). Calyx lobes lanceolate-acuminate, pubescent, 5 lines long in the dried specimen, probably 6—7 lines long when fresh. Bud pentagonal, ovate-acuminate. Corolla very large, 12—14 inches in expanse; the pubescent back is pale green, the face is rugose, pale yellowish, suffused with reddish across the corona, everywhere marked with irregular, transverse, brownish red lines, the entire surface sparsely covered with very pale, short (about two lines long) hairs. The lobes are lanceolate-acuminate, 5—6 inches long, about 2½ inches broad, 9—11-nerved, with (apparently) revolute margins, fringed with 3—4 lines long pale hairs. Ligulæ spreading, dark purple-brown, broadly linear-oblong, slightly dilated at the shortly 3-toothed apex, the middle tooth subulate and more projecting than the broad, rounded, lateral teeth. Rostra and their alæ of about equal length, dark purple-brown—the former erect, straight, rather stout, the latter broad, wing-like, oblong obtuse, somewhat spreading.

This Goliath of its genus is a native of Zululand, where it was discovered by Mr. R. W. Plant not very long, I believe, before he died in that little known part of South Africa.

My present description of this fine species is based, partly, upon two excellent drawings of the plant in the Kew Herbarium—one coloured, the other in pencil, executed by Mr. J. Sanderson, of Natal. That in pencil (of which the accompanying woodcut is a reduced copy) bears the following inscription:—"R. W. Plant's Stapelia; brought by him from the Zulu country; flo. Attercliffe, 10th Ap., 1860"—partly upon a dried flower in the Kew Herbarium (Gerrard, 717), which, likewise labelled "Natal," was probably collected in Zululand, as Mr. Gerrard also botanised in that country; but whether of Natal or Zululand origin this specimen is undoubtedly the same species as that represented by Mr. Sanderson's drawings. It has shrunk very considerably in the process of drying (as do all Stapeliæ), but even now it measures 9½ inches in expanse; the parts of the corona are spoilt by the pressing, and only the form of the ligulæ and alæ can be satisfactorily made out; they, however, agree well with Mr. Sanderson's description of them. For the rostra I have had to rely entirely upon his drawing. Although the corolla is represented as glabrous, and the lobes few-nerved in the drawings, this is easily reconcilable with the hairy corolla and 9—11 nerved lobes of Gerrard's specimen, for when fresh the hairs on the surface of the corolla are not always very apparent, unless they are dense, or long, or differently coloured, and besides being difficult to represent without making them too conspicuous are easily overlooked, as I suspect has been the case in this instance. As to the difference in the number of nerves, it is only the more strongly marked ones that are visible on the face of fresh flowers.

My reason for supposing this plant to be in cultivation is as follows:—Mr. T. Cooper, the well-known collector and introducer of many South African plants, during a visit to the Botanic Gardens, D'Urban, in August, 1862, was attracted by a fine flowering plant of Stapelia by Mr. McKen (the then curator of the gardens), who told Mr. Cooper that after the death of Mr. Plant in Zululand his effects were "brought in" by the Kaffirs. Among them was this Stapelia, which he (Mr. McKen) said produced flowers 9—12 inches in diameter. Mr. Cooper was presented with a portion of the plant, which he brought to England, and has now in cultivation. Cuttings of it were distributed, under the name (suggested by Mr. McKen) of Stapelia Plantii, to several Stapelia cultivators, among others to Mr. W. W. Saunders, and through him to the Royal Gardens, Kew (the latter one is now dead); but it has not flowered in either of these three collections, yet, from Mr. McKen's statement, I have little doubt that it is the same species as the one here described and figured, and I shall be very glad to learn if it has flowered in any other collection.

The collection at Kew contains a plant sent home by Mr. McKen in 1862 from the Umvelos River, Zululand, which, from the resemblance of the stems to Mr. Sanderson's drawings, and taking into consideration the source from whence it came, must, I think, be the same species. Although Mr. Cooper distributed his plant under the name of S. Plantii, it must not be confounded with the true S. Plantii, Hk. f., figured and described in the *Botanical Magazine*, t. 5962, which is a very different species, with flowers not one half the size of those of S. gigantea. *N. E. Brown, Kew.*

MASDEVALLIA (SACCILABIAT.E) RADIOSA, *n. sp.**

It was last April when I first saw this Chimeroid Masdevallia at the Royal Exotic Nursery, Chelsea. It made one think, notwithstanding the very different colours, of Sir Trevor Lawrence's M. psittacina, but the lip brings it close to M. Houtteana, from which the radiating lamellæ of the lip and the surface of sepals (and the colours) distinguish it at once. It is not just an extra beauty. Its flowers are two-fifths of the size of those of a good M. Chimæra (Wallisii). The tails are very dark, almost black. The outside of the flower offers a surprising variation of brown and yellow, very difficult to describe. Blunt and dark in the backside of the three primary vascular bundles, internally the upper parts of the sepals are almost light ochre coloured. The larger inner part looks blackish purple, from being densely covered with blackish spots on a purplish ground. The petals are whitish with a brown blotch at the base, and the muriculate callus on the plate-like top is of a blackish sepia colour. The lip is white, with the upper surface of the radiating dissepiments reddish colour, whitish, with a few fringes at the black apex.

I have only had three fine flowers, and have found to my astonishment a young flower-bud near the old ovary involved in the bract of the second flowers.

It was discovered in New Grenada by Mr. Wallis. It appears to be No. 655 of his sketch-book. If so, it has been found at a 8000 feet, near Frontino. Mr. Wallis distinctly states it looks so very much like M. Chimæra (Wallisii, of course), that he had confounded both before he had seen this flowering. I have to thank Messrs. Veitch for very satisfactory materials. *H. G. Rchb. f.*

ZYGOPETALUM CLAVII, *n. hybr.*†

The inflorescence of this nice new hybrid (of course I have only the inflorescence at hand) is that of well-known Z. crinitum. The sepals and petals, however, are not blotched at all, on a green ground, but they are totally brownish purplish, with a very narrow green border. The lip has unusually small basilar auriculæ adnate to the callus which is whitish, with bluish violet stripes, free from any velvety lines, and the cuneate ovate blade is totally free from any velvet, and beautifully purplish blue, so that it has the full colour of Zygopetalum maxillare (mandibulare, Gautieri). The column is nearly that of Z. crinitum. The bracts are decidedly smaller than those organs in the species just named. This very interesting new hybrid was raised by Colonel Clay, The Slopes, Wallasey, Birkenhead. It is crinitum × maxillare. I have to thank Mr. S. B. Williams, Victoria and Paradise Nursery, Seven Sisters Road, Holloway, London, N., for it. The young plant made its first public appearance, as it appears, on April 21, at the monthly meeting of the Royal Botanical and Horticultural Society, Manchester. There Colonel Clay, whose name the young beauty so well bears, had a First-class Certificate (see *Gardeners' Chronicle*, May 5, *l.c.*, p. 571). It is a great pleasure to see the Manchester gentlemen appreciating so high and so well horticultural work, horticultural performance, horticultural skill, now-a-days so often overlooked.

The plant made its London *début* at the Royal Horticultural Society, May 1 (see *Gardeners' Chronicle*, *l.c.*), on the golden letter day, the Queen's day. It stood there exhibited by Colonel Clay, and was awarded a Second-class Certificate. *H. G. Rchb. f.*

GONGORA CHARONTIS, *Rchb. f.*‡

A strong, big, rounded, shining bulb, with great leaves, and producing a hairy spike with numerous gay flowers. Sepals and small petals yellow, spotted with

* *Stapelia gigantea*, N. E. Brown.—Ramis erectis clavatis, basi breviter procumbentibus, 4—8 poll. longis, 1—1½ poll. crassis pubescentibus tetragonis angulis compressis, dentatis dentibus brevibus, erectis; pedicellis crassis, 1 poll. longis pubescentibus; corolla maxima, diam. 12—14 poll.; lacinis lanceolatis acuminatis; subtus pallide virescente, facie rugosa, totaque pilis pallidis brevibus parce hirsuta, pallide flavescente, fusco-rubris transversis notata; ligulis dilatatis atropurpureis late lineari-oblongis, apice subdilatatis breviter tridentatis; rostris absque atropurpureis, subquadratibus, illis erectis strictis, his latis alariformibus, oblongis, obtusis subpatentibus. Hab. in Zululand. Plant! Gerrard No. 717!

* *Masdevallia radiosa*, n. sp.—(Saccilabiatæ): foliis cuneato-oblongo-ligulatis acutis, pedunculos excedentibus uni(3)—trifloris viridibus; bracteis minutissimis; bracteolis nullis; ovario pedicellato breviori, perigonio cupulato, abbreviato; sepalo superiori ovato-lanceolato, sepalis lateralibus connatis in caudas semet ipsis longioris extensis; sepalis ipsis apices versus barbellato-asperis, ceterum dense verrucoso-asperis; tepalis petalisque ovato-triangulatis, apice peltato-patellatis callooblongo in disco muriculato; labelli hypochilio utrinque angulato, intus profunde sulcato, epichilio subhemisphærico, limbis implicitis, lamellis radiantibus 11; columna apice dentibus 2 auctis, basi curva.—Nova Granata, Wallis. Excoluerunt domini cel. Veitch Londinenses. *H. G. Rchb. f.*

† *Zygopetalum Clayi*—(maxillare × crinitum).—Hab.tu Zygopetali criniti: bracteis minoribus, sepalis intus brunneis cum maculis nullis, labelli auriculis parvis glaberrimis, lamina cuneato-oblonga glaberrima purpureo cærulea (non striata 9 omnino calva. Cetera Z. criniti.—Hybridum excultum a. chiarecho Clay, The Slopes, Wallassy, Birkenhead. *H. G. Rchb. f.*

‡ *Gongora Charontis*, H. G. Rchb. f., in *Garcke Linnæa*, xli., p. 110, 1876.—Pseudobulbis rotundato-conicis; foliis amplis petiolatis oblongis acutis, racemo pluriflore, bracteis triangulo setaceis, ovaria pedicellata longe non æquantibus; sepalis oblongis triangulo-acuminatis, basi tessilibus, sepalo impari cuneato-oblongo acuto basi columnæ adnato, tepalis

brown. Lip white, its apex and basilar wings rich yellowish, spotted with crimson, as is the white column. The flowers are half the size of those of old G. atropurpurea. It was discovered long since in New Grenada by Mr. Gustav Wallis; it has, however, only reached Europe in a dried state, and I had not the least idea of its gay appearance (gay, of course, for an old-fashioned Orchidist, who does not confine his love to flowers of one-third of a foot in diameter painted in white, scarlet, purple, or crimson). I saw it in April at Mr. Bull's nursery, where it had been sent by Mr. Shuttleworth from New Grenada. *H. G. Rchb. f.*

CYMBIDIUM GIGANTEUM, *Wall.*, LOWIANUM.

This appears to be an uncommon plant. Its flowers are larger than those of the old C. giganteum, Wall. (actually rather rare in cultivation), but shorter than those of the well distinct C. Hookerianum I saw (and obtained) some weeks ago with Messrs. Veitch.



FIG. 110.—SHOW PELARGONIUM, AS GROWN FOR MARKET.

The petals of Mr. Boxall's plant are much broader than those of the old species, and the middle lobe of the lip is longer. Dry rachises of the inflorescence prove it to have eighteen to twenty flowers, which Mr. Boxall says are of a greenish colour, with the top of lip maroon or deep claret coloured. It may even prove to be a new species, yet I do not dare to speak about this question from my materials actually at hand. Garden botanists should be judged with a certain degree of charitable intelligence; at this moment it is impossible to come to a decision about the question; next year, if it flowers side by side with the old C. giganteum, a clever amateur's daughter, thirteen years of age, may very easily pronounce a sound view. That the possessors may be pleased by an extra surprise, and if they are agreeably surprised they will, I dare say, this time forgive me. The plant is a new Burmese discovery of Mr. Boxall's, and I have to thank for it Mr. S. Low, whose name it bears, decidedly to common satisfaction. *H. G. Rchb. f.*

ONCIDIUM ANNULARE, *Rchb. f.*; *Gard. Chron.* 1875, March 27, 396.

At last this splendid plant has flowered in England! Its blooms are nearly as large as those of D. ænulum and D. macranthum. The chief colour is a rich splendid horse-chesnut-brown. The sepals have an exceedingly narrow yellow border, and the petals are very wavy, of the same shade of brown, but with a broad shining apex and broader border of a very beautiful deep yellow. They are coherent at their top, as if glued together, and form thus a round of a ring: hence the name, annulare. The lip is brown, with a yellow top; the crest with yellow light teeth, two lateral brown disks, yellow centre, and three purplish violet small teeth before the apex. The column is very remarkable for its queer obtriangular little dark wings, and for its base much narrower than the enlarged part immediately under the stigma. For the pleasure of seeing the fresh flowers I have to thank Sir Trevor Lawrence, who kindly informs me that the plant closely resembles, in bulb, leaf, inflorescence, and general habit, Oncidium macranthum. The inflorescence had nineteen or twenty flowers, five of which are at hand. *H. G. Rchb. f.*

DECORATIVE PELARGONIUMS.

ONE effect of the recent exhibitions of Covent Garden produce that have taken place at the meetings of the Royal Horticultural Society at South Kensington is to demonstrate the fact that the 48-pot is a wonderful power in horticulture. It is something marvellous what a market grower can produce in one of these pots, and, whether it be a Hydrangea, Fuchsia, Astilbe, Pelargonium, Erica, or any other of the plants taken to market, there is seen a perfect specimen. The wonder is how so much can be obtained from a root-space so circumscribed. The growing of plants for market is now a science, and each perfect specimen means the successful application of scientific principles. The low houses are constructed expressly for the development of such plants; they cannot be show houses in any sense of the word. A constant unvarying round of attentions making up the cultural process is given with unbroken regularity. They are necessary to the rapid growth and well-being of the plants, and they are applied without stint of labour and time. If any young gardener wished to get a lesson in plant growing, he could not do better than obtain it at one of these plant-producing centres.

Perhaps most striking of all is the character of the decorative Pelargoniums. There are quantities of plants 18 or 20 inches in diameter, and the same or rather more in height, with four or five main stems, with branches springing from these crowned with twenty to twenty-five trusses of bloom—and such trusses!—the flowers large and finely developed. What a capital lesson would be taught if, during the summer months, a few of these plants could be taken to some of the provincial horticultural shows, where Pelargoniums are sometimes produced in such a way as to lead one to wonder the exhibitors could be daring enough to publicly display such productions.

Not only do the growers for market avail themselves of the best productions of others, but they are not slow to endeavour to improve the best they can find to cultivate. Of the older varieties cultivated for market a few good representatives will be found in Mrs. Bradshaw; Digby Grand, a fine variety with crimped edges; Kingston Beauty, a good white; Monte Christo, Rob Roy (Foster), very free; Triomphe de St. Maude, very effective with its bold trusses of large crimson flowers; and Duchess of Edinburgh, a charming light variety, very free and effective.

Of new varieties there are Duchess of Bedford, raised by Messrs. Beckwith & Son, Tottenham, white, with slight pale carmine spot on the top petals, the flowers handsomely fringed, remarkably free of bloom, producing large bold trusses, and having an excellent habit—awarded a First-class Certificate of Merit; and Empress of India, raised by Mr. James Sweet, Leyton, between Digby Grand and Mrs. Bradshaw, having pale lower petals, the upper petals dark flushed with carmine—a very free and valuable variety, also awarded a First-class Certificate of Merit.

Messrs. W. & A. Brown, of Hendon, who are extensive growers of Pelargoniums, have also raised some very fine varieties, a group of which were at the Royal Horticultural Society's meeting on May 2. They were all characterised by a good free branching habit, and as prodigal of bloom as one could well desire a Pelargonium to be. They may be described as follows:—Sultan, dark blotch on top petals, with broad orange-rose margin; carmine-rose and violet lower petals, with very slight spot on each petal; T. A. Dickson, dark top petals, pinkish rose lower petals, dashed with violet, and slight orange and maroon spot, very fine and free; and Challenger, dark top petals, with bright carmine-rose margin; lower petals pale bright violet-rose, very fine and effective. These three may be bracketed together, inasmuch as they resemble each other to some extent, at the same time being quite distinct. They promise to become great favourites for market and decorative work. The remaining varieties were Commander, dark top petals and clear rosy pink lower petals, good shape and highly effective; and Fascination, dark top petals, with carmine and orange margin, clear pinkish rose lower petals and white throat, the flowers small, but borne profusely on bold trusses.

These have only to be known to be in demand as bright coloured decorative varieties. And they are not to be commended merely for market purposes, but also to those whose business it is to have their conservatories and greenhouses gay during the summer months. Colour, habit, free growth, and prolificacy of bloom all unite to make them valuable for the particular work to which they are so well suited. *R. D.* [Our illustration (fig. 110)] exactly represents the style and character of the Pelargoniums grown for market by Messrs. Beckwith & Son and other growers, and was sketched at the exhibition of Covent Garden produce held on April 18. EDS.]

triangulis oblique acuminatis trinerviis minutissimis: labello unguiculato, hypochilii labiis semioblongis antice setiferis, mesochilio ancipiti rhombeo utrinque apice unidentato, epichilio naviculari acuto, omnibus partibus confluentibus; columna clavata.—Ab. affini G. scaphephoro, Rchb. f., Wevv., recedit hypochilii labiis antice longe aristatis. Valde parviflora.—Nova Granata, Wallis! Shuttleworth! (vid. vic. ce is horto Bulliano) *H. G. Rchb. f.*

CULTIVATION AND EXPORTATION OF LIBERIAN COFFEE.

An enormous demand has recently sprung up for plants of this highly important new species—Coffea liberica, Hiern. Large numbers have been sent by Mr. Bull and from Kew to our various Coffee-growing colonies, and supplies have also been given in exchange to most of our leading nurserymen, who could evidently dispose of almost an unlimited quantity. Inquiries have been made as to the best method of home culture, for the express purpose of exportation, so that instructions, according with the successful treatment pursued at Kew, will be found of value to many.

The importation of plants cannot be recommended. A certain amount of time would be gained if at once shipped to destination, but it could only be done at a risk and expense for which no compensation would be got from the few transmitted successfully. All indeed might be dead. The most reliable and cheaper method is to obtain seeds, and send young plants in a proper condition for safe transit. They can be sent in pans, after from nine to twelve weeks from the date of sowing, or in pots about the fifth month ; but to have them in the most robust condition it may be advisable to grow for twelve or fifteen months, a longer time than which would scarcely afford any advantage. Apart from the question of convenience, it is desirable to point out the advantage of each plan, so that choice of process may be made, according to circumstances. All have been successful, as sent from Kew to all parts of the world. The cases are made with an inside superficies of 30 inches by 20 inches, and thus contain fifty-four 3-inch pots—the best and most convenient size. The same case will contain four pans undisturbed, with another turned out to fill up the remaining space, making in all about 250 plants. In this way the largest number may be packed in a given space, but they require to be separated and re-established after arrival ; they may, however, travel perfectly well, and have reached Queensland in good condition. The plants in pots, being older and better established, may be expected to travel with greater certainty, and would have the advantage of being ready established on arrival. Those of twelve or fifteen months' preparation are best for journeys difficult to make and for very long distances. The length of time required for preparation will, of course, depend on the details of treatment, but the above will be found to hold good as a rule.

To receive the seeds in good condition it is important to have them removed from the pulp, otherwise a fermentation is liable to set in, which may destroy the vitality of either the whole or a large proportion. They come perfectly well if tied up in small canvas bags. The exportation of seeds has not been attended with the best results. They travel in moderately dry sand perhaps better than in any other way. Sand is a first-rate material for the packing of many kinds of roots, &c. Charcoal, though somewhat popular for the purpose, should never be used ; long experience proves it of no value, and it may be even worse than useless. For the economy of space, it is a good plan to sow broadcast on a bed of Cocoa-nut fibre—its temperature should be about 85° F. This is a good medium for the germination of seeds in large quantity, as for instance the case of Hevea (India-rubber), which last year covered several beds entirely. The cotyledons will be expanded in about six weeks, and just at this stage the young seedlings should be planted in pans. The word planting is properly used, since from the healthy growth of roots obtained in the fibre, it is impossible to prick off in the usual way, but commencing at one end, row after row must be fixed in with soil. It cannot be recommended to sow in the pans with a view to save labour, as the roots would go direct to the bottom, and there grow in a mass, and it could not be known either how thickly the seeds would germinate. No plants have been sent from Kew that have not been re-established after germination. The soil should consist chiefly of loam, it producing the sturdier plants, and, being more retentive of moisture than peat, is best adapted for transit. During growth a day temperature of 80° to 85° may be maintained, and a syringing may be given twice daily with even an occasional sprinkle besides during bright weather. If with this the soil tends to get dry, then a liberal supply of water should be given. Generally speaking, Liberian Coffee flourishes with high temperature and much moisture, but objection must certainly be made to forcing, it being the object to produce a sound and well-perfected growth. Slight bottom-heat is used with advantage after any disturbance of the roots.

The practice of planting out in the soil of Wardian cases cannot be recommended for Coffee ; indeed, it is better for plants in general to be established in pots of convenient size, and plunged in the soil of the case, thus avoiding the necessity of disturbing the roots. Cases are often packed without sufficient battening down. It is even an advantage to use broad battens ; and in this instance there is no difficulty, all the pots being of the same size. The soil for plunging in should chiefly be of loam, and so moist as not to refuse water after packing. A watering should be given the day before closing down, if not previously done, so as to let the soil drain, and its condition be seen before despatch. The battens should be put in when the soil is firm, some time after the last watering. Ten cases of the size already mentioned will shortly be *en route* for India. They have a span-roof, the angle of which is 2 feet above the floor ; the depth front and back is 7 inches, enough to allow one batten lengthwise over the ends of those across the case. A depth of soil is thus allowed of 4 or 4½ or 5 inches as occasion requires, an inch being sufficient under either pots or plants. Larger cases than the above cannot be recommended, for several reasons. *L.*

THE NUTRITION OF FRUIT TREES.

An article bearing the above heading appears in the *Gardeners' Chronicle* of May 19, which I have read and studied, as I always do any subject treated in the interesting, scientific way of the article in question. At the outset, I may say that I want more information, and am far from being at all satisfied with what is there set forth. It is there stated that most plants, however different, require the same ash constituents. This is the restatement of fact known long ago. Again we are given the analysis of a solution, in which we are told that the Apple, Pear, Cherry, Plum, Peach, Grape-vine, Pine, Fir, Maple, Ash, Elm, Elder, Orange, Lime, Hazel, Robinia, Caragana, Gleditschia, Calycanthus, Ailantus, &c., and vegetables, grew and throve in. Now, I want to know, not only that these plants grew, but if they fruited, and in what manner. It is all very well to say that in a certain solution a certain plant will grow well in, say, for instance, an Apple, but we all know that Apple and other trees will grow in certain compounds in a very vigorous way, and in the same compound, no matter what the treatment, the same trees absolutely refuse to fruit. This is the case even with trees that flower, and no proof need be cited, as such instances must be patent to every one. Now in the article in question no mention is made as to whether the plants spoken of bore and ripened fruit or no.

It is generally believed, and analyses foster that belief, that a plant may require very different salts as the foundation of their seeds than what is required as the foundation, so to speak, of the plants bearing these seeds. For instance, the cereals contain a very much larger amount of silica in the straw than in the grain, while in the grain there is a greater amount of phosphates than in the straw. According to the article in question, silica is only needed in infinitesimal quantities. If so, how is it that the straw of cereals grown in solution, with no silicates or silicic acid, is always very weakly compared with straw grown in solutions containing a sufficiency of silicates. And this is a fact that any one with leisure and opportunity may prove. It follows, at least it would seem so, that silica is wanted in many plants, not "in infinitesimally small quantities," or not at all, but that it is in some plants, and especially in some parts of plants, to be an "essential," and not an "accidental."

Again, it is stated that sodium is so little required that that which is furnished by dust, &c.—whatever the "&c." may mean—is sufficient. This may be so in some instances, but I fail to understand how it can be universally applicable. If sodium is only wanted by plants in the quantities indicated, I am at a loss to understand the effects of it when applied in the form of the chloride (common salt) to the Cabbage tribe in inland situations, and many other genera of plants, such as Potatos, Peas, Beans, and many other plants. I have always found in old soils, and not once or twice, but often, that soda in any soluble form increased the crop and stamina of Peas or Beans. This was always more marked when the salt used was the nitrate, but it was evident in the case of the hydrated carbonate, and, as I have said, in the case of the chloride likewise. From the fact that soda salts, especially in old garden soils, increase the bulk of straw and seeds, I infer that sodium is, at least by some plants, wanted in greater quantities than can be supplied by "dust, &c.," unless the *et cætera* has a greater store of it than the common dust of our fields and gardens.

I fear that the statement that nearly all plants require the same ash-constituents may prove misleading. It is quite true that a table of elements might be written of all the elements found in, and it is quite true that these elements would invariably be found, in the majority of plants. But in one plant a certain element will be found to play a most important part, while the same element in a different plant—sometimes in different portions of the same plant—may be very subordinate. Thus, lime is the main substance found in the ash of Potato haulm, while it is very subordinate in the ash of the tuber, while with potash it is just *vice versâ*.

It seems to me that what we want to know is, not just what substances plants will grow well in, but in what substances they will produce the best results. In the case of vegetables which are grown for the sake of the leaves only, such as Cabbage, Spinach, &c., whatever promotes the most rapid succulent growth is about all we want to know ; but the case is very different in the case of plants cultivated for their fruits or flowers. We all know how to produce good growth in the case of Apples, Pears, and Plums, &c., but nobody has told us yet how to ensure fruit even when the season is favourable. We know that in certain soils fruit trees are perennially fruitful, and in other soils, with equally healthy trees, the crop comes biennially or triennally.

Are we justified in assuming that something is supplied in the case of the perennially fruitful trees which is not forthcoming in sufficient quantity in the case of those only biennally fruitful ? And, if so, have we not a right to ask our scientific men to solve the difficulty for us, and tell us what causes the difference ? Mr. Rivers and others have taught us to produce flower-buds, will somebody tell us how to cause fruit to invariably follow ? *Alexander Honeyman, Hope Park, Denny, N.B.*

THE COCOA-NUT IN QUEENSLAND.

Mr. Barnes' garden is one of the sights of Mackay. It is situated on the north bank of the Pioneer River, facing the town, and is accessible by ferry. A short walk brings you to the cottage and garden, which is partly hid by the trees fringing the river, when a miniature Eden is presented to the enraptured spectator. Groves and avenues of Cocoa-nuts planted in most tasteful manner, with beautiful clean sanded walks, first attract the eye. As you wander through the garden, attention is distracted by the call to look at this plant or that of some rare fruit-bearing tree richly laden.

The area of land under cultivation is 13 acres, containing 1200 Cocoa-nut trees, the cost of which up to the present time has been £70 for nuts alone, not more than 25 per cent. of those planted having germinated ; and as yet no return worth mentioning has been made. The plantation is the result of ten years' labour, performed solely by Mr. Barnes. The first nuts planted were fifty procured from the first labour vessel arriving at this port. Many of these cost as much as 5*s.* a-piece, on account of their having a long shoot growing out ; but these eventually proved not to be the best adapted for producing good trees. Those just budding, or nuts with plenty of milk, are far superior for seed.

Mr. Barnes commenced planting the nuts where he wished the trees to remain, but found this system defective, as the plants have a tendency to grow to the surface of the ground, and many may now be seen apparently on top of the soil, affording but slight resistance to strong winds. The best method is to set the nuts about 2 feet apart, and when the plants are four years old to transplant them deeply into permanent places, at distances of 18 feet apart. At this age, or older, they may be removed with perfect safety. Mr. Barnes says that had he adopted this plan originally he might have saved himself four years' great labour, as an acre of land would have grown all necessary for the plantation.

Experience indicates that sandy soil, kept continually moist, without allowing water to be about,

is best adapted to the growth of the Cocoa-nut. After the plantation is once formed, but little care is needed beyond keeping the land clean. Peaches and other fruits are grown successfully between the Cocoas without apparent injury to either. The trees begin to bear at six years old; some have blossomed at three years, but did not produce good fruit; and others have blossomed up to the present time, being ten years old, and have borne no fruit. Mr. Barnes accounts for this by the rapid growth of the tree, it going all to wood, but believes that they will eventually bear; many of the trees average 30 feet in height, and about 4 feet at the base.

In addition to Cocoa-nuts there are about 400 very fine Date trees in the garden, some of which had a nice lot of ripe fruit of a most delicious flavour. Enormous Melons and magnificent Pines were ripening and rotting in abundance. Grapes, Apples, Oranges, and other fruits, apparently of all climes and seasons, are seen thriving together. But I do not enumerate all I saw and tasted in this garden. *M. C., in the "Queenslander."*

WYCOMBE ABBEY.

WE recently had the pleasure of paying a flying visit to the Buckinghamshire chair-making town of High Wycombe, for the purpose more especially of seeing the Apple trees in bloom in Lord Carrington's kitchen garden at Wycombe Abbey. This kitchen garden is unlike any other that we have seen in almost every particular. It is walled in, with five sides, and is surrounded by large strips of ground for vegetable growing; it lies very low, has a small stream fed by numerous springs running through it, and, lastly, contains a collection of Apple trees which, when we saw them, were for the most part literally covered with blossoms.

THE APPLE TREES.

Many of the trees are at least fifty years old, and average about 6 feet in height, with flat, table-like tops, about 10 feet across, having been kept to this size by judicious pruning of the roots and tops, the latter yearly, the former according to the vigour of their growth. The trees line the sides of the walks, several of them having been brought hence from another part of the kitchen garden many years ago by Mr. Miles, who succeeded in transplanting them with singular success, considering their age at the time. Young trees of new sorts have also been planted and trained in the same style, and many of these have attained the extreme dimensions allowed, as is also the case with others that have been cut back and grafted with better sorts. The trees at first sight have a rather odd effect, but whether we look at them singly or as a whole now that they are in blossom, the floral picture, if formal in outline, is wonderfully rich in the warm and pale rosy tints peculiar to Apple blossoms. The rugged sturdiness and severe formality of these old trees, would, to our thinking, be objectionable features in those gardens which are climatically favoured, and where a due regard for the ornamental is not considered incompatible with more useful requirements; but it is easy to see that, for low ground like this, with water near at hand, and late spring frosts always in prospect, that this is the style, *par excellence*, for the situation. These trees, as Mr. Miles informed us, never fail to carry a crop, except when the trees and flowers are thoroughly wetted with rain or snow, and are then frozen. They are too dense and too heavily laden with blossoms for an ordinary dry spring frost to injure all, and, consequently, it is very seldom indeed that anything like a failure has to be recorded. Amongst the varieties grown are all the best sorts for dessert and culinary purposes, and that being the case it would be useless to name them.

THE KITCHEN GARDEN.

Having feasted our eyes on the Apple blossoms, we had a look round the kitchen garden, and then through the houses, finding all in neat and excellent order, as they should be under a man of Mr. Miles' standing. In the kitchen garden Mr. Miles is a thorough master of his business—as witness his many victories at vegetable exhibitions; and, of course, there are many points in his practice which would be very interesting to our readers, and which we shall hope to lay before them during the coming summer. In the meantime let us remark on the healthiness and cleanliness of the wall-fruit trees, excepting Peaches and Nectarines, which are very much blistered this year, though we are sorry we cannot speak in such favourable terms of the promise of fruit—the blossoms on Apricots, Cherries, and Plums especially having been cut off wholesale. The trees on the walls of Morello Cherries are very fine, and bore a rich promise of abundance, but the crop will be very small. The growth of these trees is kept in due bounds by the heavy crops which they usually bear; and it is a practice with Mr. Miles not to dig the Cherry borders, off which he takes a crop now and then of such flowers as Polyanthus, Pinks, &c. The cleanly appearance of the trees is due to their having been washed, as it were by anticipation, with a decoction of quassia-chips and soft soap, all the trees being washed just before they come into flower, and again as soon as set. The dressing liquid can be made very cheaply, and is most effectual for the purpose.

The growing crops in the vegetable quarters looked exceedingly well, considering the backward season, and we heard Mr. Miles speak in high terms of praise of the new Queen Onion—a thoroughly good and useful early variety which every gardener should grow. After growing many different sorts for several years, Mr. Miles has weeded the list of Onions down to three, and now grows only the Queen, just mentioned, Early White Naples, and the Giant White Tripoli, which come into use in the order named. Another novelty which Mr. Miles has a high opinion of is the Standard Pea, one of Mr. Laxton's seedlings but little known as yet, and which grows about 3 feet high, has handsome pods, and is a remarkably free bearer. Judging by two seasons' experience, Mr. Miles thinks this must become very popular with the market growers. Most of the new varieties of Peas have been tried in this garden, and it has been found that the cream of the marrow-fat section consists of Supplanter, G. F. Wilson, Veitch's Perfection, and James' Prolific, all growers of medium height, rare croppers, and of unexceptionable quality.

FORCING HOUSES.

Coming now to the glass department, which is somewhat extensive, we enter a lean-to range 173 feet long and 12 feet wide, divided into four compartments. In front of this is a lean-to range of pits 200 feet long, devoted to the cultivation of Asparagus, Potatos, French Beans, Carrots, &c. It is on a southern aspect, and Figs occupy the first division; a grand old tree of the Brown Turkey variety trained to a trellis under the glass was carrying a fine crop of fruit; and a shelf on the back wall was occupied with pots of Selaginella uncinata, whose long metallic blue pendent branches are found very useful for decorative purposes in connection with the town mansion. The next compartment contains Peaches and Nectarines, including a very fine fan-trained tree of the Stirling Castle Peach, now quite ripe, and a beautiful crop. The other trees are of the Elruge Nectarine and Violette Hâtive Peach, the latter of which is found to be not early enough, and is to make way for the more certain Royal George. Two other compartments in this range are also occupied by Peaches and Nectarines, the first containing trees of the Royal George and Belle Bauce Peaches, the last-named being a very fine variety for such work, and the Violette Hâtive Nectarine; and the second Elruge Nectarine and Royal George and Noblesse Peaches, the latter being the light-coloured variety in cultivation, so remarkable for its grand flavour. At the top of the range of Peach-houses is another, 70 feet long by 6 feet wide, unheated, which contains Peaches and Nectarines, including a tree of the Salway, a desirable variety for such a house.

Range No. 2, also lean-to, 130 feet long, and with a south aspect, is devoted exclusively to Grapes, and is undergoing the process of rebuilding on a larger scale by easy stages. When finished this will be a grand range of houses, being constructed on sound principles, and with good lengthy rafters. The actual dimensions of each of the new compartments that have been finished are, length, 20 feet; width, 18 feet; and height at the back 15 feet; and the wires on which the Vines are trained 17 inches from the glass, this space allowing a free current of air between the glass and the top of the foliage, which almost entirely prevents the leaves from being at any time burnt or scalded. The first compartment we entered was the earliest, and occupied with Black Hamburgh and Muscat of Alexandria, very old Vines, in fine health and carrying good crops of useful sized, well-coloured bunches of fruit. The Muscats were particularly good for a first house, and fully ripe. The second compartment, which is undergoing renewal, contains a capital lot of Muscats only; then comes one of the new set, in which the permanent Vines are of Buckland Sweetwater, Foster's White Seedling, one of the very best white Grapes in cultivation, and much more certain than the Buckland; the White Tokay, Black Alicante, Barbarossa, Trebbiano, and Black Hamburgh. The young canes are doing well, and already carrying a few good bunches of fruit. This is followed by a division in which are planted Black Hamburgh, Golden Hamburgh, Foster's Seedling, Buckland Sweetwater, and Venn's Muscat, all in flower; and lastly, an old house containing a dozen canes of Lady Downe's, old Vines, which are making a strong growth, notwithstanding that they were last year root-pruned. Standing in this house were also a dozen or more good-sized specimens of that exceedingly useful Orchid, the old Dendrobium nobile, the flowers of which are in demand for cutting, and also a number of pots of Canadian Wonder Beans, which come very fine in the pods from this time onwards, but are not trusted for early work, the old Black Negro doing this duty well.

A fine sized half-span house, lately erected, 50 feet long, 20 feet wide, has been planted with Alicante and Lady Downe's Grapes, and with Figs on the back wall, the available space being occupied with a very strong lot of plants in pots of the Stamfordian Tomato, a free fruiting and large-sized variety—a great improvement on the old red. Near to this is another compact half-span-roofed structure, 42 feet long, 12 feet wide; and in front of this a lean-to Strawberry pit, the same length, and 7 feet wide, with Melons in the centre bed. These have succeeded winter Cucumbers. This is the second crop of Melons, and the varieties grown are Reid's Scarlet-flesh, Strathfieldsaye Green-flesh, and Cox's Golden Gem. Melons, like Pines, are grown by express here. They must grow quickly and ripen quickly, a regular succession rather than a heavy crop being the requirement; and with this in view only from three to four fruits are allowed on each plant, and as soon as these are set all others are pinched off and the plants pushed on to a successful termination of their duties.

In the same house as the Melons are several plants, with ripe and ripening fruit of great size, and plenty of them, of the old red and the improved Stamfordian Tomatos, grown in pots with unbranched stems, from 4 to 5 feet high. The next house, a similar one to the last, contains a few good Queen Pines, to ripen next month, more Tomatos in pots, and a crop of Melons coming on in front. Amongst the Tomatos we noted a seedling differing from all the others in the extra size and grand form and colour of its fruits; a much improved selection, the seed of which should not be lost.

In addition to the foregoing are several small but very useful half-span-roofed structures, all of the same size, viz., about 26 feet long, 10 wide, and rather low pitched. One of these contains Pines, chiefly Queens, which were potted into their fruiting pots on July 3 last, being put in as suckers in the previous month of May. They are a fine sturdy lot of plants, showing fine sized fruits, which will average about 5 lb. Mr. Miles expects them to be ripened and cleared off in two months' time. They are potted in a good strong loam, mixed with a few half-inch bones, with wood ashes thrown over the drainage, and occupy 11-inch pots. The plants do not make a large growth, but it is short and sturdy, and only one sucker is allowed to develope on each plant. At the back of the house are a set of Cucumber plants in full bearing, the variety being the Hedsor Winter Prolific, a medium-sized smooth variety of the Syon House type, raised by Mr. Lynn; and standing on one of the retaining walls are several plants of the Hungarian Pepper plant, Paprika—a Capsicum of fine size and rich deep crimson colour, worth growing for its ornamental appearance, leaving the usefulness of its fruit out of the question.

The Pine-house is followed by one containing a stock of young fine-foliaged plants for table decoration, and a few useful Orchids for cutting from; and this is succeeded by another Pine-stove, the plants in which were only potted a few weeks ago. The sorts are Black Prince, Enville, Smooth Cayenne, Prince Albert, and Lord Carrington. Another stove contains Queens only, half of which were potted into their fruiting pots last autumn, and some of them are showing their fruits

now, the remainder having been kept in 5-inch pots through the winter and potted in the spring. Next comes a fruiting Pine stove, in which is at present a sort of scratch crop of Melons and Cucumbers. The Melons are the first crop, some of the fruits having been cut. For this crop Mr. Miles grows the Eastnor Castle, Victory of Bath, and Cox's Golden Gem varieties. As with the others, early and quick is the order of the day, consequently only from two to three fruits are allowed to ripen on each. The Cucumbers, Hedsor Winter Prolific again, are growing at the back. In other Pine pits proper are a mixed lot of fine plants to fruit in the autumn, including four very strong ones of Lord Carrington. The last of this series of houses is devoted to early Vines, which ripened a sort of fluke crop in January last, since which they have been cut entirely back, and are fast breaking again, and has since been used for forcing Strawberries, being occupied at the time of our visit with Presidents, carrying a splendid lot of fruit. The plants were put in here just after they went out of flower, and they have had plenty of time to come on without driving, the result being fine-sized fruit of unexceptionable flavour.

Amongst other things which Mr. Miles always shows remarkably well are Cherries, and the Cherry trees grown under glass in a house 55 feet long are three in number, the varieties grown being Elton and Black Circassian. These are all large trees, growing against the back wall of a narrow structure with an upright front, with ventilators at the bottom and movable lights at the top. The two largest trees were carrying a fine crop of large, beautifully coloured, and delicious fruits. Mr. Miles considers these one of his most useful fruits. He began to gather about May 10, is almost certain of a crop every season, and considers that they cost but little or nothing to grow. He has lately introduced a plant of Governor Wood, which gives great promise of proving a valuable acquisition.

Space forbids our alluding to the grounds and plant-houses, which, with the vegetables, must form the subject of another paper; and, concluding now, we can only say that any one going to Wycombe Abbey to see good fruit and vegetable growing will not come away disappointed, but, like ourselves, pleased with what we saw, and quite satisfied that Mr. Miles is able to maintain the high position he has won in the gardening world.

THE ODONTOGLOSSUM-HOUSE AT TRENTHAM.

No one can form the slightest idea of the beauty of Odontoglossums, and especially of white Odontoglossums, without seeing them in quantities. To talk of O. Pescatorei for instance, with maybe a score of flowers, may be all very well until the talker is brought in contact with possibly a host of them, combining in all not far off a thousand blossoms. This is no mere stretch of fancy, but a reality which the visitors who may be privileged to see the Trentham Odontoglossum-house can now or within the next week or two see. The house into which I was ushered (which by the way is a different one from that old double house in the outer half of which the Lapageria alba grows to such perfection) was a low, sloping, lean-to, with a path up the centre and a table in front extending to 85 feet lengthways wholly covered with cool Orchids, and chiefly with Odontoglossum Pescatorei and O. Alexandræ. The racemes were bending gracefully from partial supports, and completely covered the vista from one end of the house to the other. I confess I never saw such a sight in this way, and no more lovely bridal Orchid house, I venture to submit, is to be found in England.

Well, these Pescatoreas—I mean, O. Pescatorei—ranged from branching racemes of sixty-nine to shorter ones of twenty flowers; and as some of them are distinct varieties, and as varieties are the chief objects catered for now by all Orchidophilists, I would submit four out of the forty in bloom as being worthy of varietal distinction.

O. Pescatorei grandiflorum.—Fine close-racemed sort, with great individual flowers; segments over-lapping each other like a good Phalænopsis amabilis, each segment shaded pink and white, more pronounced in the division next the column; an occasional crimson spot marks the segments, and it is bearing now sixty flowers to a spike.

O. Pescatorei formosissimum.—Very long racemed variety, too heavy to bear its own weight without a stout stake; sepaline and petaline segments of each flower white, with an occasional stain of soft pale purple and also a soft purple shaded blotch; labellum of the usual formation, also white ground correspondingly spotted and blotched. Altogether a most beautiful variety, with twelve subsidiary branches, totalling up sixty-nine flowers to a spike.

Odontoglossum Pescatorei elegantissimum.—Sepals white and soft pink in almost equal divisions, and as if partitioned by square and rule; petals pure white; labellum pure white, which with a prominent yellow callus renders this a most striking variety; the labellum, too, instead of being saddle-shaped like the normal form, is roundly ovate, and, from a florist's point of view, will be all the more admired.

Odontoglossum Pescatorei picturatum.—Sepals pale rosy pink and white, suffused as if washed together on a palette; sepals white ground, with stains of crimson, chiefly in the centre; labellum white, with crimson spots on either side of calli, the most sanguineous-looking of the whole family, and of the finest formation.

One other variety of distinguished excellence, this time in O. Alexandræ, is roseum.—Sepals and petals very heavily suffused with rose on white ground, the petaline segments a little torn at the upper margin; labellum cordate acuminate, with yellow blotch on calli, and a great Indian-red blotch in centre of the lip, with subsidiary spotting crowding around it: a most distinguished variety from a colour point of view, and totally distinct from most of its compeers. It is not so long in the branchless raceme.

There were many other good things in flower—one, Odontoglossum Hallii, in particular—and two or three Masdevallias, but nothing could touch the maiden-like beauty of this wealth of white tooth-tongue Orchids; and of course a word of congratulation and praise is due to Mr. Stevens for being the curator of so excellent a batch. *James Anderson, Meadowbank Nurseries, Uddingston.*

DRUMMOND CASTLE.

UNFORTUNATELY for us the time at our disposal, when we paid a hurried visit to Drummond Castle in September last, was so brief, that we had no time to accurately note all its contents, but thanks to the valued assistance of Mr. McDonald, who has been gardener here for nearly forty years, we are enabled to present our readers with a plan of the magnificent flower garden (fig. 111), which was barely alluded to in our last issue. According to our guide-book, *The Beauties of Upper Strathearn*, by Dr. Charles Roger, which we prefer to quote rather than trust our memory, "the far-famed flower-garden is immediately under the southern part of the Castle rock, and is approached from the esplanade by flights of steps communicating with three architectural terraces, beautifully formed out of the steep bank, and adorned with the most delightful shelves of shrubbery. Viewed from the esplanade, the fairy scene beneath has been well compared to a piece of the richest natural embroidery; the garden, which is of an oblong form, and includes about 10 acres, being here seen at one view, with all its statues, vases, verdant and gravel walks, beautiful parterres and enchanting shrubberies. And what adds to the gratifying feeling is the satisfaction that no boisterous breeze can injure or affect this lovely Eden, sheltered as it is on every side either by the Castle rock or lofty trees. With the most exquisite taste it is made to combine in highly harmonious unison the first-rate qualities of three great styles of European landscape decoration—the picturesque grouping of the Italian, the Dutch method divested of its fantastic distortions, and the gaudy elegance of the French. So successful, indeed, have been the efforts of the noble proprietors to make it the *beau ideal* of horticultural beauty that competent judges have pronounced it according to its scale the first garden in Britain, and not surpassed, when the highly interesting nature of its situation is considered, by any garden in Europe. Two broad walks of verdant sward run diagonally across the garden from the north-west to the south-east angle, and from the north-east to the south-west angle, intersecting one another in the centre, and thus throwing the general plan into the form of a St. Andrew's cross. A walk encompasses the four sides, and three others run directly across the breadth, one passing through the centre. The whole is then divided into parterres laid out in every conceivable form of beauty, and containing every floral treasure known in our climate. . . . The walls of the terraces are decorated with beautiful creepers . . and antique statues and vases—all of which at great expense were sent from Italy by the present noble proprietors—are tastefully erected in every part of the garden, and serve to produce the most imposing effect. In the centre a sun-dial, about 15 feet in height, and containing about fifty faces, indicating the hour in every direction, is an interesting object. It was erected by John, the second Earl of Perth, who originally laid out the garden, and whose death took place in 1662."

We believe we are correct in saying that the design of the garden was considerably improved many years ago by Mr. Kennedy, of the old firm of Lee & Kennedy, of Hammersmith. Referring now to the plan, with a view to indicating the nature of the planting in general terms, we may say that the large circles at either end are filled—1, 2, 3, 4, 5—with different species of hardy Heaths; the two beds numbered 6 are filled with flowering plants in summer; and No. 7 are designs of the family arms in Box; No. 8 is the sun-dial above alluded to; and the four triangles around it, as well as the spaces marked 10, 11, and 12, are devoted to bedding plants. The large spaces numbered from 13 to 17 inclusive are occupied by Rhododendrons, which have grown to a great size; the large spaces at each end, numbered 18, 19, and 20, are devoted to Portugal Laurels; the sections immediately in front of the dial, numbered from 21 to 24 inclusive, are occupied solely with Ghent Azaleas; while on either side of the diagonal walks, and that numbered 25, are long borders of herbaceous plants, and the two oblong borders 26 are filled with Roses. The most prominent feature of all is the tall, closely-clipped pyramidal Box, Junipers and Holly trees, which are dotted along the sides of the grass-walks.

Foreign Correspondence.

SPRING IN THE BALEARIC ISLANDS.—*May* 16.—My annual Mediterranean excursion has led me this year to the Balearic Islands, situated on the coast of Spain, between 39° and 40° latitude, which I have long wished to explore. I left Barcelona Monday, May 7, at 4 P.M., in a good-sized steamer, which makes the passage to Palma (the capital of Majorca) weekly, and arrived the next morning at 6. The distance is 130 miles. The steamer being good and large—800 tons—the passengers did not suffer much, although the sea was rough. Since then I have been perambulating the islands of Majorca and Minorca in every direction, with great pleasure and interest.

MAJORCA.

Majorca is the largest of the Balearic Islands, as its name implies. It has an irregular bay-indented coast, the north side running from north-east to south-west; the greatest width is 45 miles, the greatest length 60 miles. Its distance from the nearest point of the mainland of Spain is about 120 miles.

Along the northern coast, from north-east to south-west, runs a ridge of mountains, principally composed of limestone, which rises to a height of from 1000 to 5000 feet, with a depth of from 10 to 15 miles. These mountains protect the interior of the island to a considerable extent from north-west winds, but it is entirely open and exposed to the north-east. At the east extremity of the islands, north, there is another block of mountains, which cannot be of much use as a protection from the north-east or the south-east winds, but must serve to precipitate rain in abundance from the moisture-bringing sirrocco, or south-east wind, after its passage across the Mediterranean Sea.

Between these two ranges of hills there is a vast fertile plain, nearly on a dead level, but slightly elevated above the sea.

Such are the elements of climate at Majorca. It is an island situated in the very centre of the Mediterranean Sea, with two ranges of mountains, not very high, and not very deep, running from east to west on the north, and a block of mountains at the east, enclosing an interior level area, or plain, with all the characteristics of a limestone soil. In other words, the soil is adapted to grain crops of all kinds, to fruits, and to Vine cultivation. The mountain ranges ensure a heavy fall of rain in autumn and spring; in autumn when the north winter winds set in, and, laden with the moisture collected in passing over the sea, impinge on the cooler mountain elevations; in spring, when the warm moisture-laden winds from

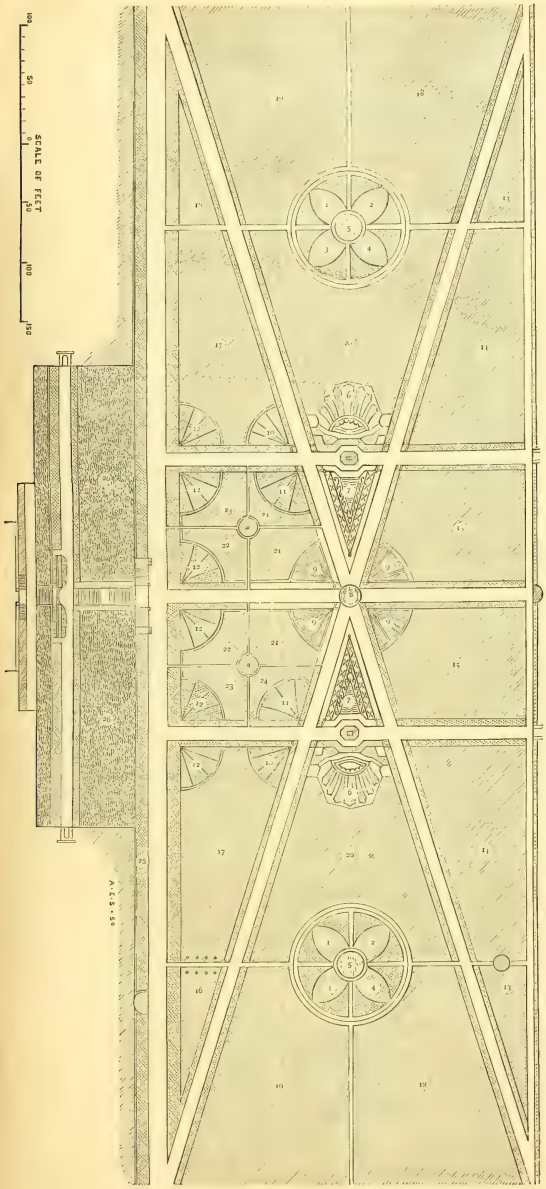


FIG. 111.—PLAN OF THE FLOWER GARDEN AT DRUMMOND CASTLE.

the south-east and the south-west replace the north winter winds, and bring summer weather with them. In summer there is little or no rain, for the mountains become too hot to precipitate the moisture contained in the winds, either north or south.

The power of the sun being great, from latitude, the heat is intense during the summer months, notwithstanding a gentle sea breeze which extends far into the interior. Already (May 15) the sun is all but perpendicular above our heads, and its rays are unbearable, as we feel it where I am writing, without protection—seated on a rock in the shade, 200 feet above the sea, on the outskirts of the beautiful bay of Soller, looking north, the temperature is 75°. Throughout my excursion this was the average temperature by day—about 70° at night. The above meteorological elements contain all that is required to make Majorca an exceptionally favoured specimen of the Mediterranean insular climate, both as regards agricultural, horticultural, and botanical products. They may be resumed in a few words—abundant autumn and spring rains, moderate protection from northern winds, intense heat and dryness in summer from April until October, with, no doubt, heavy dews at night, owing to a marine atmosphere.

Majorca is thickly populated, its central plain being studded by villages and towns, the inhabitants of which are maintained by the product of the land. Every inch of the plain is cultivated. It is divided into fields, or separate properties, large and small, by thick stone walls some 3 feet high, made of the limestones collected out of the fields in the process of cultivation.

FRUIT TREES, &c.

The tree products of the soil are Olive, Carouba, Fig, Almond, and Apricot trees. They are planted at 20, 30, or 40 feet distance one from the other, so that the sun reaches the soil around and under them. The soil is also everywhere cultivated with cereals—bearded Wheat and Barley, occasionally Oats, with Potatos and other green crops, principally Beans. I saw but few Vines, but was told that they exist in numbers, and that a good deal of wine is made in some districts.

The system of cultivation, I was told, is to grow cereals one year, the next green crops, the third the ground is allowed to remain fallow. Sheep or cows are pastured on the natural grasses during the fallow winter, the land being broken up by the plough in the spring previous to re-cultivation with cereals in autumn. This is the system followed all over the Mediterranean area. The cereal crops seemed to me generally poor and meagre, both as to height and ears, but the general product must be considerable, as every crevice and cranny is cultivated, even including holes amongst rocks bursting out of the soil.

The fruit trees seem to constitute a very important part of the produce of the land in every region. The Olives are innumerable, and more remarkable for their extreme age than for their size. We have larger Olive trees on the Genoese Riviera, but they can hardly vie with the Majorca ones in the outer evidence of age. They seem to be as old as the Flood, and are rent, twisted, divided, broken, torn in every conceivable and inconceivable shape, representing demons, monsters, dragons, and reptiles. They often only leave one, two, or three healthy young branches, like young trees growing out of a hideous mass or wreck of misshapen roots and timber, the remains of a noble tree one or two thousand years ago. These young, fair branches reminded me of old men's children—fair to look at, but with no hold on life. The produce of oil is immense, but it is carelessly prepared, and is anything but savoury to outsiders.

The Carouba or Locust trees are fine, vigorous, large trees, as large as fifty or eighty years' Oaks, covered with an abundant dark green foliage; many are very old, and twisted like the Olives. Their presence in such vigour is another evidence of intense heat and dryness in summer, as they are only found growing luxuriantly in the hottest and driest parts of the Mediterranean, such as Syria and Palestine. They produce abundantly a large bean, contained in a pod which grows directly on the trunk and branches in a very odd manner. This bean is most valuable for feeding horses and cattle in general. Carouba trees are very numerous in Majorca, interspersed among the Olive trees, and are grown for their produce, not for ornament, which is little if at all thought of in the Mediterranean.

The Fig trees are also very large and very numerous. They are often quite timber trees, and as large as those which I saw at Aidin, near Ephesus, in Asia Minor, from whence are gathered the Figs we receive from Smyrna. These Figs must be an important article of diet as well as of export. One large Fig tree, with its double crop and abundant produce, suffices for the wants of a large family. A few Figs, or any fruit, with a piece of bread, make a luxurious meal for the poorer inhabitants of Southern Europe.

The Apricot trees are large, beautiful timber trees, often as large as forty or fifty year Oaks, covered with dense lovely green foliage, and produce fruit in profusion. It is just beginning to ripen, but is small and flavourless. The Apricot is clearly suited to a very warm and dry climate. I found it, on former occasions, growing as a timber tree in Murcia, in the driest and sultriest part of Spain, and also in Algeria, near the desert. In these regions it grows to a size, and to a beauty of which we have no idea. No wonder that its branches constantly die off in our hyperborean climate; the wonder is that it lives at all in the open air. These trees, however, are not very numerous in Majorca, and are generally planted near farmhouses and villages, no doubt for the personal use of the inhabitants. As the fruit does not keep they can have little or no trade value.

The Almond trees are also very numerous, and Almonds must form an important item of export. They are principally grown in groves or orchards in some localities. They form large, often fine trees, although their habit of dividing into two or three large branches near the ground is not conducive to tree beauty.

Cereals grow and flourish in the sultriest climates, merely because their growth is over and the harvest is garnered before the sultry weather begins. Thus on May 12 I found that the cutting of Barley was becoming general in Majorca, and it was evident that in a week or two the "bearded Wheat" would be ready for the sickle, which, by-the-by, is the only harvesting implement used. A few ears of Barley are held in the left hand, and cut with the right. In the Mediterranean basin the spring rains generally end early in April, but by that time the cereals have their roots deep in the ground, and can conclude their vegetative career without any further supply of rain. The grain is ready for harvesting by the middle, the end of May, or by the first week in June at the latest, by which time, only, the very hot weather of the South begins. Thus it is that bread is always good in these regions of Europe, the grain crops never being spoilt by untimely rain, as in the North. Thus it is that cereals can be grown successfully in the hottest parts of the earth, as in the oasis of the desert of Sahara. Thus it is, also, that in dry summers in England, when pastures fail, there is generally a good grain crop.

MAJORCA ORANGE CULTURE.

All over the western Mediterranean splendid large Oranges are sold as Majorca Oranges. They appear earlier than those grown on the Genoese Riviera or at Valentia and other parts of Spain, and are more expensive. One of the objects of interest in my excursion to Majorca was to investigate the Orange groves, and I expected to find the island stocked with them. To my great surprise, after passing several days in travel—after crossing it in various directions, from north to south, and from east to west—I had scarcely seen an Orange tree. I inquired, therefore, whence all the Majorca Oranges could possibly come from, and was told that they all came from one region, the valley of Soller, situated in the north mountain range, about 20 miles from Palma. To Soller, therefore, I determined to go, taking a carriage, as the road is good.

For the first 12 miles, travelling due north, we merely passed through a portion of the central plain already described. We then reached the base of the northern mountain chain, ascended a series of zig-zags, and crossed the ridge at an elevation of 1500 feet. On looking down at our feet we saw a marvellously beautiful amphitheatre, formed by mountains from 2000 to 4000 feet high, which encircled a beautiful valley teeming with vegetation. This was the celebrated valley of Soller, all but entirely occupied in its lower area by groves of Orange trees, whilst up the sides of the surrounding mountains crept a forest, first of Olive trees, up to an elevation of 1200 feet, when they were succeeded by a forest of Ilex and Aleppo Pine, which nearly reached the summit.

Thus did I learn, by ocular demonstration, that the far-famed Oranges of Majorca, instead of being the produce of the entire island, as generally supposed, are merely the produce of a natural orchard-house, occupying an area similar to the bottom of the crater of an extinct volcano, with sides several thousand feet high, and with only one small outlet northward to the sea. Indeed, I should have thought that the Soller valley was really an extinct volcanic crater, had it not been that the mountains, as far as I saw, were entirely limestone.

It was much warmer at Soller than at Palma, or in the centre of the island, or than at Minorca, which I had recently visited, and it soon became evident to me that this valley in summer must be a natural oven, stove, hothouse. The rays of the sun being nearly perpendicular in summer penetrate just as directly into a crater valley as they would on a plain, while the heat is confined and increased by refraction. Orange trees are tropical trees, which rejoice in tropical climates, so that the intense summer heat of this shut-up valley no doubt agrees thoroughly with them and accounts for the excellence and precocity of the fruit.

Unfortunately the glory of this once happy valley seems about to depart. Nearly all the oldest and finest trees, and many of the younger ones, are dying, gradually but assuredly, of a fell disease which I found a few years ago in the Orange forest at Mellis, in Sardinia, and to which the name of "Secco," or dry disease, is there given. The terminal branchlets become dry and brittle, and die. The drying and death extends to the larger branches, and eventually to the trunk, and the entire tree dies. I was told at Millis that this disease only attacked non-grafted trees—trees grown from seed, and never or scarcely ever trees that had been grafted. I have examined many of the Orange trees here, diseased and healthy, and can find no trace of their having ever been grafted. Can this explain the death of the trees here, which threatens to ruin the country? I am told that the value of the annual export of Oranges alone amounts to above £30,000. Not knowing Spanish, and getting on principally by signs, I was not able to discuss these questions with the natives at Soller. A Palma gentleman, however, who owns an Orange orchard at Soller, told me that the Sardinian statement holds good in Majorca, the diseased trees are non-grafted.

I would mention that it appears the universal custom here to cultivate the ground under the Orange trees up to their trunks, principally with vegetables. May not the ground be thus exhausted during the summer growth of the trees, and may not subsequent heavy dressings in winter, with a view to remedy the exhaustion of the ground by the superficial crops, still further injure the trees?

From my experience in very many parts of the Mediterranean shores and islands I think I am warranted in saying that the Orange tree cannot stand wind at all, from whatever quarter. It certainly is only successfully cultivated between four stone walls, as at Malta, or in folds, depressions, cavities—sheltered, protected from the wind, as in Sardinia, Corfu, and Majorca. Its wonderful fertility, the immense number of fruit it produces, evidently enables a very small but sheltered locality to play a great part in the commercial production of Oranges. I have often thought that good Oranges might be produced commercially in England. Certainly the Orange tree is as manageable as the Vine, and bears confinement equally well, only it must be submitted to great summer-heat to bear good fruit, and the expense of the necessary summer-heating might destroy profit, which, however, is great. The Soller Oranges were sold this winter at 16*s.* the thousand.

THE SOLLER VALLEY.

The really magnificent Soller valley and mountain amphitheatre is connected by a narrow pass with a second amphitheatre, still grand and majestic, although on a smaller scale, which forms the port and harbour of Soller, about 3 miles from the town. The mountains which form the sides open to the extent of about a third of a mile, to let in the sea, which forms the port. The latter presents about a mile and a half in circumference. The sea entrance completes the circle. In this beautiful little port there is a small jetty, deep water, and all but perfect shelter.

The mountains slope up gradually all around to a height of about 1000 feet, and from the lighthouse which limits the western sea angle the view is indescribably beautiful; indeed, I have scarcely in any part of the Mediterranean seen anything as beautiful as the view looking landwards. The two amphitheatres of mountains, rising one above the other into the clouds, the smiling, quiet, little lake-port at our feet, with its rocky channel winding towards the sea, fill the mind of the observer with admiration. Seawards the entrance to the port widens out, and is protected by bold, frowning, precipitous headlands, which terminate abruptly in deep water. The mouth of the harbour channel is wide, and smilingly offers shelter and protection, but woe betide the ship that went astray and struck on the frowning rocks. It would be heard of no more.

I spent two days on these rocks with a companion, I am happy to say, and recognised the vegetation of the warmest regions of the Mediterranean limestones, various species of Euphorbia, including the dendroides, Cneorum tricoccum, Juniper, several species; Aleppo Pine, Rosemary, Lentiscus, Smilax aspera, Alaternus, wild Olive, &c.

In concluding this brief sketch of the spring vegetation of Majorca, I would add that I saw but very few flowers, cultivated or wild. The wild ones were, no doubt, things of the past, burnt up by the sun, for it had not rained for a month. I only saw a few patches of the commonest cultivated garden flowers at Palma, and in the garden of a nobleman in the interior Carnations, which are much prized and cultivated all over the Mediterranean for winter decoration and for placing in the hair of the young women; Nasturtiums, Stocks, Delphiniums, Hollyhocks, Bengal Roses, garden Poppies, Marigold, white Lilies, Pansies, and that is all. There are a few Date Palms here and there in the island, but being useless they are not cultivated. *J. Henry Bonnet, M.D.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—The Fern-house should now have more air, in order to solidify the young growth as it is made. The almost incessant cold winds we have had so long through the spring has prevented the admission of air in sufficient quantities to such plants, and where the precaution has not been taken of keeping the atmosphere somewhat drier than usual, so as to counterbalance the effects of an insufficiency of air, the growth is sure to be correspondingly weak and drawn. More shade also will now be required than at any other time of the year, not only on account of the sun attaining its maximum power, but the young fronds that have through the spring, and in the case of many species are still being, freely produced, are less able to bear direct sunlight than when they get older. In the cultivation of Ferns generally there is nothing more common than to see them grown too soft by keeping the atmosphere too moist and over-shading. So treated the plants usually have a taking appearance, by the deep green colour the fronds assume as they stand in the house, but if required for a conservatory, room decoration, exhibition, or cutting, they cannot possibly receive a worse preparation than by being kept too moist and over-shaded. A very unusual occurrence is to see Ferns on an exhibition stage full of luxuriant growth, yet so tender and fragile as to suffer to an extent that seriously disfigures them even by the friction of their own matured fronds, or shrivelling up by the effects of the sun. The same thing occurs, after being so grown, when they are used for home decorative purposes, but its injurious effects are never so clearly seen as in the case of Ferns required for cutting for bouquets and other floral arrangements, where they often flag and have a miserable look before they have been cut many hours—than which there are few things more tantalising, for instead of adding elegance to the flowers with which they are associated, they spoil the effect of the whole. This is more particularly the case with Adiantums, the fire best of which for cutting are tenerum, formosum, pulchellum—for vases and baskets, and cuneatum and gracillimum for bouquets; for the centre portion of a bouquet the latter has no equal when grown so as to stand without flagging. The best way to deal with these plants is to grow them up from a small state until they get to a useful size under ordinary Fern-house treatment, after which put them in a shady corner in the warmest end of a greenhouse or any other situation where they will not receive more warmth with a much drier atmosphere than in the Fern-house. Here the fronds will not grow to above half the size that they attain in a Fern-house, but they will keep as fresh and plump when cut with their stems in water for a week as when growing. So grown the fronds are a much lighter green.

Tree Ferns that have fully completed the growth of their first lot of spring fronds may have some of the old ones cut away, which will be an advantage if they are at all affected with scale or

thrips, but in this matter the operator should be guided by the strength of the plants; any that are weak, or have been recently imported and not yet got fully established, should never so much as have a single frond removed whilst there is any vitality in it, as the removal whilst at all green has a weakening influence that tends to diminish the size of the fronds that are produced afterwards. For this reason, with rampant growing species, either planted out or in pots or tubs, in houses where there is a deficiency of room, if the knife is used freely in thinning the mature fronds more or less the plants can often be kept within the required limits; this particularly applies to such vigorous-growing kinds as Cyathea medullaris, Alsophila excelsa, Cibotium Schiedei and regale, or any others that are outgrowing the situation in which they are placed. A very great mistake is often committed in planting Ferns out. With the unlimited root-room thus given them it is next to impossible to keep them within bounds, and prevent their smother-ing the weaker-growing kinds. Much root-space with these plants is totally unnecessary, as by a liberal use of manure-water they may be kept for years in a vigorous condition, and the size of their fronds be regulated by the frequency and strength with which it is used.

To grow Ferns with any degree of satisfaction they must be kept clear from insects. The worst pests that affect them are thrips and brown-scale, and for the next three months, where these at all exist, they will increase apace, especially where more heat is applied than the plants require. Many of the most elegant species of Ferns, such as the Cheilanthes and Nothochlæna, and many Adiantums and Aspleniums, are often grown very much warmer than they should be; where these plants are confined in stove heat, frequently much too dark and with insufficient air, the growth is long and weakly, and the plants are so predisposed to the attacks of thrips that it is next to impossible to keep this pest down upon them, whereas if grown cooler little difficulty would be experienced. Nothing contributes more in giving an elegant finished appearance to a vase of cut flowers than a few long pieces of the old Selaginella uncinata or Lycopodium cæsium: to have this in condition to stand well, the plants should be grown in pots or baskets hung up to the roof, where the pendent growths they make are thus sufficiently hardened to stand for days in water, and independent of their being so used the plants improve the look of any house in which they are so placed. *T. Baines.*

FLOWER GARDEN, ETC.

As this is the most important time of the year for the arrangement and planting of the flower garden for the season, considerable thought is required so to arrange the beds as to give the greatest amount of satisfaction, in all cases. The blending of colours depends upon the taste of the artist; the stock of plants at his disposal has also considerable influence in guiding him to certain ends. Planting must now be persevered with, beginning as far as possible with those plants that are best established in the pots, and most able to resist some amount of cold, reserving the more tender things until all the others are finished. Opportunity should be taken of dull or damp days for planting the more delicate-rooted things, which has a marked effect on their future well-being. As all hands will be occupied with the planting the regular work is very apt to fall behind at this busy time, but the planting must have especial attention until all is finished, after which the general work must have its due amount of care. Lose no opportunity of keeping the grass regularly cut, for it always grows fast at this time of the year. Any spare time may be well employed in looking over the Roses, for I find that the worm-i'-the bud is getting troublesome, and, like all other pests, the sooner they are got rid of the better. Any climbing plants that require nailing or tying will need to be looked over, as the high winds which we have lately had, and may have at any time, are apt to break over the tender shoots. Dahlias had better have their stakes put in as soon after planting as time can be found for the purpose, as the roots then are not so likely to receive injury as they are after having been in the ground for some time. Keep the place as tidy as circumstances will allow, until time can be found to get all put in regular order again. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

STRAWBERRIES IN POTS.—Another season's experience with these subjects confirms us in recommending the following kinds as being still unsurpassed for the purpose:—Keens' Seedling, President, Sir Joseph Paxton, Sir Charles Napier, Dr. Hogg, and British Queen. Vicomtesse Héricart de Thury is also a commendable sort in many respects; while La Grosse Sucrée, to which we adverted in the Calendar last year, as being a desirable kind for early work, has maintained its repute in that respect, but owing to the acidity of the fruit, which likewise possesses a soft texture, it is not likely to become a general favourite, or ever to supersede the Keens' Seedling. The reputed character of Garibaldi, if it be distinct as a setter, even under adverse conditions and at an advanced season of the year, is such as to outdo all others in this respect, and therefore it is worthy of notice. From young vigorous plants a supply of runners will be obtainable at an early date; as these plants cannot be secured too early either for pot cultivation or for planting-out into beds or otherwise, they should therefore be layered immediately they are fit: for this purpose a sufficient number of 3-inch pots and pegs should be ready, and a quantity of well-enriched soil should be run through a medium-sized sieve and be placed together where it will not become dry. Water the plants at once after layering, and if this matter is well attended to by all means let the pots be fully exposed to natural influences, as by so doing a speedy root-action will take place; and before the roots become too thickly matted together in these pots they should be placed in 5-inch pots for fruiting, using on this occasion about three parts loam to one part of well decomposed manure; these materials should be in a moderately lumpy condition. Continue to plant out the best of the plants which have fruited which are required at the earliest moment, and those which have not yet fruited will succeed in frames or pots far better than in any dry house. *G. T. Miles, Wycombe Abbey.*

THE CHERRY-HOUSE.—The main point in this department, when the Cherries are ripe, will be their preservation in the best condition for this object the house should be freely ventilated at all times without suffering the fruit to become wet, and if any sunny weather prevails, if a shading can be applied it will be an immense advantage, and if the borders in the house are sprinkled occasionally under such conditions it will also be beneficial. Recommence syringing the trees when the fruit is gathered, and employ any other means which may be necessary to keep insect pests in check; this is especially necessary in order to keep the foliage healthy as long as possible, so as to prevent a premature ripening of the leaves at the end, which is fatal to the subsequent crop of fruit. *G. T. Miles, Wycombe Abbey.*

VINES.—It is now generally admitted that inside borders which have been properly drained and constructed can hardly receive too much water when the Vines are in active growth, and as the occupants of all houses, from the earliest to the very latest, are now in a growing state, particular attention to watering and mulching must be considered one of the principal points in successful culture. Vines on which the crops are ripe or ripening must not be allowed to suffer, and if the house is kept clean and well ventilated the fruit and foliage will derive benefit rather than injury from a nicely moistened border. Maintain a forward growing atmosphere in all houses swelling off fruit, and if the Vines show signs of weakness let them have good supplies of tepid liquid manure up to the time of colouring, when stimulants may be discontinued and moisture gradually reduced with just sufficient artificial heat to admit of a free circulation of air, which must be liberal and constant. Late houses in which shy setters are in bloom will also benefit by a circulation of dry warm air, with a maximum temperature of 90° on sunny days and a minimum of 70° at night. Remove all small bunches as soon as the Vines are out of flower, and follow up thinning when those properly fertilised begin to swell. Early houses from which the fruit has been cut must be copiously syringed, to cleanse the foliage of dust and red-spider, and if the old foliage is good this should be kept on by the use of moderate pinching-in of the points. Let the inside borders be well watered, and ventilate freely. Muscats and Lady Downe's finishing the stoning process will require close watching when we have a change to bright weather, and if they show signs of scalding increase the night temperature, to prevent condensation on the berries, and ventilate early and freely through the day for a fortnight, when the usual routine may be resumed. Young Vines struck from eyes this spring, if intended for planting out towards the end of the month or early in July, should be potted into 10-inch pots and kept steadily growing. Those intended for fruiting next year will now be getting forward. Pinch out the points when they have made growth suitable to the place they are intended to occupy, and encourage early maturation of the canes by the reduction of atmospheric moisture and increased ventilation. *W. Coleman.*

MELONS.—Early Melons now ripening will require great care in watering to prevent the fruit from cracking. Atmospheric moisture must also be reduced but not discontinued, as few plants go off quicker after a sudden check than heavily-laden Melons, and fruit which ripens after the foliage is always deficient in flavour. The best practice, particularly where the plants are grown in a small quantity of soil, is to water moderately before the fruit shows signs of changing, and to mulch with 4 inches of dry horse-dung from an exhausted Mushroom bed. Have a good stock of plants established in fruiting pots for following the earliest when the crop is off. We generally have them 18 inches high when they are taken in, and by adopting this plan three crops may be grown in one season, or two crops in time for winter Cucumbers to follow. If a mixed collection of Melons is grown in one compartment varieties which ripen pretty much together should be selected. A cold, sunless May has not been favourable to rapid growth in frames, but where attention has been paid to linings and covering at night the fruit will now make good progress. Pay regular attention to thinning and stopping before the foliage becomes crowded, and keep a supply of quicklime and sulphur ready for use in case of canker. Elevate the young Melons on flower-pots turned up on their rims; mulch the beds after the final earthing, to prevent rapid evaporation; shut up with abundance of moisture in the frame and over the foliage on fine afternoons. Delicate-skinned kinds, like Eastnor Castle and Victory of Bath, require shading with tissue-paper when they begin to change colour, as they are liable to scald if fully exposed to bright sun. *W. Coleman.*

HARDY FRUIT GARDEN.

The severe frosts and the cold unpropitious weather that prevailed during the greater part of last month has rendered the present year one of the most disappointing and discouraging as regards the fruit crop and condition of the trees that gardeners have experienced for a long time past, and unless the most unremitting attention is bestowed on Peaches, Nectarines, and Apricots, to keep them clean and render them all the assistance possible to help them in recovering from their present crippled condition, the chances of a crop next season will be very small indeed. As regards Apricots, the only insect enemy to contend with is the grub, but as the late spring growth trees are making is likely to be more than usually troublesome. The trees should therefore be looked closely over, and any curled leaves squeezed between the thumb and finger, which from the soft nature of the insect will be quite effectual in killing them and more expeditious than any other time in any other way. In the case of Peaches and Nectarines, I always depend more on the garden engine and clean water to keep them free from aphides, red-spider, &c., than on any of the many forms of insecticides now so commonly in use, and if applied in time before either of those troublesome pests establish themselves it is seldom necessary to resort to the use of the latter or to adopt any other means of eradicating them. The present season, however, being so exceptional, from the absence of sun and lowness of temperature both day and night, it has not been safe to bring the above useful implement into operation, and greenfly are therefore making the most of the short respite. It frequently occurs that only a few shoots in certain parts of the tree are badly infested while the others are free, and when that is the case a puff or two of tobacco-dust from a proper distributor is generally sufficient to prevent them spreading, if followed up as fit should be on the first favourable opportunity with a good drenching either from the garden engine or syringe, and as the weather improves the trees on these outer walls will be dusted freely at least two or three times a week. The aphides that infest Plums and Cherries are not so easily dealt with, and take a strong solution of tobacco-water to destroy them, but if all the young breast-wood is at once pinched back, and only such shoots left as are required for laying in to fill vacant places on the wall, it is an easy matter to keep the trees clear, as they rarely attack the fully grown leaves, the tissues of which are too hard for them to penetrate. What few leading shoots there are after the removal of the breast wood can then be dusted or syringed in any insecticide sufficient strength to be effectual, and afterwards nailed in to the positions in which they may be required. By following out the above practice I never have any trouble with either Plums or Cherries, and it is the only way to keep them closely spurred back and the trees and fruit in a healthy satisfactory state.

From press of work it is not often that Gooseberries and Currants get much attention after their winter pruning, and yet there is nothing that makes a better return for any extra attention by way of stopping the side shoots than they do, as they form more spurs up the main branches and it assists in developing the buds in the same manner it does on Pears, Plums, &c. In a season like the present, when greenfly is in the ascendant, this stopping is absolutely necessary, as it is impossible to obtain fruit from red or white Currants fit for use unless some means or other be adopted to hold them in check; and it is from these they spread over the bushes, and by their excreta discolour and damage the fruit. Raspberries should at once be looked over, and have the suckers reduced to four or five of the strongest and best situated, unless it is in contemplation to make any fresh plantations in the autumn, in which case due provision should be made for the same by leaving a sufficient number to grow into young canes for the purpose. If a mulching of half-rotten manure is now put on, the yield of fruit will be considerably added to, as it will shade the roots. *J. Sheppard, Woolverstone Park.*

THE

Gardeners' Chronicle.

SATURDAY, JUNE 2, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, June 5 { Royal Horticultural Society: Meeting of the Fruit and Floral Committees at 11 A.M., and Scientific Committee at 1 P.M.

WEDNESDAY, June 6 { Sale of the second portion of Slove and Greenhouse Plants at Lee's Nursery, Hammersmith, by Stevens (four days).

THURSDAY, June 7 – Linnean Society: Meeting at 8 P.M.

GARDENERS, we fear, will have cause to remember the present spring. After a mild wet winter, in which many plants scarcely stopped their growth at all, there has come a bitter spring, with frosts and winds enough to carry despair to many a gardener. The growing shoots of such things as common Laurels, Aucubas, Weigelas, are in many places near London blackened and destroyed. The ripe berries of the Aucuba have changed their gay livery of brilliant red for the mournful black. Roses show crippled and curled leaves, many of which conceal a worm i' the bud, and promise badly for the season's display. The beautiful Dielytra spectabilis, usually a model of grace and elegance, sends up its spindly flower-stems — a mere mockery of its usual state. Myosotis dissitiflora—a plant which generally excites the enthusiasm, not only of our floral scribes, but of those who have less experience and weaker appreciation of spring flowers—was this year blasted in its beauty by the cruel frosts. Where spring frosts have been, *per se*, powerless to retard or injure, the fierce winds have too effectually done their work. Tender-leaved Limes, Norway Maples, and some of the choicer Acers, such as Schweidleri, have had their young leaves torn to shreds. The prudent Ash has scarcely opened its buds this year, long behind the tardiest Oak, at least in the district from which we write ; Robinia Pseud-Acacia is even later—its buds have only now begun to move ; and the same may be said of those of Ailantus glandulosa. Euonymus japonicus is not much hurt, but Elæagnus japonica is sorely crippled. The species of Philadelphus are unhurt, and the beautiful Nepalese Buddleia globosa is fortunately quite unharmed. The common Mahonia has not suffered, but the lovely Berberis stenophylla has been hardly the ghost of its usual self. Lilacs and Laburnums have offered mere suggestions of their usual beauty, while the blossoms of the Horse Chestnut are small and have an unusually starved appearance. Pear blossoms lie scattered on the ground, withered, blackened, dead. Cherries are not much better. Plums have made a better stand. Peach blossoms are nowhere, and their leaves are shrivelled and screwed up in some places, and swollen and reddened in others, as if they had rheumatic gout ; but no, it is only Peach blister in an aggravated form ; so that, though there will be plenty of blister, there will be no Peaches. Gooseberries and Currants are not hurt, and Strawberries promise fairly. Of early Peas and Potatos, the less said the better ; indeed, there is not much left to be spoken of. Nor is our experience singular. From various parts of the country we get similar unfavourable reports. We select one illustration, from a western county, which will have a special interest for those who put their trust in orchard-houses :—

"When I wrote you last, I mentioned that we had 7° of frost here the previous night, but the following night we had 10°, and the Apricot-house not being heated the crop of fruit is most seriously damaged. Never before have I met with so disheartening a reverse, for a finer promise could not have been—by far the best crop we ever had ; the plants and fruit were in the most luxuriant health, and therefore very tender. There are plenty of wall Pears, but very few on the pyramids. Strawberries will be abundant, and so will Grapes, Figs, Pines, Peaches, and Melons, but other fruits will be very scanty. Of Plums there is certainly not a peck in the garden."

We are induced to publish the foregoing letter in the hopes of eliciting from some of our correspondents their experience under like conditions. In the case above cited Apricots have been grown in an orchard-house heated when required, but as the crop was never satisfactory the trees were transferred to an unheated house, with the result above mentioned. Heated orchard-houses require the most delicate management, and are a frequent source of failure, but it is evident that an unheated one with 10° of frost is an equally dangerous place to grow fruit trees in when in bloom.

Dr. BENNET's letter on the conditions under which the Apricot and other fruit trees grow in Majorca, published in another column, has a special bearing on the subject now under consideration, and should be perused by all who have to grow fruit trees.

—— A CORRESPONDENT has sent us, from the neighbourhood of Caterham, a fine specimen of the HELIX POMATIA, that large white-shelled snail of which the Romans were so fond, and which it is supposed they introduced from Italy to our Kentish downs. Be this as it may, the species is rarely found far from the chalk downs. The specimen before us is nearly 2 inches across in its longest diameter. The snail in question is considered a delicacy in France, being fattened in special snaileries on the Burgundian hillsides, warmed with the sun that beats on those limestone downs, and fed with the delicate young foliage and tendrils of the Vine. Fortunate snails ! How different your lot from that of your English brother, the humble asperse, and yet may they say, too, "All is vanity," for whether it is better to be crushed or to be eaten is a question for the anti-vivisectionists to consider. Any way, let those visitors to Paris who may be tempted, as we were, by the dainty snails exhibited in the best restaurants reposing in a basket of green moss, garnished with tempting Parsley, pause ere they put the seductive-looking morsel in their mouth. We are willing to believe that when fresh they will challenge comparison with any other delicacy, but they may not be fresh—the butter or fat with which they are served up may be rancid, and there may be too much garlic chopped up with them. We say no more, only—Beware !

—— One of the prettiest greenhouse plants at this time of year is VERONICA HULKEI, a New Zealand species of semi-scandent habit, and with dense panicles of lavender flowers. Though it has been introduced for some years, and was figured in the *Botanical Magazine*, it does not seem to have been at all generally distributed.

—— We learn that Professor BOULGER, the Professor of Natural History at the Royal Agricultural College, Cirencester, is preparing a *Flora* of Gloucestershire, and will be glad of any information as to rare species, localities, &c., that our Gloucestershire correspondents can give.

—— From Mr. GLAISHER's quarterly report we take the following remarks on the weather during the quarter ending March 31, 1877 :—

"The weather during the quarter has been for the most part exceptional, the readings of the barometer have been usually below their averages, with frequent stormy weather ; the temperature of the air was high both in January and February, rain fell almost continuously and was excessive in January, and there has been very little sunshine throughout the quarter.

"The high temperature which set in on November 13, 1876, and continued with the exception of six days in December till the end of the year, was also prevalent throughout January and until February 19, 1877, the average daily excess of temperature for the fifty days beginning January 1 and ending February 19 was 6°.2 ; and for the ninety-nine days beginning November 13 and ending February 19 was 5°.1 ; the winter, therefore, of the year 1876-7 has been exceptionally mild. On February 20 a period set in which was distinguished by several days of temperature below their averages, and then followed by a smaller number of days of temperature above their averages, and this variation of temperature, alternately warm and cold, continued till March 23 ; the average daily deficiency of temperature for the twenty-six days ending March 23 was 2°.8. From March 24 to the end of the quarter the weather was uniformly warm, and the average daily excess was 8°.9.

"The fall of rain in January was excessive ; at about London and its neighbourhood it fell during the first half of the month on nearly every day, and during the whole of the month it fell on six days out of seven days. The amount at Greenwich was 4.35 inches ; back to the year 1815 we have no instance of so large a fall of rain in January, and but two instances which are closely approximate, viz., in the year 1828 when the fall was 4.3 inches, and in the year 1868 when it was 4.2 inches. The average rainfall of sixty-two Januaries is 1.85 inch, so that more than double the average fell in January ; this is the more remarkable, as the fall in December, 1876, was so excessive.

"The fall of rain in the three months ending January was 13.20 inches, being more than half the mean annual fall of sixty-two years, viz., 25.2 inches. The average fall for the three successive months, November, December, and January, is 6.24 inches ; therefore, for these months, the fall of rain has exceeded in amount twice the average fall.

"The fall of rain in January was large everywhere, and it fell on every day in the month at one or other place ; the day of least fall was the 22d, on which day it fell at a few places only, and to a small amount ; on the 12th, 13th, 23d, and 26th, the falls were less than a quarter of an inch ; all the other days the falls exceeded a quarter of an inch at one or more places ; on the 2d, 3d, 4th, 6th, 7th, 8th, 10th, 11th, 17th, 19th, 29th, and 30th, the fall at one or more stations was nearly 1 inch, or it exceeded 1 inch.

"The mean temperature of the air for January below that of December over the whole country was very nearly alike, and averaged 1°.3 ; that of February above that of January was nearly the same everywhere, the average being 1°.1 ; and that of March below that of February was nearly uniform, and averaged 2°.8.

"The mean temperature of the air for January was 42°.7, being 6°.2 and 4°.1 above the averages of the preceding 106 years and thirty-six years respectively. In the preceding 106 years there are but five instances of so high a mean temperature for the month of January, viz. :—

In 1796 it was	45°.3	In 1846 it was	43°.7
1804 ,,	43.2	1875 ,,	43.4
1834 ,,	44.4		

"The mean temperature of the air for February was 43°.5, being 4°.9 and 4°.3 above the averages of the preceding 106 years and thirty-six years respectively. In the preceding 106 years there are only eight instances of so high a mean temperature for the month of February, viz. :—

In 1779 it was	45°.3	In 1850 it was	44°.7
1794 ,,	44.7	1867 ,,	44.7
1809 ,,	44.1	1869 ,,	45.8
1846 ,,	43.9	1872 ,,	44.8

"The mean temperature of the air for March was 40°.7, being 0°.4 and 1°. below the averages of the preceding 106 years and thirty-six years respectively ; it was higher than the values in 1874 and 1876 by 3° and 0°.4 respectively ; but 0°.5 above that in 1875.

"The mean temperature of the air for the quarter was 42°.3, being 3°.6 and 2°.5 above the averages of the preceding 106 years and thirty-six years respectively. In the preceding 106 years there are but six instances of so high a mean temperature in the quarter, viz. :—

In 1779 it was	42°.4	In 1846 it was	43°.6
1822 ,,	43.5	1863 ,,	42.6
1834 ,,	42.9	1872 ,,	43.6

—— Advices from HOLLAND refer to the fact that the HYACINTH CROP is passing through a crisis that is causing some anxiety to cultivators. The blight which exercises such a peculiar withering influence on the Hyacinth is sadly affecting some of the crops, and it may lead to a scarcity of certain sorts and an advance in their prices. Tulips promise well, so do Crocuses, and the bulbs are expected to be good and cheap.

—— We are informed that the late MANCHESTER NATIONAL HORTICULTURAL EXHIBITION proved a decided success, notwithstanding the unfavourable opening days. During the Whitsun week the number of visitors was upwards of 50,000.

—— The new KIMBERLEY PARK, at Falmouth, presented to the inhabitants of that town by the Earl of KIMBERLEY for their use and benefit, and as a recreation ground, was opened on the 24th ult. by his lordship, in the presence of the borough Members

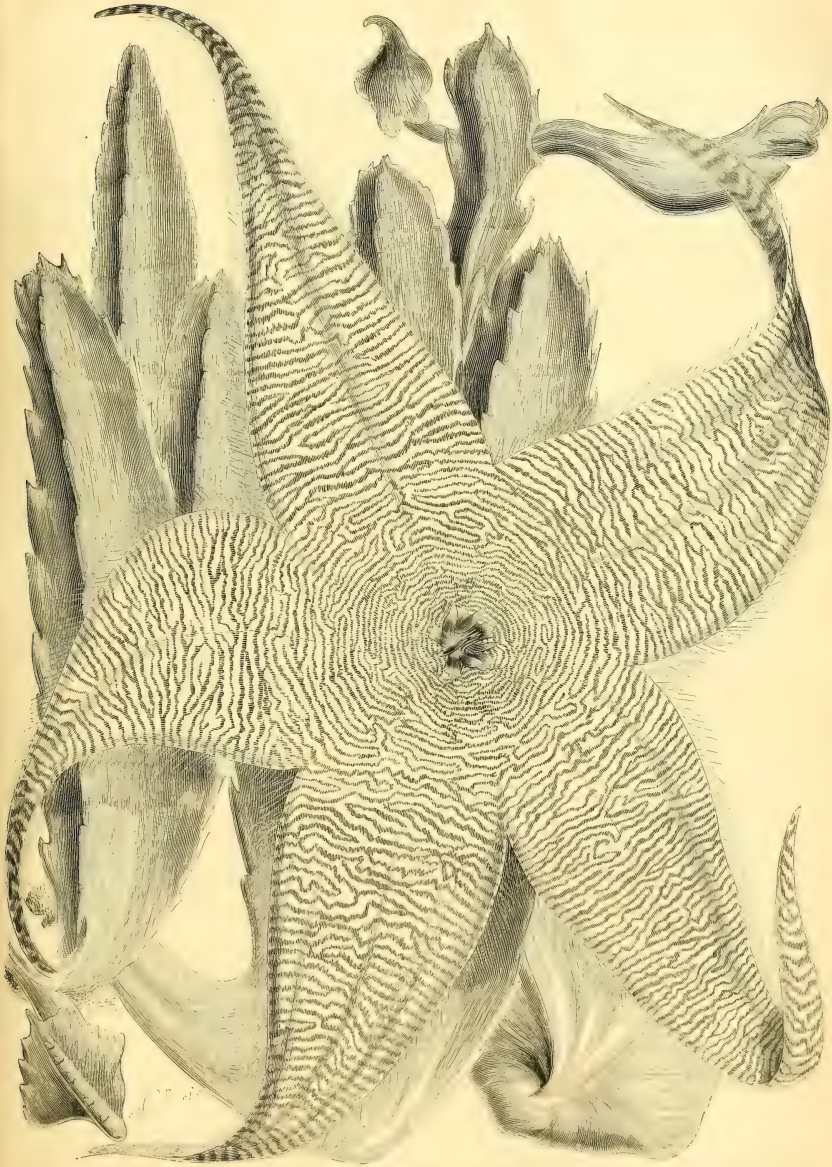


FIG. 112.—STAPELIA GIGANTEA. (FOR DESCRIPTION, SEE P. 684.)

and Corporation. The park is picturesquely situated in Berkeley Vale, diverging from the centre of the town westward, and has been planted and beautified by Lord KIMBERLEY, who was accompanied on this occasion by the Countess and the Hon. ARMYN and Lady CONSTANCE WODEHOUSE. A public dinner followed, at which Lord KIMBERLEY was present.

—— We have received the following note from Mr. DAY, of Tottenham:—"Your account of DENDROBIUM DIVERSIFLORUM in the *Gardeners' Chronicle* of May 26 is not correct. It was sent to Messrs. HUGH LOW & Co. first in 1856 by their correspondent, the Rev. Mr. PARISH, to whom Orchid growers are indebted for many fine things. I flowered it here in 1866, and have a drawing of it dated May of that year; and it is figured in the *Botanical Magazine*, July, 1869, t. 5780, under the name of Dendrobium densiflorum var. albo-luteum." [We had overlooked the circumstance related by Mr. DAY, and therefore apologise to Messrs. LOW for unwittingly giving to another firm the credit due to them. EDS.]

—— The proprietor of the *Darling Downs Gazette*, the oldest provincial newspaper in Queensland, who offered several valuable prizes for competition at the late annual show of the Drayton and Toowoomba Agricultural and Horticultural Society, has favoured us with a photograph of several of the bunches of Grapes shown on the occasion, and which are stated to be those which carried off the prize for the largest three bunches, and some others.

"The weight of the heaviest bunch amounted to 8 lb. 2 oz., and it must be remarked that none of the bunches were the result of any forcing process. That the prizes would be given was not announced until a week or two before the show, and consequently competitors had simply to overhaul their vineyards and select the largest bunches which Nature had produced. The Darling Downs, an elevated table-land of rich volcanic soil, enjoying a climate more temperate than any other portion of the colony, is known in the colony as the garden of Queensland. Wheat is extensively grown, as well as Maize, Barley, and Oats. Nearly all English fruits grow to perfection, as well as Oranges—the remarkable success of which fruit has encouraged several settlers to lay out extensive orangeries. The Vine also flourishes on this tract, giving splendid results, and the wine-making industry—although yet in its infancy—promises to attain very great importance."

—— Mr. MACKELLAR, gardener to Sir JAMES WATTS, Kt., Abney Hall, Cheadle, has sent us a very beautiful cut spike of DENDROBIUM FORMOSUM, bearing four fully developed blossoms, and one yet to open. The flowers measure from 4 to 5 inches across, are pure white, with the exception of an irregular outlined bright yellow blotch on the lip. This must be the variety of D. formosum named giganteum; at any rate, as Mr. MACKELLAR observes, it is a very beautiful evergreen species, and can be grown by any one who has a stove; in which, in the absence of an Orchid-house, it has been cultivated at Abney Hall.

—— A local paper records the occurrence recently at Cockermouth of a Good Templars' FRUIT BANQUET, at which about sixty persons were present, and four courses of fruit were distributed.

—— Mr. A. J. TEMPLE, gardener to J. SHUTTLEWORTH, Esq., Hartsholme Hall, Lincoln, has favoured us with a good sample of CHENOPODIUM BONUS-HENRICUS (English Mercury), or, as it is popularly called in Lincolnshire, "Markarry." When this subject was being discussed in our columns a few months ago Mr. TEMPLE stated that no labouring man in his locality considered his garden completely stocked without it, and by rich and poor alike it is highly prized—a circumstance that can surprise no one who has partaken of it at the dinner-table. Mr. TEMPLE mentions as a fact worth recording that his father, when gardener at Falkland Palace, in Fifeshire, gathered the Chenopodium nearly fifty years ago, and sent it, instead of Spinach, for the use of the kitchen.

—— Owing to the wanton destruction of flowers, shrubs, &c., by a pleasure party who visited Lord STAMFORD'S famous gardens at Enville during the Whitsun holidays, his lordship has ordered them to be closed to the public. A number of persons who were found committing the damage were turned out of the grounds at once.

—— In a congregation held at Oxford on May 24 a series of resolutions were proposed, the object of which was the establishment of DEGREES IN NATURAL SCIENCE, corresponding to the B.A. and M.A. degrees, and permitting candidates for such degrees to substitute at the earlier examinations either French or German for one or other of the classical languages, but at the same time increasing the quantity of mathematics required of them. The title of the degrees was to be Bachelor and Master of Natural Science. The Council draw attention to the fact that these proposals will not in any way interfere with the existing arrangements as to degrees in Arts. The B.A. degree, in other words, will still be qualified for by the study of theology, or mathematics, or law, or, finally, natural science; but by its side will be a degree for Natural Science students possessing a definite meaning and value. After much discussion the resolution was carried by sixty-three votes to forty. The University of London established such degrees some years since.

—— According to *Nature*, LOCUSTS were so numerous early in May in ALGERIA, as almost to stop the trains running from Blidah to Algiers.

—— The Society of Arts has convened a special meeting of agriculturists for Tuesday next to discuss the question of STAMPING OUT HURTFUL INSECTS, which was raised by a recent circular from the Lords of the Privy Council to the different agricultural societies throughout the kingdom, in which circular certain propositions made by Mr. ANDREW MURRAY, F.L.S., were brought under notice. The Duke of BUCCLEUCH has consented to preside, and the discussion is to be opened by the reading of a short paper on the subject by Mr. MURRAY.

—— We learn that the LESSONS TO THE YOUNG GARDENERS AT KEW, and about which there has been some correspondence lately, are divided into those given in the summer and those in the winter months respectively. From May till August practical lessons in botany are given twice a week, as also demonstrations in economic botany and the uses of plants, in the museum. In the winter months lessons on the geographical distribution of plants, microscopical demonstrations of the structure of plants, together with lessons in elementary chemistry, physics, and meteorology. Each student is expected to attend regularly and to take careful notes. It is quite evident that a great deal is done in a quiet way, without fuss or ostentation, and at a trifling cost.

—— At the anniversary meeting of the Linnean Society on the 24th ult., the President, Dr. ALLMAN, delivered an address on the Foraminifera, tracing the history of their gradually increased complexity of structure from the simpler forms to those of higher organisation. He showed how these creatures, which are undoubted animals, have the power of forming starch in their tissues, and how in some cases the extremely minute germs by which they are propagated are capable of resisting a heat of 300° F. with impunity, a fact of the greatest importance in the question of spontaneous generation. It has been supposed that all germs would be killed by such a temperature, and that any which made their appearance in duly closed vessels after such exposure must have been developed as entirely new creations in the fluid; but if the germs in question are not killed by such a heat the old doctrine "*omne vivum ex ovo*" is still upheld.

—— Among spring flowering plants at Kew we noticed lately that the deepest coloured AUBRIETIA known to us is A. conspicua. Its flowers are of a dark violet-purple; A. tauricola is a very free flowerer, with flowers of a pale lavender, larger than those of A. deltoidea. They may be seen now in the herbaceous ground at Kew. The best of the species of Trollius is T. Fortunei, the flowers of which are of a deep orange colour. Alyssum saxatile is not to be deposed from its place as the best yellow of its class. Iberis gibraltarica is the best of the half shrubby species of Iberis, though I. Priviti and sempervirens are by no means to be despised. Convolvulus Cneorum against a wall is a charming plant, its silvery leaves and large, white, funnel-shaped flowers giving it a very striking appearance.

—— Here is an alleged fact for the members of the Pelargonium Society. M. HECKEL has been experimenting with the leaves of the PELARGONIUM ZONALE by wrapping them round small pieces of meat. After some time an acid secretion was observed, which produced on the meat the same effect as has been observed in the so-called CARNIVOROUS PLANTS. The Pelargonium leaves, it must be remembered, are clothed with sticky glandular hairs. When meat was wrapped in leaves destitute of such glandular hairs—such, for instance, as Ivy leaves—no such effect was produced. Even where the leaf was covered with hairs not of a glandular character, such as Glechoma hederacea (ground Ivy), no effect was perceived. It is the glandular hairs then alone that are endowed with the property of dissolving nitrogenous matter. It remains to be seen, however, of what use the property is to the plant. At present it would seem as if the carnivorous property were a mere luxury, which the plant could do perfectly well without.

—— From Mr. DAVID INGLIS, Howick Gardens, Lesbury, Northumberland, we have received some LARGE MUSHROOMS, which were taken from an old Melon-pit which has stood all winter full of bedding plants. Eight specimens weigh exactly 3¼ lb., and the two largest 1¼ lb. It is nothing unusual to see Mushrooms growing on old Melon beds, but we do not remember to have seen any so large and at the same time of such good quality before. Mr. INGLIS states that he has had a large supply from the pit, and to all appearance it would have continued in bearing much longer had it not been required for other purposes.

—— Seed growers are often puzzled at the varying times required for SEEDS of the same description to come up. For instance, seeds of Primula japonica sown at the same time and under the same conditions, come up very irregularly. This has been made the subject of inquiry and experiment at the agricultural station of Tharand by M. NOBBE and HAENLEIN, who attribute the differences in question to the varying anatomical conformation of the skin of the seed. In the Handbook of Seeds, *Samenkunde*, numerous observations of a similar kind are made chiefly from German sources, the researches of MIERS, TUFFEN, WEST, and other English observers, being apparently, however, not known.

—— Baron VON MUELLER writes that he has lately determined that the PITURY, a stimulant said to be of marvellous power, and known to be in use by the aborigines of Central Australia, consists of the leaves of Duboisia Hopwoodii (*Fragm. Phytogr. Austr.* ii., 138). "This bush extends from the Darling River and Barcoo to West Australia, through desert scrubs, but is of exceedingly sparse occurrence anywhere. In fixing the origin of the Pitury now a wide field for further inquiry is opened up, inasmuch as a second species of Duboisia (D. myoporoides, R. Br.) extends in forest land from near Sydney to near Cape York, and is traced also to New Caledonia, and lately by me also to New Guinea. In all probability this D. myoporoides shares the properties of D. Hopwoodii, as I now find that both have the same burning acrid taste. Though the first known species is so near to us, we never suspected any such extraordinary properties in it as are now established for the later discovered species. Moreover, the numerous species of the allied genus Anthocercis, extending over the greater part of the Australian continent and to Tasmania, should now also be tasted, and, further, the many likewise cognate Schwenkeas of South America should be drawn into the same cyclus of research, nothing whatever of the properties of any of these plants being known. The natives of Central Australia chew the leaves of Duboisia Hopwoodii, just as the Peruvians and Chilians masticate the leaves of the Coca (Erythroxylon Coca), to invigorate themselves during their long foot journeys through the deserts. Those living near the Barcoo travel many days' journeys to obtain this, to them, precious foliage, which is carried always about by them broken into small fragments and tied up in little bags. It is not improbable that a new and perhaps important medicinal plant is thus gained. The blacks use the Duboisia to excite their courage in warfare—a large dose infuriates them."

—— The seventeenth anniversary festival of the ROYAL AGRICULTURAL BENEVOLENT INSTITUTION will be held at Willis's Rooms on Wednesday next, under the presidency of the Right Hon. the Earl of DUNMORE.

—— Our excellent contemporary the *American Agriculturist* (one of the best serials, by the way, that comes before us) tells its readers that spring in England begins in February and summer in May. We doubt the accuracy of this in any season, but we think this year winter began about the middle of April.

—— A remarkable collection of HERBACEOUS CALCEOLARIAS is now in bloom in one of the plant-houses of Messrs. SUTTON & SONS, London Road Nursery, Reading. The house, which is of good size, is even inconveniently crowded with specimen plants, but it serves to show off their great beauty and attractiveness *en masse*. Each plant is a specimen, but some are much larger than the others; a few are in 10 and 12-inch pots, the smaller in 24-size pots, but in each case the growth is dwarf, stocky, and healthy, and each plant is densely laden with large flowers. The first sowing was made on July 16 last year, the second sowing on the 31st from seed just harvested. The Calceolaria is naturally a free bloomer, but many of these plants are so densely laden with bloom that the flowers may be said to be heaped upon them. The colours are very varied, from creamy white, handsomely spotted on the body, to rich dark maroon, and between these there are many intermediate shades. A considerable amount of attention is required in keeping the plants clean and healthy, but they are well cared for, which is abundantly evidenced by their condition.

—— On May 25 and 26 a successful floral exhibition was held in the beautiful grounds attached to the Orleans Club House, at Twickenham. The show was held under the management of Mr. J. R. ROLLISSON, in two large marquees erected in a meadow on the banks of the Thames, and the competitions in the various classes were generally very good, the specimens staged being mostly of high-class quality.

—— The *Cumberland Pacquet* states that the annual "RADISH FEAST AT LEVENS HALL," a custom dating from time immemorial, and supposed by some to be a relic of feudal times, was held as usual on Saturday, May 12, at Levens Hall, the seat of the Honourable Mrs. HOWARD, and adjoining the high-road about midway between Kendal and Milnthorpe. May 12 is also the fair day at the latter place, the fair being opened in the presence of the Mayor and Corporation of Kendal, who afterwards dine at one of the hotels, where they are joined by a number of gentlemen from the surrounding district, and tradition hath it that the Radish feast (which is held after the fair) originally rose out of a rivalry between the families of Levens Hall and Dallam Tower as to which should enteriain the Corporation with their friends and followers, and in which Levens eventually carried the palm. The grounds are thrown open on the return from Milnthorpe of the Corporation, who are the first to enter, and admission to the public is by ticket given gratis on application. The "feast" is provided on the bowling-green in front of the Hall, where several long tables are plentifully spread with Radishes and brown-bread and butter, the tables being repeatedly furnished with guests. The liquids comprise two very potent extracts of barleycorn—one, which is called "morocco," being of reputed great age. After the repast comes an important feature of the proceedings, when the "colts," or new visitors, are brought into a ring as they are captured, and are compelled, each poised upon one leg, to drain a quantity of "morocco" from a glass of unusual and antique make, and to give the pledge—"Luck to Levens as long as the Kent flows." Failing this achievement, as many do, a money forfeit for the benefit of the attendents is incurred, and the whole affair occasions considerable diversion.

—— We notice from an advertisement that Mr. WILLS is about to offer for sale by auction, at Stevens' Rooms, TWENTY-FIVE of his best and most distinct DRACÆNAS, the cream of the whole collection. As Mr. WILLS' business does not exactly lie in the direction of distributing new plants, he has probably acted wisely in coming to this determination, the more so as the number of really fine kinds is more than it is reasonable to suppose should be sent out from one establishment within any reasonable limit of time. At any rate the public will now have a better chance of obtaining them, and as they are so extremely varied in character and colouring there are varieties to suit all tastes. To Mr. BAUSÉ belongs the credit of showing us unmistakably that we need not go to the South Sea Islands for Dracænas, if we only know how to set about "creating" them nearer home. The sale is to take place on the 26th inst.

—— Some ripe seeds of Adenium obesum were lately brought to me by my son, Surgeon-Major R. W. BERKELEY, from Aden. As the surface of the seeds, with their short, obtuse, reflexed hairs seemed curious, I was induced to examine them with the microscope, and I was surprised to find that each of them contained a very broad double spiral thread, ending in a loop at either end, reminding one closely of what occurs in the elaters of Jungermanniæ (SCHACHT, *Pflanz*, tab. iv., fig. 13). In most cases it is like a loop of tape simply twisted, but occasionally there is a slight inclination to further complication by branch-

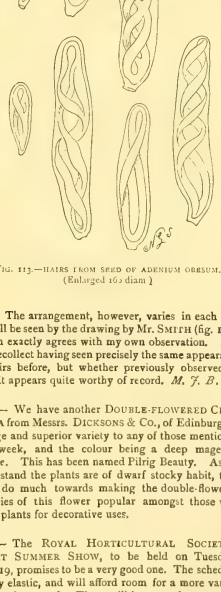


FIG. 113.—HAIRS FROM SEED OF ADENIUM OBESUM. (Enlarged 160 diam.)

ing. The arrangement, however, varies in each cell, as will be seen by the drawing by Mr. SMITH (fig. 113), which exactly agrees with my own observation. I do not recollect having seen precisely the same appearance in hairs before, but whether previously observed or not, it appears quite worthy of record. *M. J. B.*

—— We have another DOUBLE-FLOWERED CINERARIA from Messrs. DICKSONS & Co., of Edinburgh—a large and superior variety to any of those mentioned last week, and the colour being a deep magenta-purple. This has been named Pilrig Beauty. As we understand the plants are of dwarf stocky habit, they must do much towards making the double-flowered varieties of this flower popular amongst those who grow plants for decorative uses.

—— The ROYAL HORTICULTURAL SOCIETY'S GREAT SUMMER SHOW, to be held on Tuesday, June 19, promises to be a very good one. The schedule is very elastic, and will afford room for a more varied display than usual. There will be a regular competition for the medals or money prizes in each class. The prizes for fruits and vegetables are especially good, and ought to bring out a good display. New plants will no doubt be well represented in the competitions for Mr. BULL'S cups; and as in addition to the above subjects the annual show of the Pelargonium Society will take place at the same time and place, the attractions to be offered to visitors will be extensive enough for the greatest floral gourmand. As the show is likely to be largely attended by both exhibitors and horticulturists generally, may we suggest to the Council certain improvements that might be made in connection with the show, with a view to affording greater comfort to those most concerned. First, owing to the exceedingly limited space in the yard, either at the arcade entrance or in the Albert Road, the accommodation for exhibitors' vans is specially inconvenient, and matters are rendered much worse because, as there is no one in authority to make the most of the limited space, the vans are set—to use a vulgarism—"all over the shop," one blocking up the way to another, taking up the space in which several might conveniently stand. If a policeman were detailed off for the purpose of arranging these things properly it would be to the advantage of all the exhibitors. Second, a proper lavatory, in which any one who has borne the heat and dust of arranging plants for several hours may get a wash and brush-up, and thus be presentable for the rest of the day, without having to go goodness knows where for the desired accommodation. Surely the Council can secure, either in some part of the buildings or in a tent, this simple requisite for the exhibitors' comfort. Lastly, a cheaper refreshment bar, buffet, or room is sadly needed by the many exhibitors' *employés* who desire to be at the show and yet are driven out to remote beershops or elsewhere to get needful refreshment. It would be worth while seeing how far a tent devoted to the supplying of ale, tea, coffee, lemonade, and good edibles at a cheap rate would be a success, and leave the buffet in the arcade to those who are rich enough to pay for luxuries that are beyond the reach of poorer men. The Council have the power for doing good in this direction at little trouble to themselves, and we are sure that they would earn the hearty thanks of those most concerned if they would treat exhibitors and their *employés* as valuable allies, rather than as necessary evils.

—— Some two years since or more, Mr. FLEMING, gardener to R. HOUGHTON, Esq., Sandheys, Waterloo, Liverpool, sent us specimens of a seedling Fern, to which we then gave the name of ADIANTUM CONCINNUM FLEMINGII. It had, of course, many of the characters of A. concinnum, but these were so veiled by other features that the relationship with A. concinnum was rather questioned at that time, though it has since been settled by the plant itself, which produces from its spores, not the variety Flemingii, but true concinnum. Its chief peculiarity, from the gardener's point of view, is its upright and dense habit of growth, and its comparative dwarfness, since it does not exceed some 18 inches in height. The fronds want altogether the lax, drooping character which belongs to the typical A. concinnum. Since that time it has been exhibited at one of the Royal Horticultural Society's meetings (July 21. 1875), when it received a First-class Certificate, a similar award having been recently made to it by the Royal Caledonian Horticultural Society. The fronds are ovate in outline, tripinnate, or sometimes quadripinnate, the pinnæ and pinnules thickly set and overlapping, bright green, and having the usual characteristic of the lowest pinnules lying along the rachis, the same peculiarity being more or less evident in the pinnæ themselves. In the original specimens sent to us the larger pinnules were half an inch wide, and rather deeply lobed; but in specimens recently forwarded by Messrs. IRELAND & THOMSON, of Edinburgh, by whom the plant is being sent out, the pinnules are somewhat smaller, and rather more deeply lobed, thereby increasing the elegance of the plant, which is certainly one of the prettiest of the smaller-habited Maidenhairs, ranking in this respect with cuneatum, decorum, and amabile. Mr. FLEMING states that this Fern is sufficiently hardy in constitution to thrive in an intermediate house, and that all the plants of it propagated up to this time have been obtained by division, since the spores produce only the typical concinnum.

—— We have been favoured—shall we say deceived?—by the inspection of some grey-looking fragments of flowers, which at a casual glance we took to be those of the soft grass, Holcus lanatus or H. mollis. More careful examination, however, showed them to be

very young unexpanded flowers of the common Laburnum, crippled by the frost.

—— We are informed that Mr. ANDERSON, of Uddingston, Glasgow, has now bloomed a seedling AMARYLLIS, which for colour, form, and substance altogether surpasses the rare and beautiful variety named Dawsoni.

Home Correspondence.

Trees in Borders.—I am afraid that the suggestion given in your paper regarding Apple trees planted in borders as ornamental trees would not, if acted upon, afford a lasting gratification to the planter. Apples worked on the Paradise stock, and planted in a mixed border of shrubs and trees, would not, I think, thrive in such company. My own experience of such trees is that they require good soil and cultivation; if planted in mixed borders, their more grasping neighbours would certainly rob them of any benefit offered to them by the delicate attentions of manuring and surface-stirring the soil. Hence I think the plant buyer would not thank the news writer for his hint to the catalogue maker. The Cherry tree is less particular, and will stand its ground with any trees on a dry and gravelly soil. The Hertfordshire woods are very gay when the Cherry trees are in bloom. *T. F. R.*

The Fruit Crops in East Anglia.—This is the latest season by a fortnight or more we have had for five-and-twenty years. So far the chances were in favour of an abundance of fruit, and a month ago the prospect was most promising: in general terms the prospects have been utterly blighted. The fruit crop, as far as superior fruit on walls is concerned, is utterly wrecked—frozen right through or off, and there is an end of it for this season; and this bears with stern impartiality on protected and unprotected walls. No protection could withstand the long-continued frosts and hard cutting winds. What fruit the frost did not sting through or turn a black mass, the piercing dry winds withered up. And as if this were not mischief enough for one year the weather has gone on and crippled most of the trees, and killed a good many Apricots outright. Apricot trees have suffered more than Peaches. These had set a splendid crop here and were swelling fast, and seldom have the trees looked better. The frost went right through the house, curled in the leaves, discoloured them, and took all life and stamina out of most of the fruit as if they had been dipped in scalding water; and now they hang flaccid on the trees or drop off in shoals with the merest touch, while many trees have more than half died, and others wholly. Peaches have stood it better, and a few, such as George the Fourth—a Peach that I have found escape several times, when others were destroyed by frost—looked fresh and well long after the others had succumbed, but these have gone off since, and George the Fourth is bare as the others. The Pears and Plums, again, looked safe when I last wrote, but most of them have since fallen, and on examining lines of pyramids the blossom comes off with its embryo fruit in handfuls. I fear there will be a light crop of Pears, and also Plums, so that there will be little to fill up the loss of the Peach, Nectarine, and Apricot crop. Apples are abnormally late, and the blossoms are also unusually pale; moreover, the wind is again set fast in the north-east, and this air seems wrapped round with icebergs—so harsh and cold is it on May 23. Cherries seem to have escaped a little better than Plums and Pears, but the issue is still doubtful. It is hoped that the wind may veer round, or the ice in the North Sea sheer off, so as to leave us our Apples, else we shall be in a sorry plight for fruit this season. All ordinary and extraordinary means of protection are totally inoperative to save our tender fruit crops from these cold snaps in May, which seem to be extending in length and growing in intensity every year. Should they last many more years, or extend the period of their duration as they are now threatening to do, glass coverings and hot water will be needful to ensure a crop of Peaches, Nectarines, Apricots, and superior Plums and Pears. *D. T. Fish.*

Double White Narcissus not Flowering.—I have tried to grow these in my garden at Eton with the same result as that of which Mr. Heathfield complains. The flower-stalks are few in comparison with the number of bulbs, and many of them become abortive. In Cheshire, where my garden is on stiff clay, suitable for brick-making, this double Narcissus produces very large bulbs, multiplies rapidly, and flowers beautifully, doing best in the stiffest parts of the soil. My Eton garden is damp enough, but the soil is light, robbed by trees, and overlies gravel, but the single N. Poeticus does well in it, being unusually fine this year. I conclude, therefore, that the double N. Poeticus requires a stiff and retentive soil. I am told, however, by dealers that it does so well in the nursery gardens near London that the wholesale price of the bulb is only a few shillings per bushel. *C. W. Dod, Eton.*

Wild Lily.—I have been much amused by "K.'s" last note. The Great Bindweed (Convolvulus sepium) is called "The Wild Lily" by the peasantry in Hants, but it is known by a far less pretty name in some parts of Wales, and had "K." written from Cambria he might just as well have informed you that a portion of his Satanic Majesty's costume grew on his grave! Walk ("The Devil's Nightcap" being its local designation), as that a wild Lily affected such habitat. Does "K" mean by "Lily of the Field" that it is the Lily so mentioned in the Scriptures? Does this Convolvulus, or the smaller species, grow in the Holy Land? "Bear-bind," "Hedge-lilies," and "Withe-wind," are all local names for the Great Bindweed—"Taunwinde," in Germany, also "Windekarut," and "Grootewinde," by the Dutch. *H. E. Watney.*

Orchids in May.—The month has been fertile of flowers, as the following list will show:—

Vanda teres
" suavis
" coerulescens
" cristata
Cattleya Mossiæ, five varieties
" Mendelii
" Schilleriana Regnelli
" candida
" citrina
Odontoglossum roseum (an exquisite ruby: should be in every collection: cool-house)
" stellatum
" angustatum (a spike to feet long, with mauve flowers, not large, but unique)
" Pescatorei
" triumphans
" glossum
" vexillarium
" cirrhosum
" Rossii
" cordatum
Epidendrum vitellinum majus
" cochromum
" cerasiflolum
" atropurpureum
" aromaticum
Ionopsis paniculata
Oncidium cucullatum
" sarcodes
" Marshallianum
" crispum grandiflora
" concolor
" divaricatum
" Ramsayi
" Weltoni
" splendidum
" altissimum
" Philipsianum
Sacoolabium retusum
" ampullaceum
Sobralia macrantha
Burlingtonia fragrans
Trichopilia crispa
" coccinea
" spectabilis (small white flower, very fragrant; bought imported as crispa)
Trichopilia tortilis
Angulca Clowesii
Aerides virens Dayii
" odoratum
" affine roseum
" Lobbii
Maidevallia ignea
" Veitchii
" Lindeni
" amabilis
" caudata
" Peristeria
" Nycterinia
Phalænopsis grandiflora
" rosea
" amabilis
" cornu-cervi
" Schilleriana
" Luddemanniana
Stanhopea Wardii
Dendrobium macrophyllum
" triadenum
" lasioglossum
" Dalhousianum
" densiflorum
" thyrsiflorum
" Devonianum
" crystallinum
" Boxallii
" Wardianum
" Pierardi
" macrostoma
" Paxtoni
" chrysotoxum
" Farmeri aureum
" Falconeri
" fimbriatum oculatum
" capillipes
" marmoratum
Lælia purpurata
" cinnabarina
Cypripedium longifolium
" barbatum nigrum
" niveum
Brassia maculata
" gireoides
Maxillaria leptosepala
" Harrisoniæ
" sanguinea
" tenuifolia
Cyrtopodium Andersoni.

Edward W. Cox, Most Mount, Mill Hill.

Salus.—In the printed directions forwarded with Mr. Worthington Smith's "Salus," mention is only made, as far as I am aware, of its application in the form of powder, but it appears to act so well and rapidly for ordinary garden purposes when used as a solution, that it might be a great assistance to have some hints about its use, or the extent to which it might be used safely, in this form. During the past month I have been applying it in various degrees of strength, from syringing with the clear deep red solution to applying it not entirely dissolved through the rose of the watering-pot, and I cannot see that it ever in this way injures the foliage, whilst either as a restorative or fertiliser it appears to do much good. I have tried it on young seedling Zinnias, and on many garden plants—Roses, Rhododendrons, Pentstemons, Ferns, &c.—and in the kitchen garden to some of the wall fruit trees and Potatos, and all appear to benefit. Of course in field crops there would be great difficulty in any but the powder application, but in garden growing, if the method is safe, one might get the mixture well down to the roots in this way when, from overlooking the right time, or other reasons, there was difficulty in applying the powder; and if a little guidance in the matter could be kindly bestowed it probably would be a great assistance to many amateurs. *O.*

Tenderness of the Gros Colman Vine.—It may not be generally known that the leaves of this Vine are far more tender than any other of the same class. To insure full and healthy development of the leaves great care should be exercised in maintaining atmospheric conditions which are best calculated to promote healthy growth. This is best done by adopting such a line of treatment as will not permit an excess of dryness at one time and moisture at another. Anything like excessive moisture and a confined atmosphere during dull days seems to induce a warty excrescence on the back of the leaves sooner than on most other Vines. A Vine of Gros Colman clothed with clean healthy foliage in a house is a sure sign of the wants of the Vines being carefully attended to. It may also be as well to observe that it will hardly bear the slightest application of tobacco-smoke without being injured. We had occasion to fumigate two vineries last year, in order to destroy the Strawberry-pots of green-fly, and Gros Colman was the only Vine amongst several other varieties that received injury from the smoking. It would, therefore, appear that the porous nature of the leaves renders it more susceptible to atmospheric excesses than other Vines, whilst a little caution, with a knowledge of its peculiarities, will assist one to avoid such treatment as the Vine appears to dislike. The leaves of these Vines did not attain half their normal size with us last year, consequent on the mishap of smoking, but they are amongst the finest leaves we have on the Vines at the present moment, and the difference is simply owing to a slight change of atmospheric treatment. This Vine is not so generally known or cultivated as it should be. It is a grand keeping Grape in damp localities, and we do it well it requires plenty of air, light, and a long season of growth, and will colour up beautifully after one loses all hope of having black Grapes. Mr. Upjohn, of Worsley Hall, near Manchester, grows this Grape to perfection, and he would be a strange connoisseur in Grape-growing who would object to a bunch of this noble Grape grown in "true Worsley style" about Christmas, or further on in January. *W. Hinds.*

Celery Culture in Market Gardens.—In last week's issue the writer of the Villa Garden Calendar, in a clear and practical article on the cultivation of Celery, recommends planting it in trenches, which I think is a waste of space and labour—great consideration to all cultivators. The market gardeners round Fulham plant it all on the level in well prepared soil, in single rows 5 feet apart, and 7 inches from plant to plant. In the centre of the spaces they plant a row of Cabbages or Cauliflowers, or sow a row of Kidney Beans. On each side of these they plant a row of Coleworts or Lettuce, leaving a little more space on each side of the Celery. For the Celery they draw a drill 6 inches deep, in which they plant their plants. It serves for a basin, for watering purposes. By-and-by the soil is drawn to the plants, and some more soil is drawn up to form another drill for watering purposes—this is retained till the final earthing-up. As the earthings-up proceed the Lettuce and Coleworts are cleared off, and by-and-by the centre rows go to make room for the final earthing-up. In this way there are acres of the best Celery produced that goes into the London market. I can assure your readers that there is no danger in following the practice of the London market growers in or out-of-doors. Whatever they take in hand they do well, and in the economy of space and labour lie their profits. *E. W.*

Trillium grandiflorum.—With the modern system of flower gardening there appears much risk of many of our fine old hardy border plants being lost, and among them one of the most lovely of all, the Wood Lily (another Lily, not a bulb). The Trillium grandiflorum, which with us has been unusually attractive this season. Were it not that it forms its flower-buds in the full fat crowns before it dies down in the autumn, it would appear that the wet winter has had something to do with the robust state they are now in, as indeed it probably has in helping them to push up so strongly, for it is a plant that delights in a cool shady retreat, with plenty of moisture, provided the drainage is free and open so that the soil cannot become stagnant and sour. Those we have are growing in loose boggy earth containing plenty of grit, in situations where they get but very little sun, a position that suits them exactly, and more beautiful objects than they have been for a long time past cannot well be imagined. Its large pure white flowers, measuring at least 3 inches across, and set closely as they are at the top of the leaf-stalk, backed up by foliage of the most delicate pale green tint, are most valuable for cutting, although it is almost a shame to weaken the plant by so doing; but with large established crowns, and where the sacrifice can then be made, nothing—not even the Eucharis, can rival it for the purpose. With the same amount of attention bestowed on it as Spiræa japonica receives, it might be extensively grown in pots, and with very slight forcing, or even the shelter of a cold frame, be had in bloom by the end of March, when it would form one of the most attractive plants for greenhouse decoration, from being so distinct in character to anything else. There are two or three other varieties of different colours to the above, but not to be compared with it in any way, although fully deserving of

cultivation from the contrast they afford. Trilliums increase readily by division made any time during the spring, before they get much advanced in growth; and in order to do this without injury, the best way is to dig up the plant and work away the soil, so as to see where the separation can be made to the greatest advantage. Any moist, sheltered, shady place will do to grow them; and if the soil is not naturally loose and rich in decomposed vegetable matter it should be made so by working in plenty of leaf-mould or refuse peat, in either of which I find they grow freely. As their flowering satisfactorily depends on the growth they make, every encouragement should be given to induce healthy foliage, and care taken that it is not injured or interfered with till it dies away naturally, otherwise the crowns get weakened considerably, and do not come to maturity. Besides being propagated by division they may likewise be raised from seed, which should be sown under handlights on a moist, shady border, and the plants when up nursed on in a similar situation. Trillium grandiflorum has been so much admired with us in pots that I am working up a stock to try it for forcing, but whether it will succeed or not under artificial heat remains to be seen. Certain it is, however, that taken up and potted, and allowed to come on naturally, there are few plants that will afford more satisfaction or that make a better return for the time and attention bestowed on them. *S. W.*

The Ivy and Damp Walls.—The late Mr. Lindsay Carnegie, Kimblethmont, Forfarshire—a most enthusiastic horticulturist—was very fond of Ivy, and at one time, whilst I was gardener there, he had nearly every tree and house within the policies covered with Ivy. The kitchen of the house in which I lived was covered with Ivy, and during damp weather the plaster on the inside walls could have been taken off in handfuls. About two years before I left I cut down the Ivy, as the walls became quite damp. A nephew of Mr. Rust lives in that house at the present time, but I believe Ivy has not again been allowed to grow on the walls. When I entered the service of my present employer, the Earl of Southesk, the front and one end of the gardeners' bothy and one end of the gardeners' house was covered with Ayrshire Roses, which as the foliage always got brown with red-spider and thrips, his lordship wished to be rooted out and Ivy planted instead. Strong plants were put in, and in the course of four or five years the walls were closely covered. Previous to the bothy walls having been quite dry, but they became damp both upstairs and down, and, like my old kitchen, you could have scraped the plaster off in handfuls. The damp in this case was the cause of much annoyance, as his lordship, while anxious to retain the Ivy, was equally concerned about the comfort of the young men. After several consultations had been held we examined the end of my house, that was planted and had become equally as well covered as the bothy, but found no damp. This we concluded was owing to the roof projecting about 18 inches over the walls, and we must have been the means of keeping the Ivy dry. We immediately got eaves put up to conduct the water away and not let it run off the slates amongst the Ivy; that is about ten years ago, and we have never seen a damp spot on the walls since. Ever since I have been an advocate for Ivy on walls. *W. Cruden, Kinnaird Castle Gardens, Brechin.*

— A lady, on reading your last week's number, exclaimed, "I am certain that Ivy growing on the walls of a house protects it from damp;" and, on inquiry, I found that she at one time resided in a place where two rooms at the side of the house were fearfully damp. Clothes hung in closets became at the expiration of a fortnight quite spotted with mould, the walls in wet weather were perfectly moist, and the paper fell off. Mrs. —— was advised to plant Ivy. The Ivy grew quickly (it was the large sort), and it had before she left entirely covered the wall, making the two formerly damp rooms and objectionable closets the most dry spots in the house. Other friends of mine have experienced the same beneficial results from Ivy culture. *Helen Watney.*

— I can with confidence second Mr. Rust's remarks about Ivy-covered walls. A farm-house in North Wilts, in a somewhat exposed position, was up to twenty years ago about as damp a dwelling as could be found on the estate. The present tenant planted Ivy against the south and west walls—the sides most exposed, and by dint of care the walls were fairly covered in five years. The house has ever since been about the driest on the estate. This is one of many instances I could name, but one which more particularly occurs to me, as I had occasion to inspect the house carefully about a week ago. Of course care should be taken to trim the Ivy every spring, and on no account must it be allowed to interfere with the eaves, gutters, or roof. *Mervyn.*

— So much has been written for and against the Ivy, that I daresay many of your readers are somewhat perplexed as to whether Ivy makes walls damp or not. Now as I have had considerable experience, and have given this subject much attention, it will possibly be gratifying to some of your readers who have walls covered with this beautiful creeper, to know that without the slightest doubt I can assert that Ivy does not make walls damp, but on the contrary it keeps walls dry. In my person who has a wall covered with Ivy go and examine it after a heavy rain, and I warrant none has penetrated through this grand covering. I can well understand how the Ivy has got the character of making walls damp—as in this wise: a wall is covered with Ivy which has been allowed to grow at will and not properly trimmed, and has consequently got so heavy at the top that the wind has forced it from the wall; then of course the wall may become damp, as the rain will run down between the Ivy and the wall, but surely the Ivy should not be blamed for this. And again, if this fine old plant is not properly trimmed he will sometimes peep into your spouts and, like many of his countrymen, he cannot resist the temptation and he sips a little of the real mountain dew; and this giving him strength and invigorating his frame (I hope Sir Wilfrid does not read your paper), he gets a little boisterous, does not lose his head, but in point of fact gets more head, and in his hilarious fun blocks up your water conductor. However, you cannot blame him for this either, but rather his masters, who, knowing his ways, should keep him from temptation. But should your spouts be blocked from this or other causes and the water run down the wall, the Ivy is blamed for making the walls damp. Yet in no case does the fact of a wall being covered with Ivy make it damp, but where a wall is exposed to heavy rains Ivy is the best covering to keep it dry, I unhesitatingly assert. The attention required to keep Ivy in proper order is to clip it close to the wall, in April or May, according to the season and locality, choosing a time before the young shoots have grown much. The walls will look rather bare for a very short time, the first rain bringing out the fresh young leaves, which give the walls a most charming appearance. In the autumn, should any branches get detached from the wall they should be nailed close, or, what is sometimes better, cut close off, also cutting off any branches which may have shoulder'd over the spouts. These instructions followed, the Irish Ivy is the most inexpensive and the most easily managed of all creepers, therefore I defend from calumny that "rare old plant, the Ivy green." *J. H. C., Ivy Cottage.*

— In answer to Mr. Goodacre I am not aware that I have ever said that Ivy will make damp buildings dry; what I have said is that trees and walls making walls damp it has "quite the opposite tendency." Every gardener knows that ground heavily cropped is drier than land which is lying idle, and so in like manner the soil at the base of a building will be drier with a crop of plant like Ivy growing on it, and if the shoots and large leaves are annually cut off in April it will soon put forth a fresh supply of leaves and thatch the wall from all ordinary rains. Where, then, is the destructive damp to come from? Our rainfall in this neighbourhood is heavy, and as I stated before three-fourths of Cawdor Castle is covered in Ivy, and although part of the building has stood for hundreds of years and been all this century covered with Ivy, yet there are no signs of it causing the building to "decay and turn damp." How can he, in the face of such evidence, speak against this beautiful plant?—and during that long period our Ivy has been the admiration alike of the peer and peasant, painter and poet. There is an excellent article in the *Globe* of May 22, which to my mind so thoroughly clears the subject up, that I will copy it and ask you to find space for it.

"Two or three of the horticultural and scientific journals have lately been discussing the momentous question whether or not a covering of Ivy makes a house damp. Of course, the Ivy clambering up the gable of a house cannot make the house damp, any more than a topcoat can make a man's coat-sleeves damp; on the contrary, it will tend to preserve it dry. If, however, the rain is sufficiently heavy to penetrate the covering of Ivy and to wet the wall, the fact of the Ivy keeping out the rain will, of course, prevent the wall's drying if wet, just as a topcoat would keep underclothing wet if the rain had drenched the wearer to the skin. Ivy is undoubtedly very bad in this respect, in positions where there is from any special cause the need to drive in behind it. A faulty spout or an awkward bit of roof may sometimes be found to shoot the water down at the back of the Ivy. In this case the covering of green would do for the wall very much what a topcoat would do for the man whose umbrella poured all the rain down inside his coat collar. The leak in the spout, or the faulty construction of the roof, which might only shoot the outside of the bare wall, would be sufficient completely to saturate and permeate the wall covered with Ivy. In such a case the wiser plan would be to stop the downpour of water; the more obvious plan, however, is to strip down the greenery, and as this will be followed by the speedier drying of the external wall, the interior dampness may disappear also, and the Ivy will be debited with the mischief. All this seems so obvious as to be scarcely worth pointing out. Yet it is owing to the neglect of these obvious considerations that a common prejudice has arisen against this beautiful parasite, which Nature seems so kindly to have provided for the special purpose of hiding the dreary ugliness of what Mr. Ruskin calls our packing-cases. With roofs and spouts in good condition, and especially with a projecting eave over it, Ivy is as beneficial as it is beautiful, and is not used a tenth part as much as it should be." *J. Rust, Bridge Castle.*

[This question has often been discussed, and always with this result—that, provided proper care be taken, and the walls kept in good repair, the Ivy does no harm whatever, but may do good. Eds.]

Vanda teres.—I have succeeded in flowering two small plants of Vanda teres just now; one is growing on a stick of deal, and the other on a stick of Oak, 2 feet long or so, stuck in pots of crocks. The heads last autumn had grown beyond the length of these sticks, and I tied them down, in order to make them more connectable, and no doubt this bending down has induced them to flower. Others with these long straggling Vandas in their possession would do well to try this mode. Our plants are about 3 feet long, 1 foot of which is bent down, and on this the flower-spike is, each of which has four flowers; each flower measures over 3 inches each way. *Henry Knight, Floors Gardens.*

Dendrobium suavissimum.—We have just now in flower, amongst many other Orchids, a plant of the beautiful D. suavissimum lately introduced by Messrs. Low & Co., and which proves to be highly deserving sought after by ardent collectors. I think when this variety gets thoroughly established it will prove a great acquisition. It will also be highly prized on account of the fragrance of its flowers, which are very sweet. Odontoglossum Andersonianum is with us just now making a nice display; a plant of the beautiful Odontoglossum nævium majus has also just flowered, bearing fourteen fine spikes, with a total of 119 flowers. Good plants of this variety are, I believe, still scarce in collections. *J. Mill, The Gardens, Rendlesham Hall.*

Paraffin for Protecting Seeds.—Having read in the *Gardeners' Chronicle* for May 19 of "R. W.'s" unsuccessful trial of soaking Peas in paraffin, I beg to say that I also tried the experiment of soaking mine for twenty-four hours instead of two minutes, and I never had a better plant. I feel certain every Pea germinated, although I sowed them in November for my early crop. Therefore I must come to the conclusion that "R. W.'s" seed was bad. *J. J.*

— Taking a great interest in my cottage garden, I was anxious to see the effect of paraffin, and having obtained some of the Market Gardeners' Pea from Messrs. Stewart & Mein, Kelso, I, on May 1, before sowing, steeped them in strong paraffin oil for one hour, and now (May 28) I have a row of Peas 16 yards long and 6 inches high, which neither birds nor mice have interfered with. On the same piece of ground are Maclean's Blue Peter Peas, which were not steeped in paraffin, and the birds and mice have nearly spoiled the crop. Living within 13 miles of the Border, and taking the severe winter into consideration, some of your readers will perhaps be surprised to hear that at the present time the Gloire de Dijon Rose, with upwards of 100 blooms on it, ready to break. It is against a wall with a south aspect. *Richard Beatham, Middleton Cottage, Belford, Northumberland.* [We should be obliged to any of our correspondents for information as to the effects of paraffin in the case of other seeds. Eds.]

Pilocereus senilis, var. longisetus.—This very remarkable and interesting plant is, I think, rather rare in collections, and is in most respects identical with P. senilis, but the great difference is, that it produces very long spines; the long needle-like spine is upwards of an inch long, and the basal spines are of a great length, especially near the base of the plant upwards—some of them as much as 8 inches in length, and are curled and twisted round the plant and over the pot, giving it a very venerable appearance. Even in youth it looks aged, and from its slow growth it never occupies much room, and is at all times a very attractive and interesting plant, gaining admiration as it often does from non-interested individuals, and many remarks from the casual observer. *J. S. C.*

The Renovation of the Camellia.—In a floral and pecuniary sense, perhaps no plant pays better than the Camellia, for it is a favourite, robust, and free-flowering subject, easy to manage, and amenable to treatment when its health has been impaired. Debility manifests itself by a scarcity of young wood, withdrawal of the sap from the lower branches, paleness of the leaves, and blooms which do not thoroughly expand, and are soon shed. These symptoms seem to follow from exhaustion of the soil, long restriction of the roots and their liability to over-dryness, forcing in a high and dry temperature, inattention to whatever impedes healthy leaf-action, such as dust and insects, constant subjection to shade, but the most injurious practice is an insufficiency of moisture at the roots during their activity. A weakly collection may in one

season be restored to strength and beauty by the following measures, which were tried in one of the Camellia-houses here two years ago, with some plants which had become unproductive. Prepare a bottom of ashes or gravel, say 6 or 9 inches thick, on which arrange the pots and tubs, so that the drainage water passing into this bed keeps it damp, and benefits the under roots in a time of rapid evaporation. Then from the return of spring sunshine till it wanes in autumn encourage nutrition by a regular supply of liquid manure diluted with rain-water of a sooty tinge. The stimulant may consist of any of the several kinds of urine, which, as chemists tell us, contains, besides other fertilising ingredients, a salt-like substance called urea, which is rich in nitrogen, and when the liquor ferments this appears in the form of carbonate of ammonia, and exercises an immediate and beneficial influence on vegetation. At first weak applications, supplied once a fortnight, will suffice, but when the bloom is over, and shoots begin to develope, the allowance may be increased to one-third, in proportion to the water, and administered weekly while the soil is moist to receive it. An objection to the use of this fertiliser is the unpleasant smell which arises therefrom, but if the watering be done late in the afternoon, and a little air be put on in the early morning, the house will soon regain its wonted freshness. Coupled with liberal treatment at the roots, a moist atmosphere, free ventilation, and shade from bright sunlight until the buds are set are highly necessary. The plants will soon show a determination to enlarge at the points and break from below, the leaves will become broad, leathery, of a dark green hue, and brightly polished, while clusters of buds will form on the extremities of the branches. When these are plump enough to separate the strongest should only be retained, and the operation performed without delay. As the plants go out of flower shift such as are bound into pots or tubs 3 inches wider, giving them a mixture of good fibry loam and sand, with ample drainage, and press the soil quite moderately. Any that are "leggy" should receive a slight pruning and tying back; then, if frequently syringed, they will send out new buds from the old wood. Unless the roots have refused to spread it is injurious to reduce the ball of Camellias, for anything in the way of a check weakens it at a time and in a state in which it is least able to bear it. A little guano-water may now be substituted for the manure previously recommended; and if other matters of routine are attended to in the management the plants will gain a new lease of life. *James Scott.*

Reports of Societies.

Royal Horticultural of Ireland: *May* 24.—This Society's second exhibition for the present season took place on the above date at the Exhibition Palace. The show was of more than average merit in almost every department, except in that of fruit and vegetables. The show of pot Roses and stove and greenhouse plants was thoroughly good. The cup for the best group of twelve pot Roses was well won by Mrs. Herbert Manders, who had a splendidly grown collection, all the plants being well handled and profusely bloomed. Mr. Fry came next in merit with a group little inferior to that of his more successful competitor. The Society's cup for twelve exotics (in pots of any size) was cleverly won by Mr. Westby, and did infinite credit to his gardener, Mr. Bruce, whose group comprised remarkably fine examples of Rhynchospermum jasminoides, Bougainvillea glabra, Clerodendron speciosum, Anthurium Scherzerianum (profusely bloomed), Croton Veitchii, Dæmonorops periacanthus, and Croton variegatus. Lord James Butler's fine group, which was placed 2d, included a grown plant of Clerodendron Balfourianum, Rhynchospermum jasminoides, Dicksonia squarrosa, Aphelexis macrantha, and a fine Anthurium. Mr. Westby also carried off the cup for a group of exotics in 12-inch pots with a splendid collection, all his plants being carefully handled and in first-rate condition. Amongst the *crême de la crême* of this well-selected group were fine examples of Bougainvillea glabra, Aphelexis macrantha purpurea, Clerodendron Balfourianum, Erica Cavendishiana, Lomaria gibba, and Dracæna excelsa. A very nice lot of Orchids was staged by Lord James Butler, including a good Oncidium sphacelatum, Phaius Wallichii, and a good plant of Aerides Fieldingii. In the class for specimen Orchids Mrs. White took 1st place with a well-flowered plant of Cattleya Mossiæ superba. Ferns were not so largely shown as usual, but the groups staged in the several classes were of more than average merit. In Mr. Riall's group of exotic Ferns we noticed well-handled plants of the light and fairy-like Adiantum gracillimum, the beautiful Hymenophyllum demissum; and the lot exhibited by Miss Power, of Temple Hill, a new and spirited exhibitor, included a splendid plant of Todea superba. There were two nice collections of British Ferns, that belonging to Mr. Riall, which was placed 1st, comprising fine specimens of Osmunda regalis cristata and Trichomanes radicans. Mr. Waters, as usual, brought out a refreshing lot. Variegated plants were capitally shown. Mr. Westby's six (in pots of any size) included remarkably well-handled plants of Dracæna Shepherdi, Croton Weismanni, and Yucca aloifolia variegata; and in Mr. Watson's group (in pots not exceeding 10 inches) we noted beautifully-grown specimens of Croton Youngii, Dracæna ferrea grandis, and Croton majesticus. Azaleas were only represented by one group, but that a really good one, exhibited by Mr. Riall. A capital group of Gloxinias was staged by Miss Power. The small classes of stove and greenhouse plants were well represented. Mr. Boyle's lot of six in pots of any size included a first-rate Anthurium Scherzerianum and well bloomed plants of Cyrtipedium venustum and Erica Cavendishiana. In the class for six in 10-inch pots Lord James Butler was placed 1st, his lot comprising well-grown specimens of Ixora coccinea and Aphelexis humilis; Mrs. Manders taking 2d with a bright looking group, including nicely flowered plants of Azalea Souvenir du Prince Albert, Azalea sinensis, and Erica ventricosa coccinea minor. The amateurs' men a nice collection of twelve stove plants was staged by Messrs. Campbell.

In the way of Pelargoniums we have seldom seen anything better at a May show than the lot of six show varieties exhibited by Mr. Boyle. The plants were all well grown and in the best of pot-flowering condition, his specimens of Forget-Me-Not, Lilacinum, and Rose Celestial being remarkably good. Mrs. Manders took 2d with a well handled six, including well-flowered plants of James Odier, Magnifica, and Forget-Me-Not. The competition for the cup for a group of Calanthus has of late years been one of the great features of the second exhibition of the season, and if the number of competitors on Thursday was not so large as last year, the quality of the specimens staged showed no sign of deterioration. The cup was on this occasion most deservedly awarded for a very handsome group exhibited by Baron Deasy, and which included capital examples of Areca Verschaffeltii, Kentia Fosteriana, Latania borbonica, and a truly beautiful plant of Cocos Weddelliana. Miss Power took 2d with a splendid nine, comprising, amongst others, fine examples of Latania borbonica, Kentia australis, Cocos Weddelliana, and Chamærops humilis. Both groups were exceedingly bright and fresh-looking, and reflected every credit on their several exhibitors. In the way of new plants the most remarkable novelty was a magnificent and beautiful pink-flowered Odontoglossum vexillarium, exhibited by Mr. Boyle. A good miscellaneous collection of stove and greenhouse plants forwarded (not for competition) by Mr. Jamieson, Montrose, included well-flowered plants of Erica Cavendishiana and Aphelexis macrantha purpurea, and a splendidly-handled specimen of Adiantum farleyense.

In the florist flower section there was a very interesting display of Tulips, and the numerous admirers of this old favourite flower had no reason to be displeased with the quality of this department of the show. The full stand of twenty-four varieties was shown by the Hon. Mr. De Montmorency, the stand exhibited by Miss Plant taking 2d; while in the class of twelve the competitors changed places. In both classes good stands were staged by Mr. Berry and Mr. Greenwood Pim. Anemones, Ranunculus, and Pansies were well shown, some of the stands of the two last named being remarkably good. The show of cut Roses was first-rate. For twenty-four blooms Mr. Riall took 1st with a grand stand of Maréchal Niel. In the class for twelve blooms Messrs. Campbell were placed 1st with a splendid box, including magnificent blooms of Madame Joigneaux, Général Jacqueminot, Alfred Colomb, Marquis de Castellane (very fine), and Paul Neron; the 2d place being taken by Rev. Frederick Tymons, whose stand included first-rate flowers of Charles Lefebvre, La France, and Jules Margottin. The show of fruit was, of course, small. The principal features were good bunches of Black Hamburgh Grapes, exhibited by the Hon. Mrs. Dunlop; a good dish of Early Beatrice Peaches, shown by Mrs. Millner; a fair dish of President Strawberry, and some dishes of well-kept dessert and baking Apples. *Condensed from the "Irish Farmers' Gazette."*

Blackburn Horticultural: *May* 22 *ana* 23.—The annual exhibition in connection with this Society was held on Tuesday and Wednesday of Whit week in the grounds of the East Lancashire Cricket Club. Failing as it does when the grand floral display is being held in Manchester the competition in some classes is not so keen as might be desired, and as probably (considering the very liberal list of prizes offered by the Society) it would be if held a week sooner or later than the one just named. The managers, however, have not only to look to the display and get this as varied and extensive as possible, but they must also have a care to the receipts, without which few such exhibitions can be regularly kept up, and Whitsun week being in all respects a holiday week, and a greater number of visitors obtained then than at any other time, the managers wisely deem it advisable, in their desire to spread and foster a love of flowers and encourage the cultivation of them, to hold the show at such a time when the result can more likely be obtained. The plants were exhibited in a large tent, the tall plants being stood in the centre on the ground, and smaller ones on stages round the side. In the class for ten miscellaneous plants (amateurs) not less than five in bloom, the 1st prize was taken by R. B. Dodgson, Esq., Whitehead, Ilkley, in whose collection were to be seen a fine Clerodendron Balfourianum, a well-flowered Adenandra fragrans, and a finely coloured and densely bloomed Francisceа calycina. J. Thompson, Esq. (J. Swan, gr.), was placed 2d, with a very nice group, in which were also a fine Adenandra and a nice plant of Acrophyllum venosum. For ten stove or greenhouse plants, not less than six in bloom, the same gentlemen again competed—the prizes in this case, however, being reversed. In the class for six stove or greenhouse plants in bloom Mr. Dodgson was again to the front, having in his group a very fine Anthurium, and a well flowered Erica ventricosa coccinea minor. Mr. Thompson again exhibited a good Clerodendron Balfourianum. In the class for four stove and greenhouse plants in bloom the competition was very keen, four collections being staged, and the first prize falling to a new exhibitor, F. Yates, Esq. This group contained a well grown and flowered specimen of the singular Medinilla magnifica, the flower-spikes measuring in some cases 2 feet long; Mr. Thompson was placed 2d, and Mr. Dodgson 3d. For six ornamental foliage plants, W. Ecroyd, Esq., was placed 1st, with a splendid Cocos Weddelliana and a Kentia Forsteriana, the fronds of the latter measuring 8 feet in length; and J. Thompson was 2d, having Dion edule and Pandanus Veitchii capitally done; R. B. Dodgson, Esq., was 3d, and W. Barry, Esq., was 4th. For six Orchids—in which, and the following class, two or more prizes may be taken by the same exhibitor—the 1st prize was awarded to F. Yates, Esq., whose plants, though small compared with the other collections, were well flowered, very fresh, and nicely staged. The plants in this collection were D. densiflorum, twelve spikes; D. Dalhousianum, Aerides Fieldingii, two spikes; O. Pescatorei, two fine spikes; Oncidium Marshallianum, 2 capital spike, 4 feet long, and a splendid variety; and a nice plant of Phalænopsis Luddemanniana. The 2d, 3d, and 4th prizes were awarded to Mr. Dodgson, among whose plants were D. densiflorum, Vilosum, Cattleya Mossiæ and Warneri, and Saccolabium ampullaceum, in very good condition. In the class for four Orchids Mr. Dodgson was placed 1st, having D. Schrôderii, with twelve grand spikes; C. Warneri and Mossiæ, and Cyp. barbatum; Mr. Yates was 2d, who had small but nicely bloomed plants of O. Rœzlii and vexillarium; Mr. Bury was 3d.

For ten exotic Ferns only one lot was staged, the prize falling to R. B. Dodgson, Esq.; while for six exotic Ferns, W. Thompson, Esq., was 1st, who showed Adiantum excisum multifidum and farleyense in good condition. For eight British Ferns the 1st prize was taken by Mr. Dodgson. Greenhouse Azaleas were exhibited by Mr. Thompson and Mr. Dodgson, and the class, as a whole, was very creditable, the former-named gentleman being 1st for six, and the latter being placed 1st for four. Zonal Pelargoniums were shown by W. Thompson and J. Thompson, the prizes being awarded in the order of the names. W. Thompson was again 1st for six Tricolor Pelargoniums—a very even lot, and of good colour. Caladiums were shown by W. Snape, who was 1st, and W. Thompson 2d, and were well-grown plants, not very large, but of good colour. Mr. C. Rylance, nurseryman, Ormskirk, exhibited twelve splendid specimen Pelargoniums, for which he is so justly famed. They were in fine condition, and a very attractive group: awarded a special prize. Mr. B. S. Williams, Hadlow, was 1st, and Mr. Walmsley, exhibited collections of miscellaneous plants. In the collection of the last-named gentleman were some capitally flowered half-specimen Ericas, which were awarded an extra prize. Black Grapes were shown by Major Starkie, who was 1st, and F. Yates, who was placed 2d. For white Grapes the 1st prize was awarded to Major Starkie. A collection of wax fruit and flowers, &c., staged by Mrs. Storey, was much admired, and was awarded a special prize. *S.*

Reading Horticultural: *May* 24.—A dull heavy morning, with occasional light showers and a general aspect of uncertainty in the behaviour of the clouds, is not favourable to the chances of success in a flower show. It is solely a question of weather if up to noon or thereabouts it looks murky and threatening, with a cold north wind blowing, it offers great inducements for people to resolve to stay at home. Such a disadvantage of unpropitious weather beset the meeting of the Reading Society on the above date, and its effect was seen in a diminished attendance, and its inevitable accompaniment—a deficit in the exchequer. There is scarcely a more cosy place in which to hold

a flower show than the Abbey ruins at Reading, but the thing is to get to the Forbury Gardens, which afford a pleasant promenade, and which, as usual, are exceedingly well kept by Mr. Phippen; but threatening skies have their terrors, and draggled skirts at a flower show are as incongruous as snow on a Derby-day.

But those who braved exposure had a charming floral effect before them when they entered the tent, for the ornamental turf banks were lined with flowering and foliaged plants—the former largely preponderating, as they assuredly should do at a spring show. Groups of Azaleas here and there flashed out, brilliantly flanked by the sombre hues of foliaged plants. The best group of nine came from Mr. Crawshay, Caversham Park (Mr. J. C. Higgs, gr.), the leading varieties being Flower of the Day, Brilliant, Iveryana Improved, Duke of Devonshire, Delicata, Purity, Gem, and Triumphans. The plants were fair-sized specimens of the pyramidal form, and on the whole well grown and flowered. Mr. W. Lees, gr. to Mrs. Marsland Erleigh, was 2d; and Mr. G. Pile, gr. to J. J. Wheble, Esq., Bulmershe, 3d. In the class for six varieties in 8-inch pots Mr. Lees had the first honours; Mr. J. Miller, Maidenhead, being 2d. Mr. Lees also took the 1st prize for nine, for A. J. Falmer, Esq., Reading, was 1st, with some small but admirably flowered examples of Le Paix, rosy lilac; Firma, bright rose; Neptune, bright orange-red; and Duc de Nassau, all valuable exhibition kinds. Messrs. Miller and Parham were 2d and 3d.

Roses in pots were a good point, but country growers are not nearly up to the level of other productions with their Roses. The best six came from Mr. J. F. Mould, nurseryman, Pewsey, among them Paul Verdier, Etienne Levet, Edward Morren, and Paul Neyron had unusually fine blooms. Mr. W. Baskett came 2d, with Charles Lefebvre, Victor Verdier, John Hopper, and Baroness Rothschild as his best examples. Mr. W. Tranter, Upper Assenden, was 3d, with plants tied out to a flat shape as one would Pelargoniums. In the class for four varieties the prizes were of an inferior character, the best coming from Mr. Tranter.

Stove and greenhouse plants were, on the whole, well shown, and there being three collections of twelve plants each, they were a leading feature. The best group came from Mr. W. Mearing, gr. to W. Whitbread, Esq., Southill House, Biggleswade, and had Epacris Eclipse, Chorozema varium Chandleri, Hedaroma tulipiferum, and Hedaroma fuchsioides, all very good; also Clerodendron Balfourianum, Acrophyllum venosum, Statice profusa, Anthurium Scherzerianum, &c. 2d, Mr. W. Lees, whose best plants were a Azalea Sir C. Napier, Stephanotis floribunda, Polygala Dalmaisiana, Franciscea confertiflora, F. calycina major, Rhynchospermum jasminoides, Erica eximia superba, and Pimelea mirabilis. Mr. J. F. Mould, Pewsey, was 3d, his leading plants being Erica eximia superba, Aphelexis macrantha purpurea, Hedaroma tulipiferum, and Erica Cavendishiana. In the class for six plants, Mr. G. Parham, gr. to G. May, Esq., Reading, was 1st, with Clerodendron Balfourianum, Anthurium Scherzerianum, Stephanotis floribunda, Lantana Le Grenadier, Rhynchospermum jasminoides, and a finely-grown, well-bloomed Erica grandiflora; 2d, Mr. J. C. Higgs, with a large and well-bloomed Medinilla magnifica, Anthurium Scherzerianum, Clerodendron Balfourianum, Pimelea spectabilis, &c.

Ericas were nicely shown by Mr. J. F. Mould, gurneyman, Pewsey—an exhibitor who not only grows good plants, but selects good varieties for the purpose. The six plants shown by Mr. Mould, to which the 1st prize was awarded, consisted of Massoni major, tricolor Eppsii, insignis, Lindleyana, Paxtoni, and ventricosa magnifica; 2d, Mr. W. Lees, with tricolor speciosa, Cavendishiana, ventricosa grandiflora, eximia superba, and speciosa coriacea; 3d, Mr. G. Pile.

A line of charming Calceolarias was used as a marginal edge to the bank of exotic Ferns. The best (and they were very good) came from Mr. J. Tomlin, gr. to Messrs. Patterson, Bracknell, dwarf, excellent foliage, and fine heads of large, bright, well-formed flowers; 2d, Mr. W. Baskett; 3d, Mr. W. Mortimer.

The Pelargoniums, both show and fancy, are invariably employed to give bright patches of colour on the banks near the centre of the tent. The best nine came from Mr. J. Ashby, gr. to W. Fanning, Esq., Whitchurch, who had mainly the old decorative varieties, but capitally grown and flowered; 2d, Mr. Baskett, with good plants of Exhibitor, Warrior, Queen Bess, Brigantine, Magnificent, &c.; 3d, Mr. C. Higgs. In the class for four varieties no award was made. Mr. W. Baskett had six pretty plants of fancy Pelargoniums, consisting of Lady Carrington, Fanny Gair, Vivandière, Mrs. Dorling, Acme, and Lady Craven; 2d, Mr. J. Ashby, with Princess Teck, The Shah, Ann Page, &c. The best four came from Mr. J. Miller, gr. to C. Ellis, Esq., Maidenhead, and consisted of Princess Teck, Negro, Godfrey Turner, and Ring Dove.

Other flowering plants were Gloxinias, some very fine varieties being shown by Mr. Baskett—forced and hardy plants, generally Rhododendrons and Azaleas, a few Orchids, and one or two other subjects. In the class for a specimen foliaged plant a capital example of Nepenthes Hookerii was shown by Mr. Baskett, and gained the 1st prize.

Foliaged plants are always a fine feature at Reading, and they were well grouped in commanding positions. The best nine came from Mr. J. C. Higgs, but they are getting over large for show purposes. The leading plants were Alocasia Veitchii, very fine; Cordyline australis, Latania borbonica, Croton variegatus, Araucaria Cooki, Theophrasta officinalis, Maranta zebrina, and Pandanus utilis. 2d, Mr. J. Applin, gr. to H. J. Symons, Esq., whose leading plants were Pandanus elegantissimus, P. Veitchii, Alocasia metallica, A. Lowii, Croton majesticus, &c. Mr. W. Mearing had the best four handsome-foliaged plants, with nine stove and greenhouse Ferns Mr. Higgs and Mr. J. Applin were severally 1st and 2d. The plants staged by the former were generally large, spreading Tree Ferns, too much alike for exhibition purposes in case of a close competition. Mr. Applin's plants were smaller, more varied in character, and finer. In the class for Hardy Ferns were well shown by Messrs. W. Mearing, Pile, and Higgs; and Lycopods by Messrs. Mearing, Mortimer and Hawes.

Cut flowers were somewhat sparingly shown. Roses were a good feature for the season; and Messrs. J. Mayor, of Oxford, Mould and Tranter, had prizes in the order named. In Mr. Mayor' box Madame Caroline Kuster was very fine; and there were good examples of Maréchal Niel, Madame Victor Verdier, Prince Camille de Rohan, Sénateur Vaisse, Anne Wood, Gloire de Lyon, and Duke of Edinburgh. Mr. J. F. Mould had Comtesse d'Oxford, Edward Morren, La France, Ferdinand de Lesseps, Charles Lefebvre, and Souvenir de la Malmaison, as his best flowers. Stove and greenhouses cut flowers were well shown by Messrs. Rugman, Miller and Higgs; and there were also a few bridal bouquets, button-holes, table decorations, &c., in which Miss Phippen (Reading) was the heroine of the competition.

In the fruit classes single bunches of Black Hamburgh Grapes were somewhat numerously shown, the best coming from Mr. J. Mackevick, gr. to Madame Van de Weyer, New Lodge, Windsor; 2d, Mr. J. Ashby being 2d. In the class for white Grapes, Mr. J. Tegg, gr. to J. Walter, Esq., M.P., Bearwood, came in 1st, with good Buckland Sweetwater, Mr. Wells, Winkfield, being 2d. Strawberries were nicely shown by Messrs. Bridgman and Ross, and Peaches by Messrs. Ashby and Tegg.

Vegetables were, on the whole, much better than might have been expected for such an unkindly season. Kidney Potatos, of the Ashleaf type, were remarkably good; and of the round sorts the best was Fox's Seedling. Cucumbers were numerous and good, so were Asparagus, Rhubarb, Cauliflower, and French Beans. The best of the latter was Canadian Wonder, which appears to be one of the very best early varieties for exhibition purposes. In the class for miscellaneous vegetables capital collections were staged by Mr. G. Rose and Mr. T. Spring. Mr. J. S. Bellis, gr. to Major Thoyts, Sulhampstead, staged several remarkably fine specimens of Sutton's Late Queen Broccoli, which appears to be all that can be desired in a late Broccoli, and is said to stand severe weather well. The habit of growth is suggestive of great hardihood of character. (*From a Correspondent.*)

Glasgow and West of Scotland Horticultural: *May* 23.—What is termed the summer exhibition of this Society was held this year in the City Hall, and was, both in quality and display, a much better show than the best friends of the Society had anticipated, the patrons of the Society neither on numerous nor so enthusiastic as in times gone by. Were it not for the more than generous patronage of the Vice-President (A. B. Stewart, Esq.), and the few smaller contributors mentioned in this report, this Society's shows would be poor indeed. The exhibits were admirably arranged, which is always a great feature in connection with a display of any kind. The greatest display of colour-effect in conjunction with green tints was made by Messrs. Austin & M'Aslan, nurserymen, of this city, who occupied the space in front of the orchestra with a very large and varied collection of hybrid Rhododendrons, these being well backed up by a large and varied collection of Coniferæ, standard Sweet Peas, and other green-foliaged plants. A semi-double pure white Azalea in this group, named Bernard André alba, is well worth the attention of florists, being one of the very best of the newer kinds to grow for cut bloom. Across the hall, and immediately opposite to the orchestral platform, were arranged the competing collections of ornamental foliage plants. These collections contained some remarkably well-grown examples, nothing, however, being particularly novel amongst them except a splendid plant of Macrozamia Mackenzii (for description, see last week's *Gardeners' Chronicle*). This was shown by Mr. Robert Todd, gr. to A. B. Stewart, Esq.; Mr. Archibald Chapman, gr. to Alexander Hutchison, Esq., and Mr. Dougall McDougall, gr. to George Alston, Esq., Craighead, Blantyre, being 2d and 3d respectively. The greatest amount of novelty and artistic arrangement, however, in the building were concentrated on the three tables occupying the centre of the hall, and running parallel with its length—the two tables on either side being occupied by the two competing collections arranged for effect, the centre being filled jointly by collections from Thomas Coats, Esq., of Paisley, and that from the Meadowbank Nurseries (both not for competition), the most remarkable plants in Mr. Coats' collection being a well-grown example of Areca lutescens, two superbly-flowered Vandas—one a fine tricolor, the other V. suavis Veitchii, and a grand Anthurium Scherzerianum. Mr. Anderson's collection contained a very large Croton angustifolius and others. The space afforded the competing collections gave scope for taste in arrangement, and with ample material, which both gentlemen had at command, the collections were very effective. Mr. Mackenzie's table was a little overcrowded; it contained, however, some strikingly effective plants, a variety of Clerodendron Thomsonæ (more generally known as Balfourianum) being very fine, as also Aphelexis macrantha purpurea, Erica Cavendishiana and other varieties of Heaths, a grand Adiantum concinnum latum, one or two Orchids, some good Hippeastrums, &c., and quite a host of small pot Roses, for which Mr. Mackenzie has of late years become noted hereabout, and was awarded the 2d prize. Mr. Stewart's collection, which came 1st, was the acme of perfection, the details of arrangement having evidently been carefully planned beforehand by his gardener, Mr. Todd. An abundance of flowering plants, rich in variety but too numerous to enlarge upon, together with foliage plants of great beauty, combined to make up a collection which it would have been difficult to equal. In the class for six stove or greenhouse plants Mr. Todd was again 1st, with grand plants of Erica affinis, Oncidium Phillipsianum, Aphelexis macrantha purpurea, Azalea Beauty of Europe and Magnificent, and a fine Eriostemon. Mr. Beveridge, gr. to James Findlay, Esq., Maryfield, Langside, came 2d, with Azalea Duc de Nassau, Roi Leopold, and Admiration, Rhododendron Gibsoni, Eriostemon buxifolius, and Erica ventricosa coccinea. Mr. Chapman, of the 3d, was another perfection of these plants may be gleaned from the fact that these two collections of six plants have rarely been excelled in Glasgow. The corresponding class for nurserymen also brought out two good collections, that in the 1st from Mr. James Anderson, Meadowbank Nurseries, being especially well contained two good plants of Azalea Queen Victoria, Erica ventricosa coccinea minor and Cavendishiana, Pandanus Veitchii, and a grand Dicksonia squarrosa. Mr. Peter Mackenzie, Bellfield Nursery, Ainsley, being 2d, with a collection much smaller collection. There were three entries for the smaller collection of three stove or greenhouse plants, *i.e.*, Mr. A. Chapman, Mr. Thomas Hogg, gr., Aikenhead, and Mr. D. McDougall, prizes being awarded in the order of their names. The class for three Orchids was confined to two entries—Mr. A. Stewart, Esq. (Mr. R. Todd, gr.), and Charles Walker, Esq., Braefield, Lanark (Mr. McGregor, gr.), the competition here being too close to be a pleasant duty for the best of judges to decide. Their decision was, however, given in favour of the former, who had a grand Vanda suavis Veitchii, with four fine spikes; Cypripedium barbatum superbum, in grand style, 3 feet across; and Aerides virens Dayanum—five fine spikes. The latter had Oncidium Rogersii, with a branching spike upwards of 4 feet long, carrying fifty-eight flowers; Odontoglossum crispum Alexandræ, two spikes and fifteen flowers; Odontoglossum Phalænopsis, about 2 feet across, and having upwards of one hundred flowers. The Pelargoniums which this gentleman also sent from Lanark were also exceedingly good, and would have done credit to a London exhibition. The Ferns from Aikenhead were also very good, as were also the 1st prize lot of Cinerarias from Mr. J. Hutchison. The six ornamental-foliage Geraniums from Mr. M. Miller, gr., Fairfield House, Bothwell—the Auriculas, both stage and alpine in the several classes—were a decided improvement on late years; nor must be omit to mention the Heaths from Mr. Edward Boyes, of Uddingstone. This exhibitor was the winner of the handsome silver cup (open to amateurs only) given by A. B. Stewart, Esq., as a prize for twelve specimen house plants, not less than six, in flower. They were a credit to him as an amateur.

Of the four silver cups offered for competition by Mr. William Bull, of Chelsea, only three were competed for, Mr. Todd being the only exhibitor in the gardeners' class, and Messrs. J. & R. Thyne and Mr. Peter Mackenzie in the class for nurserymen. The nurserymen's groups were both interesting, the Messrs. Thyne being 1st, their collection being got up in superior style to the other, and in some instances

having three or four plants of the same species grouped together—the effect contrasted strongly with Mr. Mackenzie's group, which consisted of single plants very small and evidently not over well grown. Mr. Todd's group considerably eclipsed both, and contained some good plants of Macrozamia plumosa, Phœnix rupicola, Brahea filamentosa and Aralia filicifolia, &c.

The collection of fruit was small, being confined to four entries for two bunches of black Grapes, the 1st prize falling to the lot of Mr. J. McConnachie, gr. to A. Smollet, Esq., for Black Hamburghs; the 2d to Mr. David Provan, Wardhead House, Stewarton, for Madresfield Court; a dish of Peaches, shown by Mr. A. Crosbie, gr., Buchanan House, and a dish of Strawberries by Mr. Hogg, gr., Aikenhead. Collin Campbell, Esq., of Stourfield, Tarbert, sent for exhibition eight splendid trusses of the much-neglected Rhododendron arboreum Nilum, also very fine and all grown and gathered from the open air at Tarbert, and which were highly commended. The only new plant sent for exhibition was Hydrangea Thomas Hogg, introduced from Japan. The trusses being large, white, and freely produced, it will be found well worth the attention of growers for market. It was sent by Mr. B. S. Williams, and was awarded a First-class Certificate. In the afternoon Mr. A. B. Stewart entertained the judges, directors, and several friends of the Society to dinner. *Robert Bullen.*

THE VILLA GARDEN

FRUIT CROPS.—If the experience of other Villa gardeners is at all like our own, then there is much reason to fear that but small fruit crops will be realised this year. There was a rich promise of fruit, but crops of all kinds appear to have gone wrong. The gardening times are out of joint, and, as a witty writer remarks, "the weather suggests that March and November have stayed out too late one evening and have lost their way and found themselves in May. The look of the trees alone makes a fellow miserable. What was Pear blossom is now ugly blackness, and the leaves that had thought of coming out have changed their minds. No respectable tree could get up any enthusiasm towards such a season." Things have a little changed for the better, but there is too much reason to believe that the fruit crop to a considerable extent is hopelessly lost.

The Peach crop is a general failure. There happened two or three severe frosts in March, that fell just as the trees were in bloom, and these wrought sad havoc. Then some gardeners say that the wood of the Peach trees never got thoroughly seasoned and ripened last autumn, and that it was constitutionally incapable of bearing fruit. There is no doubt something in this. Perhaps it may be in consequence of this very failure of vigour, but it is a fact that the blister is laying hold of the leaves, and many trees are presenting a sorry appearance. The best thing to be done is to keep the trees as healthy as possible, and by occasional syringings, by mulching, and by waterings at the roots in dry weather, to endeavour to so get the trees to a healthy tone as that they may make a favourable growth, and properly ripen their wood at the end of the summer. "Mulching" is a term much employed in gardening matters, and perhaps imperfectly understood. It consists of placing a layer of dung or fertilising material of any kind, in a half-decayed state, about the stem of a tree and over its roots. It is constantly applied to newly planted trees, and to any growing on shallow, gravelly, or drying soils, and the object of the cultivator may be said to be twofold—to keep the surface-roots cool and moist, and, further, to supply an invigorating influence to encourage growth. If water be poured on to manure lying round the stem of a tree some of the particles will be carried down into the soil, and thus materially assist in feeding the plants.

It is more particularly in the case of gravelly and light soils, from which moisture soon clears away, that mulching is required. Where the soil is a retentive clay—that is, cold, clammy, and sticky—if plants grow in it at all, they are scarcely likely to suffer much from drought; but the roots would be pretty certain to do one thing—they would come to the surface for something to subsist on. In the case of such a clay subsoil as that above mentioned, the moisture in it, if it does not pass away below, will come upward, and evaporate through the surface. If the escape of this moisture be prevented by mulching, there will be the absence of ground-heat, and the effect will be injurious to the trees.

He who plants intelligently will not fail to properly drain a border likely to be retentive of moisture: but in the case of hundreds of villa residences planting was done at haphazard by unskilful planters: holes were dug in the soil—and that, too often, compounded of mere rubbish—and the trees placed in them. It has thus fallen to the lot of many Villa gardeners to have to do with trees planted under conditions so unfavourable to healthy development that they are constantly in a kind of chronic ill-health. If the subsoil be unkindly—as too often happens—the best thing to do is to lift the trees in autumn and replant them, taking care to have a proper bed constructed, so that a perfect drainage and a congenial bed of soil be provided. But in the case of a tree having a fair crop of fruit, and yet showing signs of ill-health, the best thing to do would be to incite the roots to healthy action near the surface by slightly stirring the soil, and then adding some other good soil, and there keep them moist, without materially arresting evaporation.

On dry soils, wall trees bearing fruit will require a good deal of attention during the summer. Here mulching is absolutely necessary, for trees recently planted, and those on soils comparatively shallow and thoroughly drained, require a steady supply of root-moisture; and where a period of drought, accompanied by much heat, or even of drying winds, occurs, trees thus situated are sure to suffer, if some extra attention be not paid to them. Watering, of course, immediately suggests itself, but this is an operation frequently requiring an inconvenient amount of labour; and, moreover, unless the water has been subjected to the action of the sun, or is in a tepid state, its utility, as sometimes applied, is somewhat questionable.

Under such circumstances it is that mulching is advocated. As to the matter of the temperature of the soil, little harm need be apprehended from applying it in the course of the month of May, for the ground has by that period (so we are informed on high authority) acquired a sufficient amount of warmth from the atmosphere to carry on the purposes of vegetation, promote health and well-being in the plants, and a proper fructification of the crops.

Mulching need not, then, be done till May, and just when a time of drought impends. All trees carrying unusually heavy crops may be mulched at this time, in order to prevent any sudden and injurious vicissitudes. Sudden droughts are most injurious in their action, and may lead to the sacrifice of a crop of fruit.

Syringing is also to be commended; it cools and cleanses the leaves, and keeps insects in check. It is a valuable invigorating influence in times of drought, especially where applied of an evening; and mulching is so beneficial to many strong-rooting and growing plants, such as Roses, Clematises, Hollyhocks, Dahlias, &c., that it can be used in the case of many plants with considerable advantage. The beautiful summer-blooming Clematises are so much benefited by it—it so adds to the lustre of their flowers and the duration of their bloom—that its application cannot be too warmly commended.

Obituary.

FEW of the present generation can date from the year 1777, yet there has just passed from amongst our midst a man whose manhood was spent amidst the stormy period of '98, and who might in his infancy have witnessed some of the stormy scenes of the French Revolution and shaken hands with Robespierre or Danton; or, still further back, might have embraced the knees of the hero of American independence, George Washington himself. JAMES DERHAM, whose humble career was spent in the service of Hans Hamilton, Esq., of Sheephill, as gardener for many years, has just passed away at Blanchardstown, Co. Dublin. Few incidents are worth recording in the life of the poor, but it is gratifying to know that the latter years of his life were spent at Sheephill, where, by the kind benevolence of Mr. Hamilton, he was enabled to spend the last twenty years, free from labour or anxious care; and, what he might still appreciate more, by the occasional visits of his kind and benevolent landlord, Ion Trant Hamilton, Esq., M.P., and the amiable ladies of his family. Most of his children being dead, he was followed to the grave by a numerous train of grand and great-grand children, as also by the numerous retainers of the Sheephill estate, and was interred in Mulhuddart churchyard amidst the sympathies of a largeportion of the surrounding tenantry. *Freeman's Journal.*

—— We regret to have to record the death of Mr. FREDERICK MOORE, on May 1, at Newcastle-on-Tyne. Mr. Moore was for some years gardener to the Earl of Auckland, at Eden Lodge, Kensington; and subsequently for twenty-five years was gardener to Earl Grey, at Howick Hall. He was held in high esteem by his employer, and his kind and unassuming manner procured him the respect of all with whom he came in contact. He was likewise an excellent gardener, and did much for the improvement of the gardens and grounds at Howick. About three years since he retired on a pension given him by Earl Grey, and since then has been residing at Newcastle, where, however, his health soon began to give way. He had attained the age of seventy-five years.

—— We also record with deep regret the death of Mr. JAMES BARNES, so well-known as "Barnes of Bicton," who died at Exmouth on May 23, aged 71. Mr. Barnes was born at Farnham, Surrey, in 1806. How he laboured with his father in various gardens in Surrey; how he came to London when about twelve years of age, and was employed by Mr. Moore, a florist of that time residing in Chelsea; how he engaged afterwards in the service of Mr. Stone, of Peckham, a great Grape and Mushroom grower, and subsequently took the superintendence of a market garden at Bermondsey; then successively took charge of the gardens of Crawford House, Ilford, and of those of Sir Herbert Jenner at Chislehurst, from whence he entered the service of Lord Rolle, at Bicton, in 1839, is told by himself in the account of his life, furnished by his own pen, to accompany his portrait which was published in our series of British Gardeners, in 1874 (vol. ii. n.s., p. 655). Mr. Barnes continued to manage the gardens at Bicton with great credit to himself, and to the edification of his brethren of the horticultural fraternity by the detailed accounts of his practice which he published from time to time in the periodicals of the day, up to 1869, when he was compelled to resign his appointment under circumstances which attained a painful notoriety at the time. Since leaving Bicton, where his unremitting attention to his duties, early and late, seriously undermined his health, Mr. Barnes has lived in retirement at Exmouth, but was from time to time a great sufferer from a bronchial affection.

THE WEATHER

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, MAY 30, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to Sea-level.	Departure from Mean of 18 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for the Week.	Departure of Mean from Mean of 16 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Degree of Humidity. Saturation = 100.	WIND. Average Direction.	RAINFALL.
	In.	In.	°	°	°	°	°	°			In.
May 24	30.02	+0.27	56.1	42.1	16.0	46.2	− 8.4	37.2	79	N.E., E.	0.00
25	30.03	+0.28	64.1	38.3	25.8	48.7	− 6.3	41.6	75	N.E.	0.00
26	29.95	+0.19	65.2	46.5	18.7	53.7	− 1.5	43.4	68	N.E., S.	0.00
27	29.54	−0.23	65.7	45.0	20.7	53.5	− 1.9	42.0	65	S. by W.	0.00
28	29.12	−0.65	61.5	40.5	12.0	54.2	− 1.4	41.9	63	S.W., W.S.W.	0.13
29	29.37	−0.41	62.1	41.7	18.4	51.5	− 4.3	39.4	64	W.S.W., S.W.	0.00
30	29.47	−0.32	65.4	43.0	22.4	52.9	− 3.1	40.3	63	W.S.W., S.W.	0.00
Mean	29.64	−0.13	62.9	43.7	19.2	51.5	− 3.8	40.7	67	N.E., S.W.	sum 0.13

May 24.—Fine, but dull, very cloudy and cold. Slight shower of rain at 0.30 P.M.
— 25.—A very fine pleasant day. Cold.
— 26.—A very fine bright day. Light clouds.
— 27.—A fine bright day. Strong wind.
— 28.—A fine day. Occasional showers of rain. Strong wind.
— 29.—A fine day. Cloudy, with slight showers of rain at times. Windy.
— 30.—A very fine bright day. Windy.

LONDON: *Barometer.*—During the week ending Saturday, May 26, in the suburbs of London, the reading of the barometer at the level of the sea increased from 29.93 inches at the beginning of the week to 30.24 inches by the evening of the 22d, decreased to 30.20 inches by noon on the 24th, increased to 30.28 inches by noon on the 25th, and decreased to 30.07 inches by the end of the week. The mean reading for the week at sea level was 30.19 inches, being 0.34 inch above that of the preceding week, and 0.25 inch above the average.

Temperature.—The highest temperatures of the air observed by day ranged from 65½° on the 26th to 51½° on the 23d; the mean value for the week was 56½°. The lowest temperatures of the air observed by night varied from 38½° on the 25th to 46½° on the 26th; the mean value for the week was 42°. The mean daily range of temperature in the week was 14½°, the greatest range in the day was 25½°, on the 25th, and the least 7°, on the 20th.

The mean daily temperatures of the air was as follows:—20th, 47°.5; 21st, 48°.3; 22d, 44°.8; 23d, 44°.2; 24th, 46°.2; 25th, 48°.7; and 26th, 53°.7; and the departures in defect of their respective averages were:—6°.2, 5°.6, 9°.3, 10°.1, 8°.4, 6°.3, and 1°.5. The mean temperature of the air for the week was 47°.6, being 6°.8 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 122° on the 25th, and 113½° on the 26th; on the 22d the reading did not rise above 56°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 34° on the 25th, and 41° on the 23d; the mean for the seven low readings was 41½°.

Wind.—The direction of the wind was N.N.E., and its strength moderate. The weather during the week was generally dull and cold.

Rain fell on two days during the week, to the amount of 0.26 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day varied from 67° at Bristol, and 66¾° at Cambridge, to 59½° at Wolverhampton; the mean value from all stations was 63½°. The lowest temperatures of the air observed by night varied from 33½° at Bristol to 41¾° at Brighton; the mean value from all stations was 38°. The range of temperature in the week was the greatest at Bristol, 33½°, and the least at Brighton, 20¾°; the mean range of temperature from all stations was 25¼°.

The mean of the seven high day temperatures was the highest at Bristol, 59½°, and the lowest at Wolverhampton, 52¾°; the mean value from all stations was 56°. The mean of the seven low night temperatures was the lowest at Bristol, Wolverhampton, and Eccles, all 40¾°, and the highest at Truro, Plymouth, Norwich, and Manchester—all 44¾°; the general mean from all stations was 42¾°. The mean daily range of temperature was the least at Norwich and Bradford, both 10¾°, and the greatest at Bristol, 19¼°; the mean daily range from all stations was 13¼°.

The mean temperature of the air for the week from all stations was 47½°, being 3½° lower than the value for the corresponding week in 1876. The highest was 50°, at Truro, and the lowest 44¾°, at Wolverhampton.

Rain.—Scarcely any rain fell during the week; at Norwich half an inch was measured, but at most other places the fall did not exceed two-tenths of an inch. The average fall over the country was one-tenth of an inch. No rain fell at Manchester. The weather during the week was generally dull and cold.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 64° at Edinburgh to 56¼° at Aberdeen; the mean value from all stations was 60¾°. The lowest temperatures of the air ranged from 35° at Dundee to 39° at Leith; the mean value from all stations was 37½°. The mean range of temperature in the week from all stations was 23¼°.

The mean temperature of the air for the week from all stations was 49½°, being 2½° lower than the value for the corresponding week in 1876. The highest was 51½°, at Glasgow and Greenock, and the lowest 48°, at Aberdeen.

Rain.—The amount of rain measured at Greenock was six-tenths of an inch, at Aberdeen was half an inch, and at Dundee was two-tenths of an inch; at Glasgow, Paisley, and Leith no rain was measured; the average fall over the country was a quarter of an inch.

DUBLIN.—The highest temperature of the air was 67°, the lowest 32¾°, the range 34¼°, the mean 50¼°, and the fall of rain 0.02 inch.

JAMES GLAISHER.

Answers to Correspondents

ANEMONES: *S. B. D.* The petaloid condition of one of the bracts is not unusual.

CARDAMINE PRATENSIS: *W. E.* Many thanks. We will examine and report.

GRAPES: *G. Harwood.* The berries are scalded, and scalding is the result of the action of bright sunshine on leaves or fruits while bathed in moisture. A little air given early in the day would in all probability have prevented it. Your case is similar to a great many others this season.

INJURIOUS REPORTS: *X. Y. Z.* The persons who originate such reports are as guilty in their way as those who wantonly blow up their neighbours' houses with torpedos; and those who thoughtlessly circulate them are to the full as culpable as are receivers of stolen goods.

INSECTS: *Nurseryman.* Otiorhynchus notatus, which seems to be doing a great deal of mischief this year. A remedy has not yet been found. *A. M.*—*M.* The beetle, so plentiful just now, is the common cockchafer or May-bug, Melolontha vulgaris, of which in fig. 114 we give an illustration, together with one of the July-bug, the smallest of the two. The largest figure represents a full-grown male cockchafer, and



FIG. 114.—THE COCKCHAFER AND JULY BUG.

the lower figure is that of the curved larva from which it is produced. The larvæ are very destructive, but they do not appear to do so much mischief in this country as on the Continent.

MALFORMED PEARS: *W. M.* The changes seem to be dependent on the conversion of what should have been a flower-bud to a leaf-shoot. There are also changes in the individual flowers, upon which we may report more fully on another occasion.

NAMES OF PLANTS: The names of some specimens of Pines, sent to us without any indication as to whence they came, are—1 and 3, Pinus austriaca; 2, P. Pinaster; 4, P. Laricio; 6, P. pyrenaica.—*T. B.* Staphylea pinnata.—*Z. B.* The golden-leaved variety of Lamium purpureum (Dead Nettle), used sometimes for spring bedding.—*H. C.* The common Comfrey, Symphytum officinale, not poisonous to cattle.—*W. 1*, Ajuga reptans; 2, Pedicularis sylvatica; 3, Galium cruciatum.—*W. M.* Saxifraga hypnoides.—*F. C. H.* Odontoglossum præstans (very rare), and Dendrobium scabrilingue.—*P. H. G.* Neither this nor Maxillaria Harrisoniæ are Lycastes at all. Both are Bifrenarias, and this one is the B. inodora of Lindley. It has sometimes a powerful odour. *H. G. R.*—*J. Browne.* 1, Gesnera faucialis; 2, Eriostemon buxifolius.—*T. Morton.* Valerian. Thu.—*W. H.* Abutilon Thompsoni.—*W. W.* Amelanchier botryapium (the Canadian Medlar).

PEACH TREES BLISTERED: *W. B. and A. W.* The affection is extremely common in Peach trees, and is caused by a very minute fungus (Ascomyces deformans), of which a figure has appeared in this journal. The only plan you can adopt is to pick off the affected leaves and burn them; but the spores are so minute that this treatment may not be effective. *M. J. B.*

ROYAL HORTICULTURAL SOCIETY'S MEDALS.—We are requested to state that a silver-gilt medal has been substituted for the silver Banksian, awarded to Messrs. William Rollisson & Sons, of Tooting, on the occasion of the Society's great exhibition on May 2. The Society's silver-gilt medal is usually called a gold medal, and is the handsomest medal that the Society awards, and costing quite as much as the smaller gold medals.

SEAKALE: *E. W.* Many thanks; please do.

STRELITZIA REGINÆ: *H. K.* A branched inflorescence, indicative of an unusual degree of vigour.

TRAINING APPLE TREES: *W. T. T.* The result of allowing the main central stem of an espalier-trained tree to grow up and form an independent head, is simply to make the tree an ordinary standard, and will in time completely ruin the original horizontal-trained branches.

VINE LEAVES WITH SPOTS: *B.* The leaves you have sent us are eaten by some insect—probably Otiorhynchus sulcatus; but we cannot tell by simple examination of the specimens. You must watch for and catch them in the evenings.

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

CATALOGUES RECEIVED:—R. B. Matthews (65 and 67, Victoria Street, Belfast), General Descriptive Priced Catalogue.—Messrs. F. & A. Smith (Park Road, West Dulwich, S.E.), Retail Catalogue of New and Choice Plants.—Messrs. Ewing & Co. (Eaton, near Norwich), List of Clematis.—Messrs. Green & Son (54 and 55, Blackfriars Road, London, S.E.), Catalogue of Rollers, Mowing Machines, &c.

COMMUNICATIONS RECEIVED.—S. W.—L. H.—A. W. (next week).—F. W.—A. F.—W. H.—R. A. (next week).—T. W.—W. T. T.—M. J. B.—W. S.—R. M.—W. M. (many thanks).—J. G. B.—W. D. P.—J. S.—J. W.—G. H.—W. P.—G. S.—W. M.

DIED, at 20, Warden Street, Newcastle-on-Tyne, FREDERICK MOORE, for twenty-five years Head Gardener to Earl Grey, Howick Hall, Northumberland.

Markets.

COVENT GARDEN, May 31.

Our market has again been quiet, and the recovery of last week has not been maintained. Large importations of early fruits are arriving from the Continent, such as Apricots, Cherries, and Strawberries. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apricots, per box	2 0	3 0	Oranges, per 100	8 0	16 0
Apples, per ½-sieve	3 0	8 0	Peaches, per doz.	8	0-25 0
Cherries, per box	2 0	3 0	Pears, per doz.	12	0 —
Cobs, per lb.	1 0	1 6	Pine-apples, per lb	2	0 6 0
Grapes, per lb.	3 0	12 0	Strawberries, p. oz.	0	6 1 0
Lemons, per 100	10 0	15 0	Figs, green, each	0	9-1 6
Melons, each	8 0	12 0			

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per bush.	4 0	..	Gooseberries, green,		
— Eng. Globe, doz.	4 0	6 0	per quart	0	8-1 0
Asparagus, French,			Herbs, per bunch	0	2-0 4
Giant, per bunch	8 0	20 0	Horse Radish, p. bun.	4	0 ..
— English, p. bun.	3 0	6 0	Leeks, per bunch	0	2-0 4
— Fr., natural bun.	1 6	5 0	Lettuces, Cos, p. doz.	6	0 ..
— Sprue, per bun.	1 6	..	— English, score	2	0 ..
Beans, French (new),			Mint, green, bunch	0	6 ..
per 100	1 3	2 6	Mushrooms, per pott.	1	0 2 0
— French, Long-			Onions, per bush.	10	15 0
pod, ½-bushel	2 6	..	— young, per bun.	0	6 ..
Beet, per doz.	1 0	2 0	Parsley, per bunch	0	2 ..
Cabbages, per doz.	2 0	3 0	Peas, green, per lb.,	1	0 ..
Carrots, per bunch	0 7	0 10	— shelled, per qt.	4	0 ..
— New French, per			Radishes, per bunch	0	1-0 3
bunch	1 6	..	— Spanish, doz.	1	0 ..
Cauliflowers, per doz.	2 0	6 0	— New Jersey, doz.	2	0 ..
— Eng., new, doz.	8 0	..	Rhubarb, per bundle	1	0 ..
— French, doz.	4 0	8 0	Salsafy, per bundle	1	0 ..
Celery, per bundle	1 6	2 0	Shallots, per lb.	0	6 ..
Chilis, per 100	1 0	2 0	Spinach, per bushel	2	0 ..
Cucumbers, each	0 6	1 6	Tomatos, per doz.	3	0 ..
Endive, per doz.	1 0	2 0	Turnips, per bundle	0	4-0 6
— Batavian, p. doz.	1 0	3 0	— new, per bundle	1	0-1 6
Garlic, per lb.	0 6	..			
Potatos (old). — Kent Regents,			£7 to £8: Essex Regents,		
£6 10s. to £7; Kidneys,			£7 10s. to £8; Kidneys, £7 per ton. (New) Jersey		
Kidneys, 20s. to 30s. cwt.; Rounds, 14s. to 20s. cwt.					

CUT FLOWERS.

	s. d.	s. d.		s. d.	s. d.
Azaleas, 12 sprays	0 6	2 0	Pelargoniums, 12 spr.	0	1-2 0
Blue Bells, 12 bunch	1 0	6 0	— scarlet, 12 sprays	0	1 6
Bouvardias, per bun.	1 0	4 0	Primroses, per dozen	0	6 2 0
Calceolaria, p. bunch	1 0	2 0	Primula, double, per		
Camellias, 12 blooms	0	2 0	bunch	1	0 2 0
Carnations, per dozen	1 0	4 0	Ranunculus, 12 bun.	4	0 9 0
Cowslips, 12 bunch	1	0 0	Roses, indoor, per		
Eucharis, per doz.	0	9-1 0	dozen	1	6-12 0
Gardenia, per doz.	2	0 9 0	Rose de Meaux, 12		
Heliotropes, 12 spr.	0	6 1 0	bunches	0	9-2 0
Lily of Val., 12 bun.	6	0-18 0	Spiræa, 12 sprays	1	0-4 0
Mignonette, 12 bun.	4	0 9 0	Stephanotis, 12 spr.	2	0 9 0
Myosotis, 12 bunch	1	0-2 0	Stocks, 12 bunches	4	0 8 0
Narcissus, double, 12			Tropæolum, 12 bun.	2	0 6 0
bunches	4	0-18 0	Tulips, per dozen	0	6 2 0
Narcissus, Pheasant's-			Wallflowers, p. doz.	4	0 9 0
eye, 12 bunches	3	0 9 0			

PLANTS IN POTS.

	s. d. s. d.
Azaleas, per dozen	24 0–60 0
Balsams, per dozen	4 0–12 0
Begonias, per doz.	6 0–12 0
Bouvardias, do.	12 0–24 0
Calceolaria's, ...	9 0–24 0
Cineraria, per doz.	6 0–18 0
Clematis ...	24 0–60 0
Cockscombs, per doz.	9 0–12 0
Coleus, per dozen ...	3 0–9 0
Cyperus, do. ...	6 0–12 0
Dracæna terminalis	30 0–60 0
— viridis, per doz.	18 0–24 0
Ferns, in var., p. doz.	6 0–24 0
Ficus elastica, each	2 6–15 0
Fuchsias, per dozen	9 0–18 0
Heaths, variety, doz.	24 0–60 0
Helotrope, per doz.	6 0–18 0
Hydrangea, per doz.	12 0–30 0
Liliums in var., each	3 6–10 6
Lily of Valley, each	1 0–3 6
Mignonette, per doz.	3 0–9 0
Myosotis, per dozen	4 0–12 0
Myrtles, do. ...	3 0–9 0
Palms in variety, each	3 6–21 0
Pelargoniums, p. doz.	12 0–36 0
— scarlet, per doz.	4 0–9 0
Petunias, per doz.	6 0–24 0
Rhodanthe, per doz.	6 0–15 0
Richardia æthiopica, per doz.	9 0–18 0
Roses, per dozen	24 0–60 0
— fairy, per dozen	9 0–18 0
Spiræa, per doz.	12 0–30 0
Valotta purpur., doz.	12 0–18 0

SEEDS.

LONDON: *May* 30.—The attendance on the seed market to-day was, as might have been expected, meagre in the extreme, and the amount of business doing was as nearly *nil* as possible. There is, consequently no quotable variation in the value of any kind of agricultural seeds. Although prices are at present purely nominal, holders generally exhibit increased firmness, the values fixed by them being above the views of speculators. There is some inquiry for spring Tares at unchanged currencies. As regards Canary seed, quotations are weaker, the demand for this article being just now very restricted. Mustard and Rape seed for agricultural purposes experience a good sale, and a slight advance must be noted. Blue boiling Peas and Haricot Beans move off on former terms. There is a fair request for English Buckwheat. Feeding Linseed is steady. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday the supply of English Wheat was short, but there were liberal importations of foreign, and the few sales concluded in either description were at a reduction of from 2*s.* to 3*s.* per quarter. as compared with the prices of last Wednesday, or say from 4*s.* to 6*s.* per quarter as contrasted with the rates of this day fortnight. Barley declined from 6*d.* to 1*s.* per quarter, and an easier tone prevailed for malt. Oats and Maize were about 1*s.* per quarter cheaper than last week, while Beans and Peas could only be sold at a like decline. The flour trade was dull and very heavy, all qualities being decidedly easier.—On Wednesday very little business was transacted in Wheat, but the tendency of prices was downwards, both for English and foreign produce. The flour trade was also dull, and sales could only be effected by submitting to lower prices.—Average prices of corn for the week ending May 26.—Wheat, 68*s.* 6*d.*; Barley, 37*s.* 9*d.*; Oats, 28*s.* 3*d.* For the corresponding week last year:—Wheat, 45*s.* 3*d.*; Barley, 32*s.* 10*d.*; Oats, 26*s.* 1*d.*

CATTLE.

At Copenhagen Fields on Monday there was a much larger supply of beasts than on the previous Monday, 360 Canadians having unexpectedly arrived, and about 400 Danish. The trade was very slow, and prices fell considerably. There was a large increase also in the supply of sheep and lambs. Trade was worse than on Thursday week, especially for lambs, and it was difficult to effect a clearance even at the reduced rates. The few calves on offer made a fair price. Quotations:—Beasts, 4*s.* to 5*s.*, and 5*s.* 4*d.* to 5*s.* 10*d.*; calves, 5*s.* 6*d.* to 6*s.* 8*d.*; sheep, 4*s.* 10*d.* to 5*s.* 6*d.*, and 6*s.* to 6*s.* 6*d.*; lambs, 7*s.* 4*d.* to 8*s.* 2*d.*; pigs, 4*s.* to 5*s.*—Trade on Thursday was dull. In the beast market sales were difficult to close, and the tendency of prices was adverse. Sheep also sold very slowly, and did not in all cases support Monday's rates. Lambs went at prices in favour of buyers. The few calves on offer brought late value.

HAY.

At Whitechapel on Tuesday, with a full supply, trade was dull, and quotations dropped somewhat. Prime Clover, 120*s.* to 128*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 125*s.*; inferior, 70*s.* to 85*s.*; and straw, 42*s.* to 57*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 120*s.* to 132*s.*; inferior, 100*s.* to 110*s.*; superior Clover, 132*s.* to 140*s.*; inferior, 110*s.* to 120*s.*; and straw, 55*s.* to 60*s.* per load.

POTATOS.

The Borough and Spitalfields markets reports state that the supplies of old Potatos are now perceptibly running off, and though no great demand exists decidedly higher prices prevail. Kent Regents, 120*s.* to 140*s.* per ton; Essex do., 110*s.* to 130*s.*; Scotch do., 95*s.* to 130*s.*; rocks, 95*s.* to 105*s.* per ton.—The imports into London last week comprised 8026 packages from Lisbon, 7829 bags Antwerp, 1803 bags Hamburg, 1148 sacks Brussels, 1201 sacks Bremen, 537 sacks Dunkirk, 250 sacks Paris, 359 sacks 485 bags Boulogne, 133 boxes Calcutta, and 146 casks 136 cases and 135 boxes Malta.

COALS.

There has been a steady business in the coal market at former quotations, *viz.*, Walls End—Tunstall, 17*s.* 9*d.*; Hartlepool, 19*s.*; Kelloe, 18*s.*; South Hartlepool, 18*s.*; South Kelloe, 18*s.* 6*d.*

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1829, against Red Spider, Mildew, Thrips, Greenfly, and other Blights, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has also many preparations intended to supersede it.
Sold Retail by Seedsmen, in Boxes, 1*s.*, 2*s.*, and 10*s.* 6*d.* Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6*s.*; per pint, 3*s.* 6*d.* Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardeners'*, and to our many Glass Gardeners.
Prepared by JOHN KILNER, Wortley, near Sheffield.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60*z.* to 100*z.* per 100; superior close-wove, 40*z.*, 50*z.* and 55*z.* per 100; Packing Mats at 20*z.*, 30*z.*, and 35*z.* per 100; and all other descriptions of Mats at equally low rates, at
J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

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3½-inch ivory handles .... per doz	14 0	11 0	6 0
3⅞ " " ... "	18 0	14 0	7 0
4½ " " to balance "	20 0	15 0	7 0
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5 " " "	30 0	22 0	8 0
4 " fine "	32 0	24 0	9 6
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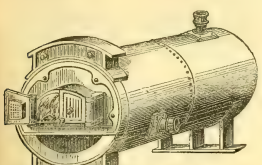
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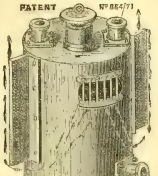
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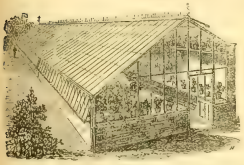
("EXCELSIOR BOILER.")

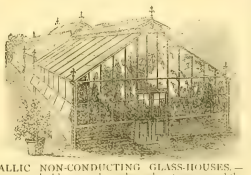
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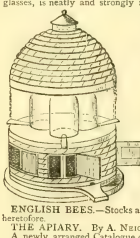


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GALVANISED AFTER MADE.



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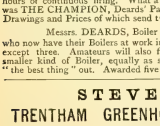
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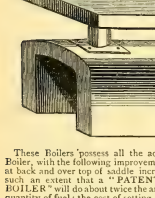
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These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

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High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 ,,	18 ,,	300	7 0 0
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20 ,,	18 ,,	30 ,,	500	9 0 0
24 ,,	24 ,,	24 ,,	700	12 0 0
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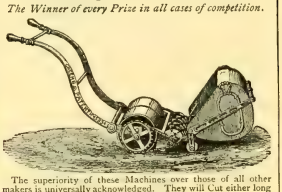
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GLASSHOUSES—perfect ventilation,
HORTICULTURAL BUILDER and TIMBER MERCHANT,
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Or Noiseless Lawn-mowing, Rolling, and Collecting Machines for 1877.
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And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

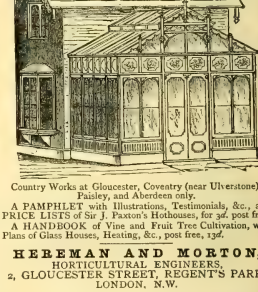
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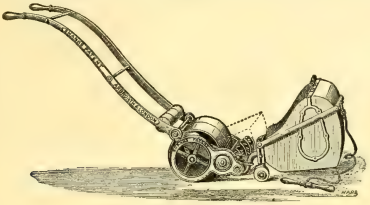
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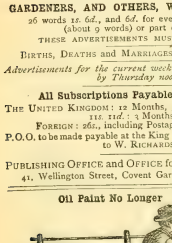
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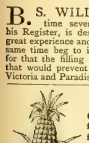
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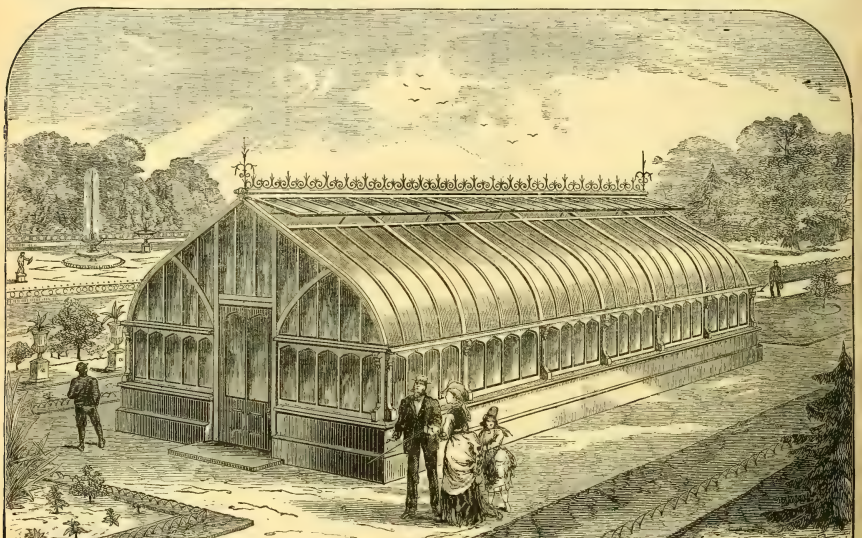
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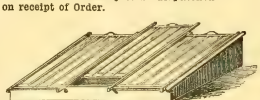
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No. 1 size, 4 feet long, 6 feet from front to back ..	3	0	0
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Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, June 2, 1877.
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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 180.—Vol. VII. { New Series. } SATURDAY, JUNE 9, 1877. { Registered at the General Post Office as a Newspaper. } Price 5d. { Post Free, 5½d.

With the present Number is presented a Special Eight-page SUPPLEMENT devoted to POPULAR GARDENING, and a COLOURED ILLUSTRATION of a new variety of CYCLAMEN.

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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

The GREAT SUMMER FLOWER SHOW under the Large Tent and ANNUAL SHOW by the Pelargonium Society, and EXHIBITION of New Plants for Silver Cups offered by Mr. William Bull, F.L.S., &c., on TUESDAY, June 19. Schedules on application. Band of the Royal Horse Guards. Admission 3s. 6d.

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CRYSTAL PALACE.—GREAT ANNUAL ROSE SHOW, SATURDAY, June 23. Dramatic Performance. Fête of German Gymnastic Society.

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5, Boone's Road, Lee, S.E.

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To the Trade.—Turnip Seeds.

H. AND F. SHARPE are prepared to make offers of Stocks of all the Choice Trade of all the Choice Sorts selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application to

Seed Growing Establishment, Wisbech.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LIST for 1877.

Extra Strong SEAKALE, 2s. per dozen.

RICHARD SMITH, Nurseryman, Worcester.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, and Double PRIMROSES of different colours: AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application. Mr. WEBB, Calcot, Reading.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Gentlemen's Gardeners, Amateurs, and Others REQUIRING

GARDEN POTS of best quality, are requested to send their orders to

J. MATTHEWS, Royal Pottery, Weston-super-Mare.

Price List on application.

SALES BY AUCTION.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from J. G. Hepburn, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, THURSDAY and FRIDAY, June 20, 21 and 22, at half-past 12 o'Clock precisely each day, the entire Collection of ESTABLISHED ORCHIDS formed by him at Sidcup Place, and Sold in consequence of change of residence, comprising, amongst many others, fine plants of the following well-known sorts, and many of which have been most successfully exhibited:—Aganisia sesquipedale, Cologyne cristata, Dendrobium Wardianum, fine variety, 150 flowers this year, Vanda suavis Veitchii, large, fine plant, 60 spikes each; Cypripedium barbatum, seven spikes, twelve flowers; Vanda coerulea, Dendrobium Falconeri, large, massive flowers, more than this year, 250 on the plant; Cattleya Mendelii, Odontoglossum Phalænopsis, good plants; O. Roezlii, twenty-five flowers, thirteen spikes; O. vexillarium, O. nævium, many, eight spikes; O. crossonium, Oncidium macranthum, three spikes, and is showing over fifty buds already—it is a very good variety: Dendrobium Devonianum, fine variety; D. thyrsiflorum; Epidendrum elongatum, E. Pseudepidendrum, E. pulchellum majus, O. cirrhosum, O. Madrense, good variety; O. Rossi Davisonianum, O. C. Hallii, Masdevallia Veitchii, M. Lindeni, M. Harryana, Lælia Perrinii, and Phalænopses, seventy to eighty plants, comprising grandiflora aurea, grandiflora Ludemanniana, amabilis, Schilleriana, rosea, leucorhoda—all have flowered, and they are very fine varieties.

On view the mornings of Sale, and Catalogues had.

Wills' New Hybrid Dracænas.

MR. J. C. STEVENS has received instructions from Mr. Wills to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 26, at half-past 12 o'Clock precisely, the entire Stock of about twenty-four of the very finest of the above magnificent HYBRID DRACÆNAS, raised by Mr. F. Bause, at the Melbourne Nursery, Anerley. Mr. Wills has determined to give the Trade an opportunity of purchasing the above magnificent Plants.

On view the morning of Sale, and Catalogues had.

The Collection of Established Orchids

of W. H. Michael, Esq., of Cholmeley Park, Highgate.

MR. J. C. STEVENS begs to announce that he has received instructions from W. H. Michael, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, THURSDAY and FRIDAY, July 4, 5 and 6, at half-past 12 o'Clock precisely each day, without the least reserve, the valuable COLLECTION of ORCHIDS, made and exhibited by that gentleman, who is now removing from Highgate, consisting of some of the finest varieties. Amongst other things will be found the following:—Aerides Fieldingii, Lobbii, &c.; Angulloa, Chysis bractescens, Cymbidium Mastersii and eburneum; Cattleya crocea variety, including the Dowiana, gigas, and Dowiana; Lælia elegans, Turneri, Schilleriana, purpurata, and a grand specimen of superbiens; Odontoglossums of all the principal kinds, including Alexandræ, cirrhosum, cirrhosum, Andersonianum, a magnificent variety; nebulosum, luteopurpureum, Rossii, hystrix, citrosmum, Pescatorei, Lindleyanum; Phalænopsis grandiflora, Schilleriana, amabilis, Luddemanniana, and rosea; Sacrolabium retusum, giganteum, Hookeri, &c.; Saccolabium Blumei, Denisonianum, violaceum, curvifolium, Batemani, suavis Veitchii; Cypripedium Veitchii, Dayanum, Argus, Stonei, Sedeni candatum, &c.; Angræcum eburneum, superbum, and sesquipedale; Bollophyllum Barbigerum, Brassias, Pescatorei, &c.

On view the mornings of Sale, and Catalogues had.

Sydenham, S.E.

IMPORTANT UNRESERVED SALE of thousands of beautifully grown STOVE, GREENHOUSE, and BEDDING PLANTS.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Carter, Dunnet, and Beale, to SELL by AUCTION on the Premises the Crystal Palace Nurseries, between Ferry Hill and Vale, Sydenham, S.E., on TUESDAY, June 12, at 12 o'Clock precisely, a large quantity of STOVE PLANTS of remarkably clean and healthy growth; a large quantity of FERNS, also an unusually rich assortment of 30,000 BEDDING PLANTS.

Full description of which will be found in Catalogues which may be had on the Premises, at 237, High Holborn, and of the Auctioneers, 98, Gracechurch Street, London, E.C., and Leytonstone, E.

Garston Vineyard, Garston, near Liverpool.

MESSRS. PROTHEROE AND MORRIS are instructed by the Crown Patent Company (Limited), to SELL by AUCTION on the Premises, as above, on FRIDAY, June 22, at 12 o'Clock precisely, the entire STOCK-IN-TRADE of the Horticultural, Building and Engineering Department, comprising about sixty new Boilers, Hot-water Pipins, Screw, Throttle, and other Valves, several Mowing Machines, a nearly new Morticing Machine, and numerous other effects.

On view one week prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. The Business of the Company will be carried on as usual at their London Establishment.

Beverley, Yorkshire.

IMPORTANT SALE of carefully selected STOVE and GREENHOUSE PLANTS in the best possible health, no expense having been spared in order to get the best collections in the country. Also a large quantity of other beautifully-grown stock.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Wm. E. Dixon, who is giving up showing, to SELL by AUCTION on the Premises, the Norwood Nursery, Beverley, York, ten minutes' walk from the State, on TUESDAY, June 26 and following days, at 11 for 12 o'Clock precisely each day, the whole of the magnificent collection of STOVE and GREENHOUSE PLANTS, which he has taken numerous prizes at the leading shows, consisting of well-trained specimens of various size, comprising Pandanus utilis, Allamandas, Dipladenias, Adiantums, and other choice Ferns; Stephanotis, Azaleas, Crotons, Dracænas, Tree Ferns, Palms, Anthuriums, Dasylirions, Orchids, and other large specimen plants. Also a large quantity of thriving Successional Stock, including Stove and Greenhouse Palms, Ferns, Anthuriums, Orchids, Pandanus, &c.

The Stock may be viewed any time prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

West Leigh, Narborough Road, Leicester.

ORCHID GROWERS, NURSERYMEN, GENTLEMEN, and OTHERS.

HAND F. TARRATT are honoured with instructions from the Executors of Archibald Turner, Esq., deceased, to SELL by AUCTION, on MONDAY and TUESDAY, June 18 and 19, at West Leigh aforesaid, commencing each day at 11 o'Clock punctually, a very extensive and valuable Collection of rare ORCHIDS, consisting of Aerides, Vandas, Cypripediums, Lælias, Oncidiums, Cattleyas, Sobralias, Arpophyllums, Dendrobiums, Saccolabiums, Phalænopsis, Anguloas, Odontogossums, &c. The Vandas include some fine healthy specimen plants; the Cattleyas include many fine sorts, amongst which may be named Mossiæ, Skinneri, Trianæ, Speciosissima, &c.; the Dendrobiums include nobile, Wardianum, and Pierardianum; the Odontoglossums will be found in great variety, and include many of the best sorts, such as Alexandræ, Pescatorei, nævium majus, Cordatum, Insleayi, and grande. Also many choice STOVE and GREENHOUSE PLANTS. The late Mr. Turner was for many years a most successful cultivator of Orchids, and the collection formed by him enjoyed a reputation probably unequalled in the United Kingdom. The Gold Medal of the Royal Botanical Society was, on four occasions, awarded for Orchids exhibited at the Society's shows by Mr. Turner. The Stove and Greenhouse Plants have also obtained seven silver Cups at local exhibitions.

Catalogues may be had fourteen days prior to the Sale, of the Auctioneers, Market Street, Leicester, who will forward same on application; or of Mr. WILLIAM ARCHER, The Gardens, West Leigh.

Kent (1187).

TO BE SOLD, a capital NURSERY, comprising three-quarters of an acre of Ground, with Six Greenhouses (about 8000 feet) erected thereon. Trade almost entirely with Covent Garden. Lease, eighteen years unexpired. Rent, £50 per annum. Price for Goodwill and Stock, £250. Apply to

PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

TO BE SOLD, a Small NURSERY (Partner taken with a small capital), 7 miles from London, with convenient Greenhouses and good Dwelling-House. Rent for all the Houses: also seventeen years' Lease of Premises. Principals only dealt with.

GEORGE ALCOCK, 35, Great James Street, Bedford Row, London, W.C.

Worthing, Sussex.

TO BE LET, GRAPERIES and GARDEN. —The old-established Vineries and Nursery Gardens in the heart of the town of Worthing, consisting of handsomely-fronted Show-house and Shop, with three large span and four lean-to Houses, 600 feet run in all, with Heating Apparatus complete: a good Dwelling-House, and extensive Yard accommodation, some colouring. Plants and Utensils to be taken at a Valuation, and an agreed sum in respect of the cost of bringing on the Grapes since Christmas. Immediate possession. Rent, £105.

GARDENER, The Graperies, Crescent Road, Worthing.

North Street Nurseries, Bridgwater.

TO NURSERYMEN, FLORISTS, MARKET GARDENERS, FRUITERERS, and OTHERS.

TO BE LET, with Immediate Possession, a 11 rose well-known, desirable and extremely productive NURSERIES, situate in North Street, in the Borough of Bridgwater, in the County of Somerset, in the occupation of Mr. Samuel Dyer, Nurseryman, Seedsman, Fruiterer, and Florist, and for many years prior thereto, of Mr. Ambrose Dyer, Jun. Never was there about to be offered to contain a splendid Greenhouse, 40 feet by 18 feet, with all necessary Heating Apparatus, Staging, Supports, and Appliances; double Forcing Pits, heated by hot-water pipes; Potting-sheds, Propagating Cases, Staging, Fixings, and Supports; Cucumber and other Frames and Lights, Potting Houses, Coach-house, Stables, Loft, and other requisite Outdoor Buildings. The Lands are stocked with the choicest of Nursery Plant, and are in the highest state of cultivation. A Residence, with an Office and Shop, forms a portion of and within the property, the whole lying compactly together in a ring fence.

Other Lands, now used as Nurseries, may be had if desired. Having in their trust to SELL by PUBLIC AUCTION: The above is a Genuine Concern, well situate, and offers many advantages very rarely to be met with. To view, and for further particulars, apply at

Mr. BOYS, Auctioneer, Appraiser, &c., Auction Offices, High Street, Bridgwater.

TO BE LET, Three GREENHOUSES, Heated with Hot-water Apparatus; and HALF ACRE of GROUND on the most favourable Terms. POSSESSION The above is a Genuine Concern, well situate, and offers many advantages very rarely to be met with. To view, and for further particulars, apply at

Mr. BOYS, Auctioneer, Appraiser, &c., Auction Offices, High Street, Bridgwater.

TO BE LET, Three GREENHOUSES, Heated with Hot-water Apparatus; and HALF ACRE of GROUND on the most favourable Terms. POSSESSION

ALICE KNIGHT, late W. Knight, Nurseryman and Florist, Kilburn Park Nursery, 23, Malvern Terrace, Kilburn Park, N.W.

TO BE SOLD, by Private Arrangement, the very select COLLECTION of TULIPS now in Bloom, grown by Charles Williams, Esq., of London, for 48 years. There are good stocks of the finest strains of some of the most esteemed varieties, and a bed of promising breeders.

May be viewed at 327, Loraine Place, Holloway, London, N.

WORCESTERSHIRE AGRICULTURAL SOCIETY.

MEETING at KIDDERMINSTER, July 24, 25, and 26.

President: The Right Hon. Lord Hampton.

A GRAND HORTICULTURAL EXHIBITION in connection with the Show will be held in Bewdley Grounds, at Kidderminster, when PRIZES amounting to upwards of TWO HUNDRED POUNDS will be offered

Schedules of Prizes and Rules, &c., apply to EDW. T. GOLDINGHAM, Secretary, 6, Foregate street, Worcester; or to J. E. HAYWOOD, Nurseryman and Seed Merchant, 28, Broad Street, Worcester, Hon. Secretary to Horticultural Show.

THE AMERICAN PLANTS at Knap Hill are now in bloom, and may be seen daily, Sundays excepted. The Exhibition of Rhododendrons in the Royal Botanical Gardens is now open. Admission by orders from Fellows, or on application to the exhibitor.

ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

CRYSTAL PALACE.—It has been decided at a Meeting held on the 26th ult., to PRESENT a TESTIMONIAL to Mr. F. W. WILSON, who has just left the Palace, after twenty-five years' service.

Mr. Wilson's genial manners, unfailing courtesy, and thoroughly zealous efforts to promote and carry out successfully the various interesting Natural History and other Shows at the Crystal Palace, have earned for him the respect of a very wide circle of friends.

Mr. C. E. ELLIOTT, of the Ceramic Court, Crystal Palace, has consented to act as Hon. Treasurer and Secretary, and he will be happy to attend to all communications in connection with the Fund, or receive any Subscriptions.

Cheap Bedding Plants.

H. J. HARDY has much pleasure in offering fine and healthy autumn-struck plants of the following:—

GERANIUMS, Vesuvius, Master Christine, Jean Sisley, Triumphant, Madame Vaucher, and other best Bedding sorts, at 8s. per 100 from store, or 10s. from single pots.

CALCEOLARIA FLORIBUNDA AUREA, 5s. per 100 from store.

Package free and carriage paid for 20s. worth. Terms Cash.

H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

Please note alteration of Address.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and will annually improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.

RICHARD SMITH, Nurseryman, Worcester.

Clearance Sale.

CHOICE AMERICAN and other POTATOS.—Fine, clean, sound sets, 8s. per cwt., free on rail, Norwich. Early Rose, Champion Regents, Red-skin Flourball, Bresee's Peerless, Brownell's Beauty, Yorkshire Hero, Scotch Blue Regent, Woodside Prolific, &c., &c., Alpha, &c. Orders will be sent out in succession till all are cleared.

DANIELS BROS., Seedsmen to the Queen, Norwich.

GERANIUM "ROBERT BURNS" (Gray).—A most luxuriant grower, yet never exceeding 3 or 4 inches in height. The habit is quite dwarf and compact, with a distinct chestnut zone. Without doubt one of the finest golden bronze Bedders yet introduced. Stout plants, in single pots, 9s. per dozen, 50s. per 100.

JAMES SERVICE, Nurseryman and Seedsman, Maxwelltown, Dumfries, N.B.

REGAL PELARGONIUMS.—
BEAUTY of OXTON | REMOVED
CAPT. RAIKES | QUEEN VICTORIA.

The above four splendid varieties free by post for 5s.

KOSNG ALBERT, Nurseryman, Penge, Surrey.

Trade price on application.

FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

Bedding Plants, Bedding Plants

JOHN SOLOMON offers VERBENAS, White, Scarlet, Purple, and Pink; LOBELIAS, purple, grandiflora, Blue-tone, and pumila magnifica; CALCEOLARIAS, golden gem; HELIOTROPES; AGERATUMS, Imperial Dwarf and Countess of Stair; FUCHSIAS, in all the best kinds; also a few Cuttings of Golden Chain and Mexican Zonale; GERANIUMS, Vesuvius, Christine, and Flower of Spring, at £1 per 100. All the above are good, strong, well hardened, and established in pots, and will be sent to any address.

Islington Nursery, Park Street, Islington, N.

DOUBLE ZONAL PELARGONIUMS, New 1876. Madame Amelia Ballet, Dame Blanche, both good double white; Deputé Vavin, Deputé Brice, Le Nadi, Est, Mademoiselle Marie Lemoine, and Mrs. Pollett, Meteor Flag, and Wonderful. The above set of ten splendid varieties for 10s. 6d., package or post-free. Double and Decorative Plants, 18s. per 100. Cut Flowers. Post-office Orders payable to

FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

MIMULUS MOSCHATUS HARRISONII —Well-rooted Plants of the above splendid new Musk, post-free, 1s. each.

DAHLIAS, VERBENAS, and GERANIUMS. Dahlias, 4s. 6d. per 100, 50 per 1000, all good exhibition sorts to name. Verbenas, in single pots, good plants, 15s. per 100: turned out of pots, 12s. per 100; extra strong, well-rooted Cuttings, 6s. per 100. Bedding Geraniums in great variety, extra strong 12s. and 15s. per 100.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

Bedding Plants for the Million.

JAMES HOLDER AND SON'S GUINEA HAMPER consists of eight dozen plants, comprising scarlet and variegated Pelargoniums, Calceolarias, Coubarias single and double Petunias, Dahlias, Ageratums, Lobelias of sorts, Gazanias, Salvias, Coleus, Iresines, Alternantheras, Heliotropes, Fuchsias, Echevarias, Sedums, Cuphea, Tropæolums, Mesembryanthemums, Fuchsias, &c.; all strong healthy plants, in single pots.

Crown Nursery, Reading.

For Greenhouses, Winter Gardens, Terraces, &c.

STANDARD and PYRAMID SWEET BAYS (LAURUS NOBILIS) More ornamental and of easier culture than Orange trees, their constant deep green colour being of a very pleasing effect.

The following are all grown and established in tubs, and fit for travelling to any distance

STANDARD BAYS:—Height of stems, 3½ to 4½ feet: diameter of heads, about 2 feet, price £2 to £3 per pair.

" " with very strong compact heads, 3 to 4 feet in diameter, £3 to £5 per pair.

" " extra large and fine, £12, £16, £20, to £40 per pair, according to size and beauty.

PYRAMID SWEET BAYS: Fine young Pyramids, 6 to 7 feet high, £2 to £3 per pair.

" " large, strong, 10 to 14 feet diameter at the base, £5 to £8 per pair.

" " extra large specimen Pyramids, 8 to 10 up to 12 feet high price £8, £12 to £20, up to £40 per pair, according to size and beauty

Hundreds of pairs to be disposed of. Apply at once to

JEAN VERSCHAFFELT'S Nurseries, Ghent, Belgium.

TEN THOUSAND HYBRID SEEDLING RHODODENDRONS are now in bloom in my Nursery, including many of the greatest novelties in cultivation. Inspection invited.
ISAAC DAVIES, Nurseryman, Ormskirk.

RODGER, McCLELLAND AND CO. have still a few extra strong plants of HYDRANGEA PANICULATA GRANDIFLORA, 1½ to 2 feet high, 12s. to 18s. per dozen.
CLEMATIS JACKMANII, 2s. per dozen.
PRINCE OF WALES, 9s. per dozen.
TROPÆOLUM SPECIOSUM, beautiful hardy climber, 6s. per dozen.
MUHLENBECKIA COMPLEXA, one of the most elegant of hardy climbing plants (like Maidenhair Fern), 6s. to 9s. per dozen.
64, Hill Street, Newry.

BEDDING PLANTS, BEDDING PLANTS.—Zonal and Nosegay GERANIUMS, 2s. 6d. and 3s. per dozen, 16s. and 20s. per 100; Bicolor do., 3s. and 3s. 6d. per dozen, 21s. and 25s. per 100; Silver-edged do., 3s. and 3s. 6d. per dozen, 21s. and 25s. per 100. CALCEOLARIAS, 3s. 6d. per dozen, 24s. and 28s. per 100. AGERATUMS, LOBELIAS, VERBENAS, IRESINES, HELIOTROPES, ECHEVERIAS, MESEMBRYANTHEMUMS, 6d. var. Bedding PANSIES, VIOLAS, SALVIAS, 12s. 6d. and 2s. per dozen, 8s., 12s., and 15s. per 100, according to size. DAHLIAS, 3s. 6d. per dozen, 24s. per 100. FUCHSIAS, CHRYSANTHEMUMS, and COLEUS, 3s. per dozen, 20s. per 100. Golden PYRETHRUMS and best SEDUMS, 2s. per dozen; bedding, 12s. per 100. Tuberous BEGONIAS, bolivensis, Sedeni Victoria, and magnifica, for bedding, 6s. per dozen.
CATALOGUES on application.
WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

To the Trade.
BEDDING PLANTS.—Fine, well grown, in separate pots 2½ inches:—
VERBENAS, Eclipse (scarlet), Purple King, and Boule de Neige (pure white), in splendid stuff, 12s. per 100.
GERANIUMS, Zonal, 10 name, 14s. per 100.
CALCEOLARIA, aurea floribunda, 14s. per 100.
AGERATUMS, HELIOTROPES, IRESINES, LOBELIAS, ALTERNANTHERAS, ALYSSUM VARIEGATUM, CINERARIA MARITIMA, COLEUS VERSCHAFFELTII, GAZANIA SPLENDENS, GNAPHALIUM LANATUM, MESEMBRYANTHEMUM, cord. var., NIEREMBERGIA GRACILIS, PERILLA, TAGETES SIGNATA, pl., GOLDEN THYME, VERBENA VENOSA, and VIOLA CORNUTA PERFECTA, 12s. per 100.
CENTAUREA RAGUSINA, 16s. per 100.
SALVIA PATENS, 2s. 6d. per dozen.
ACACIA LOPHANTHA, 4s. per dozen.
ARTEMISIA ARGENTEA, 2s. 6d. per dozen.
ABUTILON THOMPSONIÆ, 2s. 6d. per dozen.
COPROSMA BAUERIANA VAR., 4s. per dozen.
SEDUM GLAUCUM, 15s. per 100.
ECHEVERIA SECUNDA GLAUCA, 15s. per 100.
F. W. COOPER, Florist, Huntingdon.


New Plants for 1877.
B. S. WILLIAMS' ILLUSTRATED NEW PLANT CATALOGUE for 1877 is now ready, and will be sent, post-free, to all applicants.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

Bedding Plants! Bedding Plants!
FAND A. SMITH beg to offer the following, in strong healthy plants, in single pots, suitable for immediate effect:—Geraniums, Verbenas, Petunias, Cinerarias, Campanula fragilis, Dahlias, Lobelias, Pyrethrums, Phloxes, Mesembryanthemum cordifolium variegatum, Cuphea, Price LIST on application. Orders of 20s. and upwards delivered free within a radius of 6 miles from St. Paul's.
The Nurseries, West Dulwich, S.E.

Chrysanthemums, Dwarf Summer-flowering VARIETIES.
ROBERT PARKER begs to announce that he can supply the above-named in twelve distinct varieties, by the 100, post-free, price, 9s. per 100, 50 for 5s., per 100. Special quotations for larger quantities. For lines, masses, or clumps in mixed borders, these take a first rank among flowering plants.
Exotic Nursery, Tooting, Surrey, S.W.

Cheap Plants—Special Offer.
WILLIAM BADMAN offers the following cheap Plants:—
VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 10s. per 100 or 1s. 6d. per dozen; well-rooted Cuttings, 6s. per 100, 50z. per 100; twelve choice named sorts, 1s. per 100.
CALCEOLARIA, Golden Gem and aurea floribunda, good strong plants from single pots, 10s. per 100, 1s. 6d. per dozen.
LOBELIA, speciosa, Bluestone, pumila grandiflora, good strong plants from thumb pots, 10s. per 100, 1s. 6d. per dozen; from store pots, 3s. per 100, 50s. per 1000. Emperor William Lobelia, good plants, 12s. per 100; rooted cuttings, 6s. per 100.
PELARGONIUMS, Vesuvius, finest scarlet, from stores, 8s. per 100, 75s. per 1000; Jean Sisley, 10s. per 100; Madame Vaucher, fine white, 10z. per 100; Master Christine, 12s. per 100.
TRICOLOR PELARGONIUMS, Mrs. Pollock, 20z. per 100, 2s. 6d. per dozen; Flower of Spring and Prince Silverwings, 12s. per 100, 2s. per dozen.
GOLD-LEAF PELARGONIUMS, Crystal Palace Gem, strong, from single pots, 12s. per 100, 2s. per dozen; May Queen (Turner's), fine silver variegated, 12s. per 100, 2s. per dozen.
CRIMSON PELARGONIUM, Waltham Seedling, good bedder, 12s. per 100, 2s. 6d. per dozen.
HELIOTROPE, finest dark, good plants, 20z. per 100, 1s. 6d. per dozen; rooted cuttings, 6s. per 100.
AGERATUM, Imperial Dwarf, blue, fine bedding plants, from single pots, 20z. per 100, 1s. 6d. per dozen; rooted cuttings, 5s. per 100, 40z. per 1000.
IRESINE LINDENI, best crimson-leaf bedding plant, strong stuff, 10z. per 100, 1s. 6d. per dozen; from stores, 6s. p 100.
CENTAUREA CANDIDISSIMA, fine silver-leaf, 3s. per dozen, 20z. per 100.
Package included. Terms cash.
Cemetery Nursery, Gravesend, S.E.

NOTICE.
The Valuable PRIZES offered by
MR. WILLIAM BULL
Will be competed for at the Great Summer Show of the Royal Horticultural Society on June 19.
For Particulars *vide* Schedule of the Royal Horticultural Society, or Mr. William Bull's Catalogue for 1877.
ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

QUANTITY and QUALITY.
NEW ROSES, IN POTS.
TEA and NOISETTE ROSES, IN POTS.
CLEMATISES, IN POTS, of best New and Old Sorts.
ORCHARD-HOUSE TREES, IN POTS.
VINES, IN POTS.
Also, by far the largest and most carefully grown Outdoor NURSERY STOCK in this part of England.
LISTS FREE.
EWING & COMPANY,
THE ROYAL NORFOLK NURSERIES, EATON, NEAR NORWICH.

CRANSTON'S NURSERIES.
ESTABLISHED 1785.
SPECIALITIES.
ROSES, FRUIT TREES, CONIFERS.
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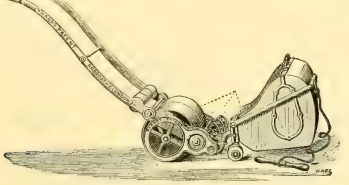
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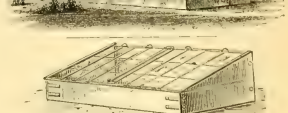
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MR. MECHI'S ADDRESS

to his OLD FRIENDS and CUSTOMERS and to the PUBLIC:—

"As it has been erroneously supposed by some that I am no longer interested in my London business, I think it desirable to state that I continue to carry it on as energetically, and I trust as satisfactorily to the Public, as formerly, assisted by my only son, who will in due time succeed me. It is now fifty years ago since I first commenced business in Leadenhall Street, and what changes have taken place! Then everybody shaved, and my razor and razor-strop trade was immense; now moustache and beard are the order of the day, and the razor and strop trade is comparatively defunct. Then there were no railways, so people stayed at home and used wooden dressing-cases; now everybody travels by rail, and we have dressing-bags to suit the altered conditions. Fifty years ago the poor geese supplied our pens, and many a now rich merchant in the City will remember the quality of Mechi's shilling pen-knives; but steel pens have extinguished the pen-knife trade and the penmaking machines, and the geese are in peace, except at Michaelmas. In fact, steam has altered, and, I may safely say, improved everything, and has made us a nation of travellers both by land and sea. I wonder how much time is now occupied in reading the steam-worked press? and how much less time is occupied in sipping port wine, as we used to do fifty years ago, when we could not travel? Steam will make our 4 lb loaves cheaper some day, just as it has converted calico from 2*s. 6d.* to 6*d.* or less per yard. Then, again, a letter which used to cost 6*s. 6d.* to Cork is now carried for 1*d.* Sir Rowland Hill richly deserves a monument. But to return to business: fifty years ago, when I first commenced on a small scale, I made it an axiom that what I sold should be good and useful, and I believe thousands who used the strop and paste, which I personally invented, can testify to this; it fact, it was sometimes complained of that I stamped on my razors 'Exchanged if not approved.' I have never, and shall never so long as I live, deviate from that principle, because it is the true means to retain and increase one's connection. I devoted my attention especially to the quality and convenience of arrangements in the dressing bag and dressing case department, and in the tasteful selection of articles suitable for presentation, as well as on the matter of dispatch boxes and writing cases. Although both razors and penknives have 'gone out,' our sportsmen remain, and 'sporting knives' form one of our special departments. I feel firmly convinced that there is no fear of the departure of knives and forks, or dinners, so we make this an important department in quality and price. In conclusion, I ask no favours, but simply desire that my customers should compare the quality and price of my wares with those of other dependable establishments, and form their own conclusions. Most of my worthy assistants and workmen have been nearly forty years in my service, and long ago learned that civility and attention to our customers are as important as good quality in the articles sold. Illustrated catalogues will be forwarded post-free on application."

112, Regent Street, W., opposite Vigo Street.—1877.

Sole Medallists for the Best Hot-Water Apparatus at the United States Centennial International Exhibition, Philadelphia.

By Royal Her Majesty's Letters Patent

WRIGHT'S
ENDLESS-FLAME-IMPACT
HOT-WATER BOILERS.

GUARANTEED

The most Powerful, the most rapid, the most Economical, the Simplest, and the Cheapest in the World.

"The '**Boiler of the Future**.' I have no doubt about this."—WM. THOMSON, *Tweed Viaduct*.

From the "Gardener," March, 1877.

WRIGHT'S PATENT

ENDLESS FLAME-IMPACT BOILER.

"This boiler is attracting a good deal of attention in the horticultural world at the present time; and as I have just had one of their largest-sized ones fitted up here, and have now got it well tested, perhaps a few lines from me upon its capabilities may not be without some advantage to some of your numerous readers. I have had some experience as to the annoyance and extra labour caused by badly-constructed boilers, and any improvement effected in these to save labour and fuel demands the attention of all interested parties.

"To give your readers a better idea of the work this boiler has to do, I may begin by stating that our hothouses consist of a range having a total length of 192 feet, a ridge-and-furrow roofed greenhouse being in the centre, two lean-to Vineries on each side, with Camellia-house and general plant-house at each end; on opposite side of wall we have a Fern-house, partly lean-to and partly span, 99 feet in length, varying in width from 10 to 30 feet. Attached to end of boiler-house is our laundry, with a drying chamber fitted up with about 250 feet of 4-inch piping.

"The whole of the above houses are heated with hot water, and have a total of about 3200 feet of 4-inch piping. We had formerly two oval flue boilers, one being 4 feet 6 inches long, the other 4 feet long. With these two boilers kept hard fired we always found great difficulty in keeping up the temperature during frosty weather, and had frequently to lose a night's sleep attending to the fires. On the last day of last year the larger boiler came to grief—the water from it drowned out the fire; and in taking down some of the brickwork it was found to have cracked beyond repair. To be thus left in the middle of winter with only the one boiler was no joke. I had to look out for another without delay. I have given a good deal of attention to the construction of hot-water boilers, and I must say I had never seen one that came up to my idea of what a boiler should be until some time ago my attention was called to a drawing of Wright & Co.'s Boiler, which appeared in the *Gardener*.

"After talking the matter over with my employer, W. S. Mitchell Innes, Esq., he at once granted permission to get the boiler I had formed such an opinion of. I at once put the order into the hands of Messrs. Meikle & Philp, hothouse builders and hot-water engineers, Torphichen Street, and they have fitted it up and attached the piping in the most complete manner. I also got some additional tight valves attached, so that if anything should at any time go wrong it can be attended to without disturbing the piping.

"And now as to the capabilities of the boiler for the work. As formerly stated, I had considerable difficulty in keeping up the heat with the two oval flue boilers kept hard at work. I now find that with the remaining oval flue boiler idle, I can heat up the whole of the houses and the laundry to a degree they never were before, and that with much less coal than it took to fire one of the oval flue boilers.

"Our chimney consists of a flue 70 feet long, led horizontally through centre of back wall, with 16 feet of perpendicular stalk. Some doubt was expressed that, as we required a chimney pipe attached to boiler about 6 feet long, there would be deficiency of draught; but we have found the opposite to be the case. I attached a 6-feet length of 8-inch stove pipe, with elbow at boiler, and cleaning door on the angle, and as I found the draught very strong I got a throttle-valve damper fitted into the bend of the stove pipe, and am able to regulate the fire to a nicety, and by banking up the fire at 10 P.M., and turning the damper fully half round, I can leave it at 10 P.M. with the greatest confidence till the usual time of commencing labour the following morning, and instead of, as formerly, having to sit up firing the half of the night at times, and sometimes whole ones, we can retire to rest at a reasonable hour, confident of sleep being undisturbed by unpleasant dreams of plants and fruits going to ruin. In concluding my remarks I may say that not the least of the good qualities of this boiler is its portability. We had not the slightest difficulty in passing it through an ordinary contracted stokehole through a trap-door 2 feet long by 2 feet broad, and fitting it up in a recess 4 feet square, and I am confident that with the assistance of two men I could take the whole to pieces and have it again in full working order in two hours. I have no hesitation in saying that for rapidity of circulation, small consumpt of fuel, portability, and cleanliness, it has no rival, and have no doubt this boiler will win its way; and where coals are high in price it will effect a considerable saving, and as there is good fire space in it it will be found a capital boiler for burning wood and other fuel."—J. CLARK, *The Gardens, Pearson's Green, Edinburgh*.

[We have a very high opinion of this boiler, and predict that it will take a foremost place in heating hothouses and all other buildings, and shall have some further remarks to make about the principles of it next month.—ED. *Gardener*.]

"I think yours the most perfect '**Heat Trap**' yet invented.—DAVID THOMSON, *Drumlanrig Gardens*."

For details and particulars as to the various sizes made, and prices, please see our pamphlet, entitled, "ON BOILERS AND HEATING," which will be handed to all applicants, post-free.

We are prepared to supply **Thirty Different Boilers** of all powers, sizes, and heights, and can vary these to suit any particular situation or requirement.

WM. WRIGHT & CO.,
HOT-WATER ENGINEERS,
AIRDRIE, near GLASGOW, N.B.

NEW ENGLISH-RAISED SEEDLING ROSES.

MESSRS. BELL & SON,
THE NORWICH NURSERIES,

Are now executing orders for their TWO NEW ROSES, raised at their Nurseries, and described and announced below. They have been thoroughly tested here before being sent out, and can be recommended with confidence as really distinct novelties.

CLIMBING ROSE "CATHERINE BELL."

Very large flowers of a deep rose colour, the backs of the petals a delicate silvery pink, of exquisite shape and very fragrant. It is very free-flowering, and of vigorous climbing habit, making shoots 6 feet to 8 feet long in one season. Figured in *The Garden*, March 18, 1876.

"Your Rose Catherine Bell is both *belle et grande*."—Rev. Canon Reynolds Hole.

Good Flowering Plants, in Pots, 10s. 6d. *each.*

COLOURED PLATES ONE SHILLING EACH.

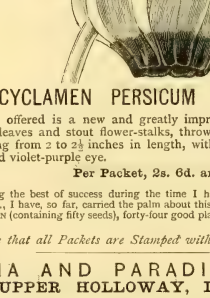
HYBRID TEA ROSE "MRS. OPIE."

Bright salmon-rose, tea-scented flowers, with shell-like petals, a most distinct and novel shade of colour among Tea Roses. It will form a charming companion to Madame Falcot, and will be as extensively cultivated as that variety when well known. In flower from May to November. Figured in the *Floral Magazine*.

Good Flowering Plants, in Pots 7s. 6d. each.

BELL AND SON, 10 & 11, EXCHANGE STREET, NORWICH.

B. S. WILLIAMS'



CYCLAMEN PERSICUM GIGANTEUM.

The variety now offered is a new and greatly improved type, having very broad, beautiful, mottled, coriaceous leaves and stout flower-stalks, throwing the flowers well above the foliage, each flower measuring from 2 to 2½ inches in length, with broad petals of great substance, pure white, with a fine bold violet-purple eye.

Per Packet, 2s. 6d. and 5s.

"*May* 17, 1877.

"Dear Sir,—Having the best of success during the time I have been here with your seeds, in the way of Primulas, Cyclamens, &c., I have, so far, carried the palm about this quarter, and have now, out of the last packet of your GIANT CYCLAMEN (containing fifty seeds), forty-four good plants."—*From* Mr. G. BOLAS, *Gardener, Hopton Hall, Derby*.

Please note that all Packets are Stamped with my Registered Trade Mark.

VICTORIA AND PARADISE NURSERIES,
UPPER HOLLOWAY, LONDON, N.

STRAWBERRY,
THE DUKE OF EDINBURGH
(MOFFAT).

THE LAWSON SEED AND NURSERY COMPANY (LIMITED),
EDINBURGH and LONDON,

Have made arrangements with Mr. Moffat, Coldwells, to send out, for the first time, the above-named splendid Strawberry. Fruit very large, firm, and of excellent flavour, bright scarlet colour. A most prolific bearer, and as a main crop for market purposes it is unsurpassed.

Strong Plants, 42s. per 100; 25s. per 50; 15s. per 25; 9s. per dozen.

Trade Price on application.

1, GEORGE IV. BRIDGE, EDINBURGH; 54, BISHOPSGATE ST. WITHIN, LONDON.
April, 1877.

SUTTON'S

SUPERB STRAINS OF

FLORISTS' FLOWERS,

POST FREE.

The Finest Strain of Cineraria.



SUTTON'S SUPERB CINERARIA.

This will be found unequalled by any in cultivation, the seed having been saved from the finest named varieties only.

Price *2s. 6d.* per packet, post-free.

From Mrs. A. ALLERTON, *Prittlewell, May* 8.

"Our Cinerarias this year (from your seed) are splendid; they far surpass any I saw at the Botanical Gardens yesterday."

The Finest Strain of Primula.



SUTTON'S SUPERB PRIMULA.

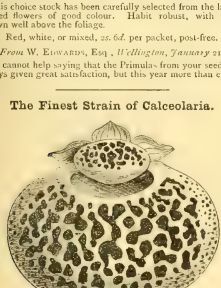
This choice stock has been carefully selected from the largest fringed flowers of good colour. Habit robust, with bloom thrown well above the foliage.

Red, white, or mixed, *2s. 6d.* per packet, post-free.

From W. EDWARDS, Esq., *Wellington, January* 21.

"I cannot help saying that the Primula from your seed have always given great satisfaction, but this year more than ever."

The Finest Strain of Calceolaria.



SUTTON'S SUPERB CALCEOLARIA.

This splendid strain has been most carefully selected from the very finest collections in cultivation. The plants are compact in habit, with beautiful green foliage, and a profusion of bloom. The flowers are perfect in form and substance, and of every shade of colour.

Per packet, *2s. 6d.*

From A. E. RUSSELL, Esq., *Dalnabrock, July* 10.

"My Calceolaria plants, from seed purchased of you last year, are particularly fine, of very compact habit, and beautiful in colour."

SUTTON & SONS,
THE QUEEN'S SEEDSMEN, READING.

B. S. WILLIAMS'

NEW AND CHOICE

FLOWER SEEDS FOR 1877.



	Per packet—*s. d.*
CALCEOLARIA, Williams' Superb Strain, *5s., 3s. 6d., 2s. 6d.*, and	1 6

From Capt. COSENS, *Aberystwith, May* 13, 1877.

"The Calceolarias, from the seed Capt. Cosens had from Mr. Williams last year, have been greatly admired—they leave nothing more to be desired."



PRIMULA, Williams' Superb Strain, Red, White, or Mixed .. .. *5s., 3s. 6d., 2s. 6d.*, and	1 6
PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance	5 0

From Mr. F. DENNING, *Gardener to* J. FENTON, Esq., *Yardsley, February* 26, 1877.

"Dear Sir,—I may inform you that at the Birmingham Chrysanthemum Flower Show, held last November, I took the 1st prize, with twelve Primulas, six red and six white, in the Gentleman's Gardeners' Class, with seeds supplied by you."



CINERARIA, Weatherill's Extra Choice Strain, *5s., 3s. 6d., 2s. 6d.*, and 1 6

From Mr. J. WEST, *Gardener, Cheadon Park, May* 21, 1877.

"Sir,—Your strain of Cinerarias which have now been in bloom some time, have been and are now the admiration of all that have seen them, and are considered by gardeners to be the best ever seen in this neighbourhood. Habit very dwarf and compact, quite equal to the drawing in your catalogue."

☞ *All the above choice seeds have my registered Trade Mark stamped on each Packet.*

VICTORIA and PARADISE NURSERIES,
Upper Holloway, London, N.

SATURDAY, JUNE 9, 1877.

TERRESTRIAL HEATING.

THIS may be regarded as the *primum mobile* for the better class of exotics, and not for them only, but also in the forwarding process of raising plants from seed as well as from cuttings. Bottom-heat, too, has been applied to Grape growing with wonderful success. It may not be out of place then to trace some of the workings of this powerful agent.

The name and history of the man who invented the common three-light Cucumber and Melon frame is lost in dry antiquity; but we have his formula left showing how he sweetened his manure by frequent turnings before he made up his bed of Oak leaves, interlarded with horse dung, built some 5 feet high, and say 9 inches wider than the frame all round; the linings were afterward applied as occasion required, also the essential covering of one or two folds of Russian mats during the dark and cold nights of early spring. This arrangement plainly showed that the earth was first heated, and it had to heat the air, with the sun's assistance by day, and without his powerful aid during the long cold nights. Well now, with all this clumsy arrangement by means of great labour and heavy dirty work, did our forefathers obtain satisfactory results? Unquestionably they did, and the atmosphere of the old Melon frame has never been equalled by any modern system of heating by steam or even by hot water. I recollect perfectly the elder Mr. Veitch, of Exeter, putting newly imported Orchids into a dung frame as the best treatment that that princely nursery could afford. I recollect perfectly striking cuttings of Arborvitæ in phials of water in a Melon frame; and any one who has watched the growth of Cucumbers or Melons planted on the hill in the centre of the frame, and has seen the fine white roots striking right out of the earth into the air of the frame, must be convinced that as regards the formation of roots the moist warm air of the Melon-frame is one of the best mediums for striking cuttings. Other systems of heating, such as by hot-water pipes, give heat moist or dry, just as the means for supplying moisture may be provided, but in the Melon-frame the dry heat is impossible. The one heat is that of fire; the other that of the fermentation of vegetable substances slowly progressing to decay.

Supposing, then, that the hill or surface of the Melon-frame had got to the state of "the smoking Flax"—neither cold nor hot, but lukewarm—it is quite clear that the addition of cold water would chill just as warm water would heat such a medium. Now, our ancient blue-apron men would meet this state of things by having a glass-bottle filled with water and kept in the frame with which to water the tender seedlings, and this bottle, and a full-grown toad by way of police, were the only occupants of the frame, besides the vine of the Melon. In this case, as the warm water descended into the soil it parted slowly with its heat, and thereby warmed the soil. We know that autumn-sown Wheat will take root, and extend the same, although the blade may not be able to extend on account of the frost and snow overhead; but this fact proves what a difference it makes to the well-being of the plant when the bottom is protected by the earth, and is thereby warmer than the blade exposed to every cold blast. If this were doubted we might argue that if there were no

other gain but calmness, that alone would be a great benefit. Again the unchangeable life underground is the very reverse of that in the atmosphere above it. Therefore, if Wheat has no bottom-heat, it certainly is many degrees warmer at one end than at the other.

The object of these remarks is not, however, to treat of Wheat but of Vines to which bottom-heat has been applied, and to show that the glass bottle in the Melon-frame, with its quill in the cork and its air-hole in the body of the bottle, was a miniature example, a kind of model for the benefit of all exotics; for water is so valuable as a carrier that it will not only convey food to the roots, but also heat, and any one who would leave out such an agent now after its character and abilities are so well known, would be expected to give his reasons for so doing.

I recollect the late Mr. Pince, of the Exeter Nursery, showing me a plant of Nepenthes distillatoria which had crawled about the hot-water pipes, and had so benefited by the bottom-heat that it flowered and produced perfect seeds, which, when sowed, produced plants with every leaf ending in a pitcher. I have elsewhere called attention to the fact that all Pine growers worthy of the name have made sure of a good brisk bottom-heat, notwithstanding what many have urged to the contrary. If I venture to say that the finest Grapes exhibited now-a-days surpass those of forty years ago, good though they were in their day, I shall be borne out by facts; but my present business is to cry up bottom-heat by the agency of hot-water, for it must be drummed into unwilling ears—since it is the newest phase of an old fact, for the Grape Vine has just as much need of warm drink as the Melon Vine.

Many years ago there was a case given in the garden periodicals of Melon roots getting to a warm-water tank, and thriving rarely with a supply *ad lib.* of teetotal beverage always warm. The largest Gooseberries I ever saw were grown by an amateur in Birmingham, and the secret of success consisted in the bushes being watered on washing days, once a week, during the growing season, with weak but warm soap-suds. Irrigation of pasture fields in certain localities produces extraordinary returns, especially where the water off the limestone comes charged with that mineral to the work, whereas in less favoured localities the wet land plants, Rushes, &c., tell too clearly of the cold bottom and sour clay soaked and saturated with ditch water. Here I would remark that it is well-known that grass, for instance, cannot attain perfection where the necessary supply of moisture is withholden from the roots, yet the plants will remain green and healthy as if biding their time, but wasting the sunny days for want of one ingredient.

Now, in the case of the Vine it has a heavy duty to fulfil, and requires much sun heat, or other heat, to accomplish its work; and to compensate that, it needs a corresponding quantity of water, for its time is short, and foliage and fruit must be matured quickly. If more heat is wanted than the sun can supply, the coal pit must put its shoulder to the work, and woe to him that stints the Vine of its strong, warm drink. I have forgotten in what Irish book it was that I read the sensible statement that "Fortune would never stick to a man that inveigled a piper's drink." Well, then, if this be true between the piper and his host, it is doubly so with the fruitful Vine; and as it tells no tales its likes and dislikes must be learned by its behaviour under different forms of treatment.

It is certainly the most generous plant we possess, for if we take 1 lb. of Grapes to yield nearly a pint of wine, a tidy bunch would give wine enough to fill a gallon bottle, and some bunches have been shown that would yield enough to fill two such bottles, and that for not once and away like the annual wheat or barley, but year by year for generations.

In planning a Vine border then, the sunny slope, and the effectual drainage, have to be kept in view; but the Vine is a gross feeder and requires a good run to supply its sheet of foliage. In sultry weather when growth is lively how grateful must it be for the feeders to get what is to them warm rain, medicated with liquid manure, thereby not only breaking bread for the Vine, but also kindly warming its strong drink. Where fires have been made to burn weeds in fields or brushwood in woods, the earth gets warmed to some depth according to the amount of fire and the time it has been kept up, and it will take several days to get cold after the embers have been removed. When pasture gets burnt up in hot summers, one would think the grass would never come again, but this deceives the observer, and the great bottom-heat only waits for the water to send up the greensward.

All guess-work beforehand on horticultural subjects is to be received with caution. Even Nature is not alway a safe guide, for Chickweed and Groundsel will thrive in a medium very little above freezing; and, on the other hand, Pine-apples will do well in a bottom-heat so strong, that the hand can hardly bear the heat of the brick-pot. Now, this is nowhere to be found in Nature unassisted, yet it is an established rule in practice.

Many Roses flower freely on walls and sheltered places, and any one judging from that that he could force, or rather forward, such in a glass structure, will find to his cost that, unless he warmed their toes a little to start the root first, he will often find his labour in vain, but some may say, why all this straining after bottom-heat? Why, because it is within our reach, for it is truly said in Holy Writ that "the wind bloweth where it listeth," and, like the unicorn, it cannot be harnessed to our team, but it is far otherwise with that part of the plant below the collar. It has an underground life in darkness, and searches far and wide for its supplies, and we have the means of forwarding this part of the work by food and warmth. By means of water, used with knowledge and discretion, bottom-heat can certainly be maintained, for when the earth is heated to a moderate depth it takes several days to cool: for example, when peaty sods that have been pared and burnt have lain neglected the ashes will be warm for weeks. But when we see splendid Grapes exhibited, and are told what treatment had so raised their character above the normal standard, surely it is time to turn the attention of Grape growers to this topic, and leaving the corn to the care of the *Agricultural Gazette*, let us claim in the columns of the *Gardeners' Chronicle* an honoured place for grapes and wine. *Alex. Forsyth.*

New Garden Plants.

Pterostylis Baptistii, *Fitzg.; Austral. Orch.*, Part I.

Beautiful it was, that miscellaneous group exhibited by Mr. Williams at Amsterdam. If it was not received with so great courtesy as the Orchids, which lived in the Palace, while these miscellaneous plants were in a small extra glasshouse, the Orchids had to pay for the honour by starving from dry and cold air. Now this Pterostylis was not an Orchid (in a flower-show sense), but a miscellaneous plant amidst many other bright specimens admired by others, but I always returned to honour my slender green Orchid. It has basilar, petiolate, oblong-cuneate leaves, not quite fully rosulate, but nearly so, the upper ones ascending the rachis, two wide sheaths, a single odd flower, whose stalked ovary is surpassed by the bract. The flower is green, with white and brown, and may be compared to the head of a Saurian, adorned with two bristle-like antennæ. Mr. B. Williams finally deprived, to my great personal satisfaction, the visitors of the happiness of seeing the frog-green flower. I brought it home, and dissected and sketched it. The *beaux restes* are at hand. If I remember well, Mr. Williams, who did not appear exceedingly partial to my pet, imported the plant from Baptist's garden, Sidney. Mr. Fitzgerald states it was discovered near Sidney by the late Mr. Baptist, and grown in his garden. In consideration of the assistance rendered by Mr. Baptist to horticulture, when in its infancy in the colony, it has been named P. Baptistii by Mr. Fitzgerald.

Comparing Mr. Williams' plants with the figures given by Mr. Fitzgerald, I have a few remarks to make. The flowers were a good deal smaller and for the most part less wide. There was much less white colour in them. The bristles of the lateral sepals were brownish. The bracts were larger and longer than the stalked ovaries. The petals had no cilia inside. There was no double crest of teeth over the appendage, but they were altogether marginal.

I do not make those remarks doubting the fullest accuracy of the author quoted, but only to show that the area of characters has to be widened.

As a species the plant is perhaps too near Pterostylis furcata, Lindl. (most probably this is P. micromega, Hook. *f.*) It would be most desirable to see whether there are such constant characters as would enable botanists to regard the two as what we call well-founded species.

It is to be regretted that Mr. Fitzgerald gave no numbers to his plates, nor any remark about the real time of the publication of the part of his work. *H. G. Rchb. f.*

Thrixspermum Hartmanni, *Rchb. f.*

This is a nice small distichous Orchid, belonging to the category of "the gems" from Toowoomba in Queensland, where it was discovered by Mr. C. H. Hartmann, of the Range Nursery. It was named Sarcochilus Hartmanni by Baron von Müller in *Frag. Phyt. Austral.*, vol. viii., 1872, 74, p. 248. It would appear to bear generally four rather thick, ligulate, bidentate leaves, the teeth of which are equal or rather acute-sharp. The roots are strong and quite even, without the least warts. The inflorescence is a dense raceme. The flowers, though rather small, are exquisite in their beautiful cream-white hue. There are numerous, brick-red spots around the bases of sepals and petals on both sides. The semifalcate or oblong side-laciniæ of the lip are richly painted with brick-red spots and streaks. The callus in the middle of the lip is yellow, with red spots. There are two yellow eyes with red margins at the front side of the solid spurs, and the middle lacinia of the lip is yellow. It has been regarded as near Saccolabium and Cleisostoma ("*quæ autem genera optime ad Saccolabium reducenda*"), which I simply do not understand. I obtained a good fresh inflorescence from Mr. Bull, in whose establishment I saw healthy plants. Ours came with death at at the heart, and soon started. *H. G. Rchb. f.*

Rhipsalis penduliflora, *N. E. Br.*

Pendulous, much branched, branches fastigiate, short, articulate, joints 3—5 lines long, 1—1½ line thick (those which form the principal branches are longer, ½—1 inch long), quite terete, very minutely punctate, not tuberculate, each with a very minute deltoid scale, from the axil of which arise two white hairs half a line in length, accompanied by a few microscopic woolly ones. Flowers terminal, pendulous, ovary exserted, semiglobose, pale green, 2½ lines in diameter, segments 9—11, spreading, linear-oblong, very obtuse, sometimes slightly emarginate, semitransparent, whitish with an apical reddish spot, the 3—4 outer segments shorter than the others. Stamens yellowish-white, salmon-coloured at the base. Stigma 4-lobed, white.

The Royal Gardens, Kew, received this plant from Mr. Pfersdorff in 1875, under the name of R. cribrata, a name which seems to have no application to the plant; so, as I can find no description of it published I propose for it a name more suitable. As a species this ranks next R. Saglionis, to which it is closely allied, but is well distinguished by the following characters:—Habit more pendulous, branches more fastigiate (not divergent), the young joints as well as the old quite terete, (not angular as in R. Saglionis), areolæ less conspicuous, with fewer and shorter hairs; and lastly, the petals are much more obtuse. *N. E. Brown, Kew.*

Setting Peaches.

Why one particular system or method of setting as adopted by one individual, and carried out to a successful end—be that system what it may—should by others be held up to ridicule is simply absurd. If one gardener douches his trees when in flower with a syringe charged with water, and has by this practice the best of results, he has a perfect right to practise it upon his own trees, and also to communicate to others or to the press the successful results of his practice. If another gardener succeeds in obtaining a good set of Peaches, and produces better fruit than his neighbours by submerging his trees altogether in

water or tobacco-water for a period of twenty-four hours, more or less, he also has a perfect right to do so, and also to proclaim on the "house tops" the excellent results of his practice. Another gardener may go in practice diametrically opposite to that described above, and keep his trees perfectly dry by withholding moisture from all the usual sources, even bringing to bear on his trees some newly invented method of dry blast, and also produce as good fruit as those who go to the opposite extremes of wet. Gardeners may also use the "bunch of feathers," the camel-hair brush, shake or vibrate the trellis, or any other imaginable resort, and all with good results, and, sometimes, it may be added, with very indifferent results. One system practised at one place may not do in another, as in many other things we could instance; so also with Peaches.

Healthy trees will bear any reasonable amount of experiment without much hurt, and without giving sufficient proof that our pet treatment was exactly the right thing to do; when it might be proved that a similar experiment tried upon trees of less vigorous health would readily show that the experiment was not to be repeated, not even in the case of healthy trees.

Supposing a gardener has a failure with one or more of his Peach-houses, and that he has omitted to

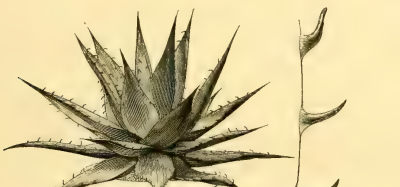


FIG. 115.—AGAVE APPLANATA.

use some of the above usual precautions—because he has read somewhere that those practices are "obsolete." Would not that man's ears tingle when he thought of his failure, and would it not be very reasonable to believe that in conscience at least, this man would be a great deal more easy, if he felt that he had exhausted any, or even all the known common methods of setting. I should never for a moment think of throwing aside any of the well known methods of endeavouring to secure a set, notwithstanding what anyone may have to say to the contrary, and I hope I should never be found to be egotist enough to give forth any system of mine, or hold exclusively to the pet system of anyone else, as being the *sine qua non* system of Peach treatment during the time of setting.

We all know what sunless weather we had for Peach-setting during the first weeks of January of this year, and what an anxious time it was for gardeners who had anything to do with early Peaches. The young man in charge of my Vineries and Peach-houses appeared to be quite as much alive to the jeopardy of the situation as I was, and he had already set to work to do what he knew lay in his power with the camel-hair brush. I was pleased to see the enthusiasm of the youth, anxious I have no doubt for his own reputation to secure a good set. I happened, in passing, to remark that if he brought in a hive of bees they would save him a deal of labour, and do the work he was doing so much better. In passing through the next day I found the young man had taken me at my word, for the hive of bees was there and at work too all over the house. I watched them closely as they industriously passed from flower to flower, grasping the whole of the stamens with their fore-legs or arms, and clearing away what pollen there was at the time on the anthers; the work was soon done, and watching the return of the laden bees at the door of the hive, it was easy to observe that they were reaping a harvest quite as pleasing to them as their operations appeared to be both pleasing and useful to us. When the sun did not shine, the bees did not leave their hive, and if after enticing them from the hive, the sun suddenly disappeared, the bees were soon back to the hive. No warmth from the hot-water pipes had any effect in bringing forth the bees. The same hive was moved to the second Peach-house, and so on to the third and fourth. It is now out of doors, and I think none the worse for its early spring campaign amongst the Peach blossom. As to the set of Peaches in the early house, it was a decided success, and I may also say the same of all the others. Whether the same amount of success would have been attained without the assistance of the bees I am not prepared to say, but one thing I can say with confidence, and that is, if they did no good, I am quite sure they did no harm, and no matter how sages or egotists may sneer, if I live I shall most certainly repeat the experiment another year. I had often heard of it being done, but never before saw it put to the proof.

Perhaps when all is said and done, the best way to ensure a good set is to see that the leaves throughout the season, or in other words, from spring to fall, are kept thoroughly healthy. To effect this no green-fly or red-spider must ever be allowed to obtain a footing. Prevention is better than cure, and by first keeping clear of fly, the leaves become healthy and robust, and in better condition as the season advances, to ward off or resist the attacks of red-spider. In our Peach-houses here, there is one rule which I always insist upon and see carried out, that is "to smoke or fumigate where there is no green-fly," and a similar rule is observed out of doors, which put together makes a very good garden couplet. "Hoe where there are no weeds, and smoke where there are no green-fly." This maxim carefully carried out by young gardeners might be the means of steering them safely through and beyond many breakers a-head. *Wm. Miller, Combe Abbey.*

THE GENUS AGAVE.

(*Continued from p. 692.*)

SERIES I.—CORIACEO-CARNOSÆ.—Texture of the leaf rigid, not at all fleshy or yielding to the touch when mature. End-spine large, hard and pungent.

Group III. SUBMARGINATÆ.—Edge of the leaf furnished with a distinct horny border in the upper part running down from the end spine.

This is a small group, of which all the species of which the flowers are known belong to the subgenus Euagave, of which the leaves are intermediate in character between the Marginatæ and Americanæ. Here the border is not so distinct as in the Marginatæ, but merely consists of the terminal spine, decurrent with or without teeth down the margin of the top part of the leaf, whilst the lower half or two-thirds is toothed, without any border, just as in the Americanæ.

* PARVIFOLIÆ.

20. *A. (Euagave) Deserti*, Engelm., Notes, p. 22.—Acaulescent. Leaves few in a rosette, oblanceolate, 6—12 inches long, 1½—2 inches broad above the middle, thick, fleshy, very glaucous, deeply concave on the face, with a long (1—2 inches) slender end-spine decurrent to about the middle of the leaf; both this and the unbordered lower part of the leaf furnished with crowded, strong, hooked, horny, lanceolate prickles, ½—½ inch long. Scape 4—10 feet high, 1—2 inches thick at the base, furnished with distant lanceolate acuminate toothed bracts. Panicle thyrsoid, the branches very short, the lower horizontal, the upper ascending, the secondary peduncles ½—¾ inch long, the pedicels shorter. Perianth yellow, under 2 inches long, including the ovary; ovary trigonous, ⅜ inch long; tube campanulate, ½—½ inch long and broad; segments oblong, ⅜ inch long. Filaments twice as long as the perianth segments, inserted at their base; anthers ¾ inch long. Capsule oblong-trigonous, 18—21 lines long. Seeds under ¼ inch broad.

Eastern base of the mountains of Southern California, and in the adjoining deserts. Discovered by Lieutenant Emory in 1846, and gathered later by Dr. Parry and others, and fully described by Dr. Engelmann. We have young plants in the Kew collection, received from Messrs. Miller, Sievers & Co., of San Francisco.

21. *A. (Euagave) Shawii*, Engelm. Notes, p. 26, tabs. 2 and 3.—Acaulescent. Leaves 50—60 or more, forming a dense globose rosette a couple of feet in diameter, oblong-spathulate, 8—10 inches long, 3½—4½ inches broad at the middle, deep green, not vittate, narrowed to a brown end-spine 1 inch long, ½ inch thick at the base, ⅛ inch thick in the middle, the upper third or quarter entire, the rest furnished with crowded upcurved lanceolate teeth ¼—½ inch long. Scape 8—12 feet high, 2—2½ inches thick, covered with erect clasping deltoid or lanceolate-deltoid bract leaves, with a brown scarious margin. Panicle thyrsoid, about a couple of feet long and broad; branches stout, 4—9 inches long, 1—1½ inch thick; clusters dense, composed of 30—50 flowers, surrounded by large foliaceous fleshy bracts. Perianth, including the ovary, 3—3½ inches long, greenish yellow, trigonous; ovary 15—18 lines long; tube broadly funnel-shaped, ½—⅔ inch long; lobes 12—14 lines long. Stamens inserted about the middle of the perianth-tube, exserted ½ inch beyond the segments; anthers above ½ inch long. Style ½—⅝ inch longer than the filaments. Capsules oblong-trigonous, cuspidate, 2½—2⅞ inches long, not quite 1 inch in diameter. Seeds ¼ inch broad.

A native of dry hills bordering the Pacific at the south-west corner of California. Discovered by Dr. Parry, in 1850, and rediscovered from his memoranda and photographed by Messrs. Parker and Hitchcock, of San Diego. Dr. Engelmann gives a full description in his paper, accompanied by Mr. Parker's excellent photographs, and names the plant after Mr. Henry Shaw, "already so highly esteemed in St. Louis as the founder and donor of the Missouri Botanical Gardens, grand at present, and promising a future as useful as it will be magnificent." I have seen it in a living state in the Kew collection, received from Messrs. Miller, Sievers & Co., of San Francisco, and have no doubt that in a few years' time it will be one of the favourite species of the genus in our European gardens, as it is a most distinct and handsome plant.

22. *A. applanata*, Lemaire; Jacobi, Mon., pp. 48 and 219; (fig. 115).—Leaves 20—30, or even 40, in a dense sessile rosette reaching a couple of feet in diameter, oblong-spathulate, 8—12 inches long, 3—3½ inches broad at the middle, narrowed to 2—2½ inches above the deltoid base, very glaucous, 1 inch thick at the base, ½ inch thick in the centre, the lower half of the face flat, the upper half concave, the upper part narrowed suddenly to a pungent brown channelled spine, above 1 inch long, which is decurrent as a border to the upper half or third of the leaf, the bright brown more or less curved lanceolate prickles ¼—½ inch long. Inflorescence unknown.

A native of Mexico, long known and widely spread in our European collections. It is wrongly classified

by Jacobi amongst [the true Marginatæ. It most resembles in habit the small varieties of Scolymus, but may be easily recognised by its decurrent end-spine. It is a handsome plant, the chestnut-brown of the spines contrasting well with the very glaucous lamina. I cannot by the description alone clearly distinguish from this A. cinerascens, Jacobi, Monogr., p. 51, unless it be by its having very large crowded deltoid-cuspidate prickles. If it be distinct this is evidently the place into which it falls.

** GRANDIFOLIÆ.

23. *A. Hookeri*, Jacobi, Monogr., p. 219.—Leaves 30—40 in a sessile rosette, which measures 8 or 9 feet in diameter, oblanceolate-spathulate, bright green on the face, rather glaucous on the back, 4—5 feet long, 7—9 inches broad two-thirds of the way up, narrowed to 5—6 inches above the dilated base, where it is 2—3 inches thick, the hard pungent end-spine a couple of inches long, and decurrent for a quarter or half a foot, in centre ¼ inch thick, the face flattish or slightly concave, the edge repand between the teeth, which are irregular, deltoid-cuspidate, brown and horny, ¼—½ inch long, and curve in different directions. Inflorescence unknown.

A native of Mexico. There are two fine specimens at present in the Kew collection, from one of which Jacobi's original description was taken, but it has never flowered. One of them, which came from Mr. Wilson Saunders, has prickles considerably smaller, and more distant than in the other. I cannot distinguish from this *A. Fenzliana*, Jacobi, Monogr., p. 221, of which I have seen an authenticated specimen in the collection of Mr. Saunders, nor *A. inæquidens* K. Koch; Jacobi, Monogr., p. 53, which I know from description only. If they are the same species the latter name, being the oldest, ought to be maintained.

24. *A. (Euagave) Salmiana*, Otto; Jacobi, Monogr., pp. 58 and 221; Rev. Hort. 1873, p. 373, tabs. 40 and 41; Gard. Chron. 1871, vol. ii., p. 141, tab. 31. — Acaulescent. Leaves 12—30 in a dense rosette, which is often 5—6 feet broad, oblanceolate-spathulate, 2—4 feet long, 4—6 inches broad above the middle, narrowed to 3—4 inches above the dilated base, where it is 2—3 inches thick, a dull slightly glaucous green, the face more or less concave, the end spine 1½—2 inches long, hard and pungent, decurrent for ½—1 foot, the teeth deltoid-cuspidate, ½ inch long, chestnut-brown, hooked up or down. Scape reaching a height of 20 feet exclusive of the inflorescence. Panicle thyrsoid, 6—8 feet long, with erecto-patent branches and flowers in dense clusters. Perianth greenish-yellow, 4 inches long; ovary oblong-trigonous, above 2 inches long; tube narrowly funnel-shaped; segments oblong. Filaments 3 inches long; anthers linear-oblong, nearly 1 inch long.

A native of Mexico, now one of the commonest kinds in European collections. I am not aware that it has ever flowered in England, but the inflorescence has been twice figured—once in the *Revue Horticole*, as just cited, from a specimen that flowered with M. Goupil, at Pecq, near St. Germain-en-Laye (Seine et Oise), in 1872; and in the *Gardeners' Chronicle*, from the collection of M. Thuret, at Antibes. In general habit it closely resembles A. americana, from which it may be told at a glance by its deader colour, and decurrent end-spine. It varies greatly in size, and also in the breadth of the leaf in proportion to the length. So far as I am able to judge, a large number of species founded or adopted by Jacobi should range here. Of those of which I have seen specimens in English collections, which I have no reason to doubt are properly named, I would refer to the typical form of Salmiana, *A. atrovirens*, Karwinsk., Jacobi, Monogr., p. 55 (a name of earlier date than Salmiana, having been first published by Salm-Dyck in 1834); *A. tehuacensis*, Karwinsk.; Jacobi, Monogr., p. 60; and *A. Jacobiana*, Salm-Dyck; Jacobi, Monogr., p. 57. Of those, of which I have seen descriptions only, I cannot separate from typical atrovirens by any definite character *A. Canartiana*, Jacobi, Nachtrage, ii., p. 22; *A. asperrima* Jacobi, Monogr., p. 61; *A. Schlechtendalii*, Jacobi, Monogr., p. 54; *A. deflexispina*, Jacobi, Nachtrage, ii., p. 72; *A. Ottonis*, Jacobi, Mon., p. 263; and *A. gracilis*, Jacobi, Nachtrage, ii., p. 66.

Var. *A. latissima*, Jacobi, Monogr., p. 41.—Leaves broader in proportion to length than in typical *atrovirens*, 2—3 feet long, by 8—9 inches broad above the middle.

From this I cannot separate *A. Lehmanni*, Jacobi, Nachtrage, p. 21; *A. mitraformis* Jacobi, Nachtrage, p. 20; and *A. convicta*, Jacobi, Nachtrage, p. 22.

25. *A. (Euagave) cochlearis*, Jacobi, Nachtrage, ii., p. 67.—Acaulescent, forming a sessile rosette 10 feet broad. Leaves oblong-spathulate, 5—6 feet long, above a foot broad, 5 inches thick at the base, opaque green, with a deeply excavated face, the very stout pungent brown end-spine decurrent for some distance, the middle-sized deltoid cuspidate brown prickles curved variously. Stem reaching a height of 26 feet. Inflorescence thyrsoid, the flowers in dense clusters. Flowers yellowish green, above 4 inches long; ovary cylindrical-trigonous, above 2 inches long; tube ½ inch long above the ovary. Filaments 3 inches long; anthers linear-oblong, ¾ inch long.

A native probably of Mexico, described by General Jacobi, in full detail, from a plant that flowered at Stuttgart in 1867. It may, perhaps, prove to be a giant form of A. atrovirens var. latissima, as the account of the inflorescence quite bears out this idea.

J. G. Baker.

NOXIOUS INSECTS.*

I BEGIN by making one or two assumptions, which I presume will be granted me, but which, if disputed, can be easily proved. I assume that, besides the occasional great injury done by insects by which whole districts are ravaged, a continual drain is constantly kept up by them which constitutes a very perceptible per-centage of deduction from the cultivator's profits. I say that much of this is preventible, but I do not make this one of my assumptions. All the length I go is to assume that where it can be prevented at less cost than the loss it occasions, it should be prevented.

So far, I imagine, we must be all at one, but we may not be all at one as to the possibility or means of prevention, or at least of prevention except at a price greater than the loss that would be sustained by leaving matters as they are. I do not mean mere money cost—that would be easy to deal with, for whenever you come to actual figures you can cipher them out, but I mean the interference with a man's liberty of action in conducting his own business. That is the critical point of this question. How far it would be wise, and under what precautions it would be desirable, for the general benefit to interfere with the inalienable privilege of an Englishman to do what he likes with his own!

Before accepting any proposition tending in that direction, we should require not only to be satisfied that the object was really for the general interest, but also that it can be attained in no other way. That the object is for the general interest is one of the assumptions that you have permitted me to make; and that it can be attained in no other way than by entrusting power to some executive authority will be plain if we consider for a moment the nature of the work contemplated. If we wish to rid a district or a country of an injurious insect, and if, as is very generally the case, we have the power of doing so by attacking it at a particular date, and in a particular manner, it is obvious that to be effective the attack must be simultaneous and combined, for to what purpose would it be, if I cleared my farm while my neighbour did not clear his; or if I cleared mine one year and he cleared his another? We should each preserve an ample reserve of our pests to replenish the cleared fields of the other. A central authority, therefore, a power to which both he, and I, and every other farmer in the district, must bow, is needed to secure united action, and what is such an authority but paternal government, compelling us to obedience for our own good?

As to the advantage of the general principle of stamping out, and the necessity of an executive authority to direct it, there cannot, therefore, be much difference of opinion, but there remains the more difficult question, how much and what kind of interference may be tolerated, and by what safeguards it should be surrounded, and how far it is workable or not? The administrative machinery by which it should be carried out need not concern us. If Government resolve to interfere, it must fall to them to make their own plans and find their own tools—but as a contribution towards elucidating the various points which they would have to consider, I think I may usefully draw attention to a few of the different ways in which interference might be beneficially exercised.

The simplest, the most powerful, and the most efficient of these is what I may call county or district rotation of cropping.

The great majority of vegetable-feeding insects do not feed on all kinds of plants indiscriminately; most of them are restricted to one kind of plant, and if by cultivation of that plant its numbers are enormously increased, so will naturally be the number of the insects that feed upon it, while, if we should cease to grow that plant, the number of the insects would correspondingly diminish. Thus, for instance, if a district is almost entirely in pasture, there will be very few Wheat feeding insects in it, but if it is turned into a Wheat country they will be in myriads. If these numbers reach such a pitch as to deteriorate the crops the remedy is plain. Change the rotation, and grow some other crop instead of Wheat. Allow me to illustrate this by an actual example. Last summer I spent the month of July at Broadstairs. In my rambles about the place I was immediately struck with the Wheat crops. At a little distance they looked tall and strong, but on examining the ears I found them so ill-filled that I should have said they were only three-quarters filled. The blade or leaf was throughout almost entirely white and dry, and I have no doubt that if I had asked any farmer what was the cause of the poor ears he would have said drought, as shown by the bleached and dried-up leaves.

But although he would be quite right in describing the deficiency of weight in the ear to the failure of the leaf, he would in this instance have been wrong in ascribing the failure of the leaf to drought. It was due to the mining of the larvæ of a small fly named Agromyza graminis, which lays its eggs under the skin of the leaf at its tip. From thence the young larvæ mine downwards, feeding on the parenchyma of the leaf, leaving nothing behind them but the empty husk, consisting of the upper and under walls of the leaf. If the leaf is small they entirely consume the interior; if large they may not reach entirely to the bottom of the leaf, but will have consumed about three-fourths of it before they pass into the pupa state—as may be seen from some leaves which I have preserved, and which I hand round. Now, of course, I cannot tell what amount of damage this insect did. I have said that the ears seemed only three-quarters filled. They continued so until reaped. Let us suppose that this is too much by half, and take an eighth. This would be a loss of upwards of 12 per cent. on the grain crop, and to make the margin still wider, and the figures more manageable, let us reduce it to 10 per cent. The actual percentage of loss is not of much consequence if I can satisfy you that it was considerable, and my object is less to show the amount lost, than where it falls.

Now we all know that the total yearly produce of a farm has to be distributed between three accounts—one is in repayment of the cost of cultivation; another is in payment of rent; and the third is the tenant's profit. It is plain that no reduction can be got either from the expenses of cultivation or the rent on account of this insect damage. The tenant or cultivator has to lose the whole of it, and you will also see that although the loss on the whole crop may only be 10 per cent., that is by no means the percentage of the loss on his profit. If, for example, we suppose that the tenant's profit on the entire produce is one-third, and that the total gross produce of the Wheat crop was £500, 10 per cent. loss on that is £50, but 10 per cent. loss on the tenant's profit would only be £16, whereas a deduction of the whole £50 would be equivalent to upwards of 30 per cent. You will thus see that this in its present stage is entirely a cultivator's question. The landlord (not a cultivator) has only a prospective interest. If arrangements could be made by which such insect damage could be annihilated, no doubt as leases terminated a readjustment of rent suited to the improved production would take place, but in the meantime it is the tenant who suffers, and who will be first benefited by stamping out such insects.

Now a change of crop, if carried out over a sufficiently wide district, supplies an easy and effectual cure for the attacks of this insect. Its habits lend themselves to such a remedy. It feeds only on Wheat and a few allied pasture grasses. At Broadstairs there were crops of Barley and crops of Wheat growing side by side, the only separation between them being a footpath, not 2 feet in width, running through the field; and while, as I have said, every Wheat blade was mined, I could not find one touched on the Barley, which, by the way, had correspondingly escaped damage. Furthermore, the insect is only an annual. If it could be banished for one year it would

* Abstract of a paper read at the Society of Arts meeting on June 5.

be banished entirely, or until reintroduced. Now if there were a controlling authority in that district, what would be easier than to say to the farmers, "Gentlemen, in the common interest you will substitute Barley for Wheat in your next year's rotation." The fly, deprived of its proper nidus, must then either lay its eggs in an unsuitable place, where they will perish, or have recourse to the pasture fields for Triticum repens, or other suitable grasses. By this of course the fly would not be exterminated, but its numbers would be so reduced as to render it comparatively harmless, at all events for a time, when, if it again reappeared in force, the same means of defence could be again resorted to. Nay, it might be so arranged that two or more counties might brigade themselves together, so as to establish a permanent see-saw by which they should play into each other's hands. But you will observe that no single man can carry out such a rotation. He may try it upon his own fields, but they will be replenished continually from the fields of his neighbours, unless they at the same time are compelled to follow the same rotation. Gentlemen, it is for you, who know the respective capabilities of soils, and the relative returns of Wheat and Barley, to say whether you would prefer to suffer a heavy yearly per-centage of loss, or to submit to the substitution of barley or some other crop instead of Wheat for a single year.

And if you thought it desirable to do so, can there be any difficulty in carrying it out? I could suggest half-a-dozen ways. Power might be given to the Lords of the Privy Council to carry it out at their own discretion and *ex proprio motu*, or to carry it out on the requisition of the county authorities, or on the requisition of a committee of the farmers of the district appointed for the purpose of dealing with insect pests and similar questions; or an insector might be appointed for every county, with the requisite power and authority; or a central board of experts might be appointed for the same purpose, but with wider jurisdiction; or each county might have a board for itself. Any man can plan out a scheme for it; but I think no man will maintain that there is any insuperable difficulty in devising means that will answer the purpose.

Before leaving this point let me remind the meeting that the plan of excluding for a year a particular crop from the cultivation of a district will apply to almost every crop that we grow, whenever the insect is an annual (that is, does not live over one year), and this includes by far the greater number of injurious insects.

The next means of extirpation to which I shall advert is burning the nidus, in which the insect, in whatever stage, passes the winter, and I may take as my example the species of a small fly belonging to the genus Chlorops, some of which attack Wheat, others Barley, others Rye, &c. The larva makes a channel in the stem of the ear, causing abortion of the pickles, and gives it a twisted, stripped-looking appearance (as shown in the diagram), which on a superficial examination might be taken for the work of sparrows. The fly remains about the ear for many weeks after it is thrashed, and may be found in great numbers in winter in a semi-torpid state among the chaff. Now is it not an intolerable abuse of the privilege of doing what a man likes with his own, that my neighbour should be allowed, for the sake of small profit he can make out of his chaff heap, to preserve such a focus of infection to destroy my future crops. He should be compelled to burn it. In like manner we want some one to compel the burning of the heaps of Couch-grass and weeds gathered from foul land instead of keeping them to rot into manure. These are the focus and shelter-place of wire-worms and other pests, and contribute largely to their spread.

To the same class of remedies belongs the local treatment which I recommended for the Onion-fly. The plants attacked are readily distinguishable from those that have escaped; the former are sickly, flaccid, and yellow, the latter firm, erect, and green; and those attacked can easily be picked out and burned. Each plant attacked contains a nest of larvæ in the stem or bulb, as shown in the diagram. If these are destroyed the whole future family is annihilated.

The Carrot plants attacked by the Carrot-fly are equally easily distinguished and destroyed, but it is not certain that the grubs in them keep always to the same root. But both with them and similarly destructive insects that infest the Cabbage and Turnip, a year's avoidance of that crop throughout the district will relieve it from them.

Next comes the remedy, in the shape of some application that is fatal to the insects. This is the plan adopted in America for the destruction of the Colorado beetle, where Paris green is dusted in powder or sprinkled in solution over the larvæ on the Potato plants. It is the plan used by our horticulturists to get rid of the red-spider in their hothouses, where sulphur is the medium. Manufactured into Gishurst compound, or made up into some soapy solution, sulphur is also largely used by them to destroy greenfly. Sulphur has also been successfully used on a small scale against the hop-fly, and might be advantageously used on a large scale. There are various other supposed specifics (such as hellebore for the Gooseberry caterpillar, &c.), which are more or less in favour with different individuals. As a remedy, however, such applications seem better adapted for individual protection than combined stamping-out, although it would be foolish to forego the advantage of using them where they seem to meet the requirements of any special case. Such a case most certainly is the destruction of what are called ticks and lice upon sheep. Every one knows how readily such vermin can be communicated by contact or even proximity, and it does seem a very hard case that a man, who has kept his flock clean by taking proper precautions, should be liable to have them infected by a neighbouring neglected flock, by stray sheep, or even by sheep passing along the road. I have no personal knowledge on the subject, but I am told that, *cæteris paribus*, the difference in value between a sheep that has been kept clean for the season and one that has been worried by vermin will be 20*s*. If that is so, I wonder that sheep farmers have not long since clamoured for some supervision.

The picking and gathering of the individual caterpillars, or perfect insects, is a remedy that has been tried largely on the Continent, but without any marked success. For ordinary crops it is much more clumsy than a change in the rotation, and for crops which cannot be so dropped out of rotation, as fruit or forest trees, it is almost impossible to collect the larvæ efficiently. At the same time it is right to add that this *echenillage*, or caterpillar collecting, can scarcely be said to have ever (any more than any other plan) had a fair trial, it having generally been conducted without regular system or combined and simultaneous action over a wide extent of country.

There remains the last refuge of all invaded countries, namely, destroying the resources of the country before the invaders, that they may perish for want of food. This can rarely be necessary, but beyond doubt it will be the proper course to follow should the Colorado beetle gain a footing in this country. In that event the first that we shall hear of it will be that the larva has appeared in some Potato patch near Cork or Londonderry, Liverpool or Glasgow. The instant this is perceived the vines of the Potato field should be cut to the ground, and Paris green scattered over the field.

But that is not a course that can be adopted even in a case of such urgency and importance, unless there is some central motive power having the necessary authority to act; for the notice that the Colorado beetle will give will be very short, the larval stage in which alone it can be successfully encountered only lasts about a fortnight, and, if no previous preparations have been made, I leave any one who knows the slow grinding of our administrative mills to say what chance there is of the larva having grown big enough to be noticed; of somebody having noticed it and reported it; of the report being considered and a course of action resolved on; of officers or agents being appointed to act; of their providing the necessary apparatus; and of their reaching the spot and putting them in operation—all within the short space of fourteen days.

The possibility of such a call for action occurring is an additional reason for getting some sort of executive machine rigged up that could on sudden emergency deal with such an event.

I have nearly exhausted the list of my suggestions, but there is one which I must not forget. It is very small, but in my view very important. Let us by all means call on the cultivator to give notice as soon as an injurious insect appears in any numbers on his farm; but do not trust to him. Promise a reward to the first person who shall communicate the intelligence of such a pest appearing. There are more entomologists scattered about the country than you think of. It may be that you would have some erroneous and some false reports, but proper precautions against deception could be taken. Specimens of the insects might be required to be forwarded; and even although some deception and cheatery did take place, it could be endured.

There remains another point which, supposing you to go in the line along with me, must also be considered, and that is, what the action of this Conference should be in regard thereto. If I might offer an opinion, it humbly appears to me that its office is rather to give a general verdict upon the importance of the subject and the practicability of dealing with it than to enter into the discussion of details which should more properly be left to the Government, who will be responsible for them should they resolve to deal with the subject. *Andrew Murray.*

THE MANCHESTER ORCHIDS.

THE magnificent show at the Botanical Gardens, Old Trafford, that must now be reckoned as a thing of the past, has doubtless in many a case left impressions and pleasures that will long remain in the memory, and find matter for congratulation and reflection, not only in the present but also in days that are yet to come. To the rosarian what finer display could have been desired? In what respect could the plants and groups have been improved? To the lover of the more stately forms of foliage and flower there was much to rejoice over, and to cause wishes and resolves to become the owners of similar, or at least the early beginnings that might ultimately grow into such fine masses of colour and forms of beauty. To those who are more interested in the commoner but still beautiful gems that we class as herbaceous, there were several collections comprising richness and variety that left nothing to be desired. To those again who make the Orchids more especially their study and care, there were such a number of grand specimens, finely bloomed and varied in colour, that there can be no doubt that for some time to come this show will be looked to and spoken of as pre-eminently a feast of Orchids. Your ample report has done full justice to the many shown, and none can complain of being overlooked or slightingly noticed. Whilst not wishing in any way to supplement that report, there were several plants exhibited that hitherto have not, as far as my memory serves me, been staged in the exhibition-house at Old Trafford, which seem to me deserving of just more than a passing notice. That at one show such new and good things should be displayed to the public, at the same time giving opportunities to plant-lovers to see that even now all have not been obtained that the eye may feast upon, speaks much for the enterprise of those who are continually adding to the riches of our stores, and also for the care and patience of others who have succeeded in hybridising and successfully bringing to perfection such showy and new forms. In the collection of sixteen exhibited by Dr. Ainsworth what could be finer than the two seedlings named in honour of the learned and worthy Doctor? Its free blooming properties Dendrobium Ainsworthii inherits from both its parents. The dark rosy purple of the labellum of both, and the pure white in one case and the rosy-tinted sepals and petals of the other, combine to make these welcome additions to an already rich family. Mr. Mitchell has brought them up this time in splendid condition, which leads one to hope that as they increase in size, they will also be even more showy and attractive. Passing to the group of Mr. Wrigley, we therein met with one, new to the great majority who beheld it, which at most has only been in cultivation for about three years. I refer to Thunia Marshalliæ. This will make a fine companion to T. Bensoniæ, which it much resembles in growth and manner of flowering, bringing its heads of large white flowers, with yellow and crimson lip on the top of the new growth. There can be no question that now it has been seen in such fine condition it will be eagerly sought after, and find a place in many a collection. Mr. Hubberstey must be congratulated on the excellent manner in which he exhibits these Thunias among his other fine plants. In Mr. B. S. Williams' group we observed a fine plant of Oncidium concolor, and, though not quite new, it has not been seen in such flourishing condition here. Looking at this plant one is reminded of the time just over five years ago, when the known plants of this in the country were considerably less than a dozen. Two of

these were in the collection of S. Mendel, Esq., and at the time of the sale one was disposed of for seventeen guineas, the other fetching nine guineas. Since then, however, great numbers have been sent home, and now good flowering plants may be purchased for much smaller amounts. The pendulous spike of self-coloured yellow flowers is very distinct and pleasing. In Messrs. Rollisson's group we met with a grand spike of Oncidium Marshallianum. This has been known to Orchid growers, by name at least, longer than any of the preceding, and yet is very seldom seen in flower. In this instance it carried a spike about 4 feet long, with several laterals, on which were a number of large bright yellow flowers marked with spots of a rich brown colour. It is certainly a fine and highly desirable species, and, coming from the same native habitat as concolor, will doubtless succeed under similar treatment. A plant of Odontoglossum cirrhosum was also exhibited among the new plants, and there can be no doubt that among the recently imported plants there will be many that will exhibit forms that will come up in every respect to the very glowing description with which it was first introduced to the notice of plant lovers. *W. Swan, Fallowfield, May 29.*

BLAIR ATHOLE.

(Concluded from p. 684.)

FROM the lawn we entered Glen Banovy, and a superb pheasant covert planted with rare shrubs. Higher up in the forest, Glen Banovy becomes a mere ragged watercourse across the moor. A young Pinus nobilis in this sheltered cover has grown 5 feet 6 inches in length within the last three years. It stands in a favourable situation, next a Bird Cherry and a "Snowberry," the noble and the humble side by side, as must often happen when the owner of Athole and his guests and keepers enter this covert together. But the nobility among shrubs do not thrive in a thick cover. They apparently require air and more space in which to spread themselves. The Rhododendron ponticum holds its own here in the shade, better even than the common Berberis; the St. John's Wort and Savin are tolerably at home; the Weigela rosea adds to the variety.

From this ducal pheasant covert we crossed the Banovy, near a Spruce of unusual height, rising from the water's edge 140 feet, according to careful measurement. It is the largest Spruce I have seen, with a bole diminished in apparent size by its height and reduced in apparent height by the low position which the tree occupies. The measurement is 9 feet 11 inches at 5 feet from the ground, and the bole holds nearly the same girth to a height of 40 feet, and then tapers slowly to the lofty top. The purling brook loses itself here amongst the foliage of "Diana's Grove," and in this secluded spot, on a shelf above the stream, are the four remaining Larches of 1738. These trees are about 90 feet high, and the largest contains about 400 cubic feet of timber. Judging from their appearance, the proper distance apart for specimens of this kind would have been 13 yards, which is the actual distance between the trees in one direction, while in the other they stand at 8 yards, with some injury of the foliage and mutual repulsion that has sent two of the trunks away from the other two and caused a leaning up-hill and down-hill, and, as it happens, north and south.

Above, upon the banks, there are some handsome Conifers and evergreens. The Castle is in full view, and on the left are the ruins of the old church of Blair, with a surrounding graveyard full of mouldering Stewarts, and thickly set with ancient gravestones. The late Duke George was buried here in 1864. From the house the unfenced ruin on its knoll, surrounded by masses of Yew and Box and other appropriate foliage, forms an interesting point of repose in a delightful landscape. Great Ash trees partly surround it, and behind is a bank of Conifers, screening it from the factor's residence, the only remaining house of the old village of Blair, removed by Duke James in 1750.

Among the Conifers are Abies Menziesii of 50 feet, Picea Pichta, Abies nigra of 55 feet, the Hemlock Spruce, Abies Albertiana, A. Douglasii, and a common Silver Fir, of late habit of growth in spring. There is a nursery for young trees here which we crossed, and then followed the noisy Banovy, running below in a deep channel through a noble wood of Scotch Firs of eighty or ninety years' growth, which have in many cases each produced a cubic foot of timber in each year of their age. A Beech wood thriving on a gravel soil followed, and then a wood of Scotch Fir and Beech mixed on a rubble glistening with mica. We are here ascending the slope of the Grampians, which terminates in the glen below us. A fall from the edge of our path would land us in the stream 250 feet below, but for the saving aid of trees upon the steep. The Mountain Ash became "Thor's helper" in just such a place as this. He was hurrying through the woods on some improper enterprise or other, when he slipped over a steep glen side, and was saved from falling by a Mountain Ash. The head of a great Scotch Fir might here receive him, or he might grasp one of their blushing trunks. We enter another Scotch Fir wood, old, with Fern and Heather below, and an occasional green carpet formed of Whortleberry. Then comes a stone dyke, and beyond it is the open moor, with the Banovy a mere burn scoring its wild surface; and two trees upon its bank, outside the dyke, are the last trees in this direction for 20 miles. And this is the general character of Blair Athole—woods and plantations on the lower slopes, and then the bare moorland.

Turning southwards through Heather and plantations, a roe-deer started from our path, and a capercailzie went off upon the wing; he would have been better roasted, and served in the summer-house hard by. There are seats at "The Whim," which stands on a conspicuous site in front of a young plantation, with specimen Firs around, a pleasant prospect of the park, the valley of the Garry and its boundary mountains. Nature endowed this locality with the Garry and the Tilt and much uneven ground, and Art has added a castle and park, and woods which encircle several of the hills.

From the Whim we turned into Craig Urrard Plantation of old Scotch Firs, which have reached the maximum height attained by this tree under ordinary circumstances—from 70 to 80 feet. There are eighty trees per acre, straight and clear in the bole, and measuring in many cases 70 cubic feet—50 cubic feet is a good plantation tree. The soil is a micaceous rubble on rock. This was once a sheltered spot for deer during storms upon the hills outside, but they are now excluded by wire fencing, put up for the sake of some young plantations. There are about 500 acres of this fine old plantation, and as our road ran across the slope, we had around us a fine array—ranks of red trees below, regiments of red trees above, all wearing dark green caps. We next strolled up the valley to Bruar Water, through Balfuan Wood, containing 800 acres of Scotch Fir, six and ten years old, and about to be thinned for the first time. Bruar Water has been elsewhere noticed. *H. Evershed.*

Forestry.

THIS is the season of the year at which all young and middle-aged plantations should be carefully and minutely gone through, and every tree examined. Not that each individual tree is either to be actually handled or operated upon, but the eye should be allowed to fall, and so far rest upon each tree, as to detect anything unnatural or wrong. When this is done, it is always found that the labour bestowed is not only well remunerated financially, but the pleasure and satisfaction emanating from it are such as only those know who delight in the beauties and perfections of properly managed woods and plantations.

The work to be done in different kinds of plantations, and upon different individual trees, varies so greatly, that only general directions can be given with safety. At the present time I am extensively engaged with such work, and proceed with it in the following manner. The subject in hand is a mixed Pine, Fir, and hard-wood plantation, ten years old, situated in a valley sloping towards the sea, but distant from it a few miles. The crop of trees consist chiefly of Norway Spruce, Larch and Silver Fir, Black Italian Poplar, Ash, Elm, and Oak. It was planted with the view of affording shelter to the arable land surrounding it on all sides, of beautifying and adorning the landscape, and of affording wood and timber for the requirements of the estate. When the plantation was formed, some of the adjoining tenants demurred to the sacrifice of some pieces of the arable land, although fully compensated for the loss, asserting that they would never derive any benefit by way of shelter during their nineteen years' lease. Little more than half the lease is yet run, and there is already splendid shelter afforded. This is the sixth time the plantation has been gone over, and every tree attended to according to its requirements; and no one seeing the plantation now would say the attention and labour have been vain or ill-bestowed. The rapidity of growth has doubtless been greatly facilitated by allowing every individual tree the necessary amount of freedom which its habit and constitution demanded, and the uniform and rapid growth again has urged the constant attention bestowed. The reader is doubtless desirous to know what has actually been done in this plantation, and why it has required so much attention. The first matter attended to after planting was to see that no plant was overgrown with rank grass or other herbage; and at the same time to see that all were alive and in a growing state, so that no blanks or open spaces would occur. This was repeated each of three successive springs, till all the trees were above such intrusion. After the fifth year's growth the more rapid growing trees began to overgrow, and injure those less favoured, such as the Spruce overgrowing the Oaks and Elms, and the Poplars overtopping the Spruce, &c.

From various causes trees of every species are less or more liable to have their leading top shoots injured, and when this occurs it induces the top to divide into a plurality of leaders. Unless such trees are timeously attended to by pruning off all except one, and that the most eligible, the tree would be rendered comparatively valueless, sometimes not worth room at all in any plantation. This, then, constituted part of the work referred to. Hard-wood trees are specially liable to produce, not only double and divided tops, but to produce a plurality of stems springing from the neck of the tree close to the surface of the ground—the result often of the tree either being too large when planted, or of the soil being too poor, cold, or wet to properly nourish the main stem; hence sickliness or death of the tree, or part of it, and the young shoots springing out of the vital part below. This is one, and probably the most important branch of pruning, and had also an important place amongst the operations of work referred to. Regulating the distances between the trees is also a branch of forestry of vast and vital importance, and is generally spoken of as the art and practice of thinning—a subject of itself sufficient to fill volumes.

As practised upon the subject in hand, however, it only extended to the operation of relieving any seriously injured tree, and specially such, as from too close proximity were losing their proportional growth by inducing top growth at the sacrifice of the lateral or side growth. The plantation, as already stated, is situated in a valley, and one part of it in a ravine, which extends throughout its entire length. This and all similar ravines are liable to be filled with snow-drift at times, and, as is well known, it is only at a particular stage of growth that the trees suffer from accumulation of snow. When below 2 feet high they yield to the pressure, and will remain weeks flat upon the ground covered with tons of snow, and rise erect and uninjured when it melts, and they are relieved. Again, when the trees are sufficiently tall and strong to resist successfully the pressure, no evil, of course, occurs from snow-drift. It is only, therefore, at the middle stage of growth, and while the stems are clothed with branches near to the ground, that most damage is sustained, and in regard to the subject in hand, it has to be stated with regret that no small amount of injury has been inflicted by last and bygone winter's snow-drifts. With skill and timeous attention, however, the evils have been remedied chiefly by means of raising those crushed down; lopping off shattered tops and side branches; splinting and bandaging tops partially broken; placing stones over the roots of those partially torn out of the ground, and other attentions suggested on the ground, too numerous to be here mentioned. *C. Y. Michie, Cullen House, June 2.*

"THE GOLYNOS OAK."—This wonderful tree, which overspread 452 square yards of ground, grew on the estate from which it takes its name, about 4 miles from Newport, in the county of Monmouth. The diameter of the main trunk was 9½ feet, from which grew, exclusive of dead limbs, twelve branches, the largest of which contained 472 feet of timber, and the whole product of this enormous Oak was 2426 feet. Its bark, which round the trunk measured 3 inches in thickness, was estimated at 6 tons. From the rings in the butt it was calculated that the tree had been growing upwards of 400 years, and from many of its lateral branches being dead and broken off, it is presumed it must have stood after it had attained its maturity little short of a century. It was purchased by the late Mr. Thomas Harrison, many years pur-

veyor of Plymouth Dockyard and Dean Forest, in the year 1810, for 100 guineas, and when converted its total product was valued at nearly £600. The above was copied from an engraving published by the celebrated publishers, Boydell, Cheapside; T. Clay, Ludgate Hill; and Colnaghi, Cockspur Street. *Journal of Forestry.*

Notices of Books.

L'Olivier, &c. : *The Olive Tree, its History, Botany, Cultivation, Products, Commerce, &c.* Par A. Coutance. Paris, Rothschild. 8vo, pp. 443, Xylog. 120.

As may be judged from the title which we have quoted in brief, this is an ambitious volume, dealing by the other trees to become their king, and the author proceeds to moralise on the subject of elective monarchies! The Mount of Olives, withits most hallowed associations, next comes under review. From it we pass to the Olive as known to the Greeks —the emblem of Minerva, the symbol of peace, the reward, in the form of a wreath, of valour and discretion. But classical literature alone has not sufficed for M. Coutance. He gives us a brief list of the principal modern works on the subject before he plunges into the more technical details connected with its natural history. The author has attempted, with what success we will not venture to say, to group all the most important varieties under sixteen groups, under each of which is ranged a number of synonyms. Woodcuts of some of these varieties are given, showing considerable variation in the fruit and in the indestructible. Cut them down they spring up afresh, a fact known to Virgil—

"Quin et caudicibus sectis, mirabile dictu,
Truditur è sicco radix oleagina ligno."

In south Europe the Olive is generally grown on terraces, on the slopes of the hills, carefully banked up and often artifically made with soil brought from the valleys. A single tree may be the property of a single proprietor, or the crop it yields may be even more subdivided as to its ownership. As to cultivation local proverbs say that by digging the ground you ask the Olive to yield fruit, by manuring it you press it to do so, and by pruning you compel it to do so; the latter process however naturally requires to be done with judgment, and if we mistake not many of the finest Olives as to produce are all but untouched with the pruning knife in Italy. As to manures, nothing



FIG. 116.—OLIVES ON THE CORNICHE ROAD NEAR MENTONE.

with a very large and manifold subject. It is got up in excellent style, the paper is good, the typography clear, the woodcuts numerous, and many of them beautiful. Commencing with the history of the Olive the author passes on to botanical details, to the districts wherein it is cultivated, the method of cultivation, the diseases to which it is subject, the manner of gathering the Olives, the mode of expressing the oil, and the uses made of it. Under these headings the author has massed together a large amount of useful information, and much that is interesting to the general reader. Few trees indeed can boast of more varied or hallowed associations. Our author begins with a dramatic rendering of the liberation of the dove from the Ark by Noah, and its return with the Olive spray in its beak as a token of the abating flood. Then we are reminded how the Olive was solicited stones. As to the various districts in which the Olive is cultivated, as in Syria, in Greece, and in the Mediterranean region generally, the author gives full details. How great is the difference in climate even within the limit within which the Olive can be cultivated at a profit may be seen by the traveller as he passes by rail southward from Lyon to Nice, and the Riviera, or from the summit of the Apennines towards Florence. How different the miserable scrubby trees one sees north of Marseille, or high up above Pistoia, and the noble patriarchal trees met with on the Riviera, especially near Mentone. Anillustration (fig. 116) which wetake from an earlier volume, of an Olive tree on the Corniche Road near Mentone, shows an Olive tree in its noblest guise. The age such trees attain to is hardly to be estimated. We must confine ourselves to saying that they are almost seems to come amiss to the Olive. Very generally the rocky nature of the countries in which it grows prevents any great depth of soil, and hence what there is requires to be enriched in any possible manner. About Mentone a mode of root pruning and manuring is adopted which is not mentioned by our author. A trench some 18 inches or 2 feet wide, and as much in depth, is cut in a semi-circle at a few feet from the base of the tree. This is left open for a little, and subsequently filled in with what Kentish hop farmers know as shoddy—old woollen rags of the most varied description, but all having the common characteristic of frowsiness to an almost incredible degree. From a dirty monk's dirtier robe or a soldier's blood-stained coat, then, come the rich Olives and the limpid oil.

We have not space to follow the author in his account of the fabrication of the oil, nor in his very

interesting account of the virtues, real and imaginary, that have been attributed to it. It must suffice to say that the chapters devoted to the symbolism connected with the oil, and the use made of it in religious ceremonies, is one of the most interesting in the book. The author, penetrated with a love of his subject, has collected together a large amount of miscellaneous information not otherwise readily accessible, and has placed it before his readers in an attractive and interesting form.

Aperçu Systématique des Ustilaginées, &c. Par A. Fischer de Waldheim. 4to. Paris, 1877. Lahure, pp. 51.

This treatise is dedicated to the International Congress of Botany at Amsterdam, and is merely a preliminary sketch, with a view to a more perfect illustration of the subject. The author has taken great pains to collect every possible information, but from the scarcity of English publications in some of the Continental Herbaria he has not been able to give characters of all the species that have been published in this country. This however will ultimately be remedied, since he has applied for information on described or unrecorded species, which has accordingly been forwarded. Meanwhile we beg leave to recommend this to students who are desirous of knowing what species have been described. The work includes characters of 127 species, referred to seven genera, and though possibly some mere varieties are raised to the rank of species, it is well to be able to refer at once even to these. In one case we have noticed a "double emploi." It is however quite certain that several distinct species occur on the same matrix, as is more especially the case with those found on the different species of Polygonum, some of which are local and extremely interesting, while others abound in very distant parts of the world. They all agree in a more or less intense lilac tint. The germination of the common Bunt (Tilletia caries) is so interesting that we hope that our author has extended his observations in this direction. It is curious that wheat in the United States suffers from a quite distinct species, but having the same disagreeable fœtid smell. Information or specimens will be thankfully received if addressed to the author at Université, Varsovie. *M. J. B.*

PUBLICATIONS RECEIVED. — Der Volksgärtner (Bada-Pest).—Le Bulletin Horticole.—The Orchid Grower's Manual; by B. S. Williams (fifth edition) —Tropical Agriculture; by P. L. Simmonds (Spon). —Familiar Wild Flowers, part 3.—Bulletin d'Arboriculture.—The Gardener.—Bulletino della R. Societa Toscana di Orticultura.—Botanical Tables for the use of Junior Students, by Arabella Buckley—Tropical Agriculture, by P. L. Simmonds (Spon)—Revue Horticole — Berlin Monatschrift — American Agriculturist.

Florists' Flowers.

NEW FUCHSIAS.—On p. 206 of the present volume of the *Gardeners' Chronicle* it was stated that Mr. J. Lye, Clyfe Hall Gardens, Market Lavington, Wilts, who holds the proud position of the Champion Fuchsia Grower of the West of England, was also a raiser of Fuchsias. In past years he raised three or four varieties that are now greatly esteemed exhibition sorts in the immediate district where they were originated.

Mr. Lye has this season bloomed a batch of seedlings of the second and third year of flowering that were of a promising character in previous trials, and which have this season proved so fine, that he has resolved to distribute a batch of ten varieties, which promise to be invaluable for exhibition and decorative purposes. I have just had an opportunity of inspecting them, and while the habit of growth is generally of a very satisfactory character, the varieties are all characterised by great freedom of bloom, the flowers large, bold, massive, of fine form and most attractive colours. Mr. Lye's determination is not to put his name to anything but what is of decided value for exhibition purposes; and an inspection of his products at the time of flowering leads me to the conclusion that he is in no danger of erring in this direction.

The batch of ten new varieties consists of six light and four dark forms. The former consist of Mrs. Huntley, white tube, delicate flesh-coloured segments, large brilliant carmine corolla, very stout and large, and the whole flower of excellent form; Miss Lye, blush tube and sepals, with faint lines and somewhat suffused with delicate rosy pink, carmine-red corolla flushed with violet, distinct and of fine form; Letty Lye, delicate flesh-coloured tube and sepals, deep carmine corolla tinted with purple, very fine form, a most attractive variety; Beauty of Wilts, creamy white tube and very delicate flesh sepals, violet-rose corolla with distinct margin of carmine-red, like a Picotee edge, a charming variety; Blushing Bride, an improved Lustre, delicate flesh-coloured tube and sepals, dark carmine corolla slightly shaded with violet, stout, fine, and handsomely reflexed; and Delicata, white tube and sepals, pale pinkish violet corolla, evenly margined with brilliant carmine, very pretty and attractive.

The dark varieties consist of—James Lye, red tube and sepals, and dark violet purple corolla; an improved Perfection, flowers large, bold, and of the finest form; Charming, scarlet tube and sepals and purple corolla, a grand exhibition variety; Elegance, scarlet tube and sepals, with light blue corolla, fine and showy; and James Huntley, bright red tube and sepals, the latter very broad; rich plum-coloured corolla, changing to pale purple with age; very fine bold flower, stout and well reflexed.

Exhibitors of the Fuchsia especially will find these varieties well deserving their attention. *R. D.*

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS. — Many of the fine-leaved greenhouse plants suitable for table or room decoration whilst in a small state, and for general decorative purposes before they get too large, such as Lomatias, Grevilleas, Aralias, and Rhopalas, can only be had in suitable sizes by continually working up young stock from year to year. Most of these are plants that will not root freely unless cuttings in a particular condition are obtainable; to simply take the top off a young or half-ripened shoot, severing it at the base of a leaf, as usual with the majority of things, would be to court certain failure, as most of the above plants can only be induced to root with any degree of certainty by making cuttings of young shoots, easily procured from headed down plants taken off with a heel, with a bit of the firm wood at the base attached, such as will be now available from plants that were cut back early in the spring, and that have since broken and made some 6 inches of growth. If the plants were put in a little heat to accelerate their breaking, the cuttings will be in better condition. In taking off cuttings of the above description it is necessary to have a knife usually at hand to pare away the bark; use a sharp knife, in all cases cutting downwards from the upper side of the shoot, by which means a cleaner cut is more likely to be effected than if the knife was inserted at the lower side; none of the leaves should be removed, simply smoothing the edges of the bark at the base. The cuttings should be put singly in 3 or 4-inch pots, according to their size, half filled with sandy peat, the remainder all sand; submit them to a brisk bottom-heat of 75° or 80°, if such is available; if not they will do stood on any moist-holding material that will keep the atmosphere round them humid. Cover with bell or hand-glasses, and shade from the sun. They take longer to root than many plants, some as much as three or four months, and should not be fully exposed to the atmosphere of the house until they have got sufficient roots to support them; with a night temperature, such as is easily maintained now for some time, of 70° or 75°, they will require nothing further than attention in never letting them get dry. Dracænas that were headed down in like manner will in most cases have broken several shoots, and as they look the best confined to a single stem, all except the best placed shoot for forming the future plant should be taken off, and struck in the same way as the above.

The present is a good time to take off root-cuttings of Yucca filamentosa variegata, which is one of the finest decorative variegated plants in existence, and near so much grown as it deserves to be, and although generally treated as a stove subject it is hardy out-of-doors, and yet is thoroughly at home in a greenhouse or cool conservatory. In the latter place, from its neat, yet graceful habit, and handsome white and green foliage, it is one of the most telling plants that can be introduced, especially when used in sufficient numbers to give effect. One cause for its not being more generally grown is the high price that it has realised since variegated plants became fashionable, and a deficiency of knowledge on the part of many growers of the way to increase it to the extent it is capable of. Any one having a good strong plant fully established, with plenty of roots, in a 12 or 14-inch pot, may now turn it out. Remove the crocks, shake the soil away carefully without injuring the roots, which must be disentangled without breaking, one-half of these, the strongest, should be selected and cut clean away from the underground portion of the stem. They should be cut into pieces about an inch long, and inserted in pans well drained and filled with sifted peat and sand in equal parts, putting the cuttings in an inch asunder, leaving them one-eighth of an inch above the surface. Press the soil firm, and give a little water immediately. Put them in a stove where a night temperature of 65° or 70° can be kept up. They may be covered with propagating glasses, or an ordinary sheet of glass laid over each pan, to prevent the soil getting too wet through syringing. In six or eight weeks these root-cuttings will make growth, when the glasses must be removed, giving them a fair amount of light, and not allowing the soil to become either too wet or over dry. When they have made four or five leaves each, they may be put singly into thumb-pots, and kept on growing in heat through the winter. The partially disrooted plant should be placed in a pot considerably smaller than it has before occupied in good peat with a little sand added. Be careful not to over-water, applying it sparingly until the roots have again begun to move. Give it warm stove treatment, with shade from the sun, and keep the atmosphere moderately humid; so treated it will lose very few leaves; but, as might be expected, if, after this partial disrooting, it is not managed carefully, as above advised, a good deal of the bottom foliage will turn yellow and die off. The advantage of propagating this Yucca in the manner described at this time of the year is that the plant is enabled to recover itself before autumn, and the young stock in like manner has time to get established before winter, and are in a position to start off freely into growth early the coming spring, when, if carefully treated, they will make nice small plants by the following autumn.

The fine shrubby variegated Yuccas, Y. aloifolia variegata, Y. quadricolor, and Y. quadricolor Stokesii, are liable in time, as they attain a considerable size, to lose their under leaves, in which way they have a naked unsightly appearance, as, like all other plants grown for the beauty of their foliage, unless their leaves are perfect from the base upwards, they lose much of their effect. As these are slow-growing subjects, propagating to form good heads, it is advisable, so far as possible, when they get in this state to re-root as large a portion of the head as is furnished with perfect leaves. This can be done at the present season. The head should be cut clean off 5 or 6 inches below the lowest healthy leaves; it should then be inserted in a well-drained pot filled with sifted loam and sand in equal proportions, sufficiently large to support the head. Put in a house with a temperature something like a late vinery, stood on the floor, and keep the atmosphere immediately around them confined, which can be best done by taking two, three, or more ordinary hand-glasses with moveable tops, placing them one above another according to the height required, putting one of the tops over all. If a large plant, the leaves will require being partially tied in an upright position, so as to admit of their going through his imposed-covering. Keep closely shaded from the sun, the soil moderately moist, but not too wet; in this way they will generally form abundance of roots in the course of six or eight weeks, when they may be gradually inured to the air of the house. I have found these large heads succeed much better than when subjected to more heat and an over-moist atmosphere, in which they often lose some of their bottom leaves. The remaining portion of naked stem may be either left to break, and the young shoots as produced taken off with a heel and struck, or it can be headed down to within 2 or 3 inches of the base. The bare stem thus cut away may be divided into pieces an inch in length inserted to half their depth, like ordinary cuttings, in pots, or pans drained and filled with sand, placed in the stove, and kept moist, but not covered. Under these conditions very few will fail to produce root and to make healthy plants. *T. Baines.*

ORCHIDS.—Turning our attention from the Orchid-houses proper, as they may be called, and though not in any particular relaxing the attention required for all they contain, it will be advisable and worth while to look again to one or two subjects that are best managed in the greenhouse or cool frame. For the late summer and autumn blooming there are few more striking plants of any class than Disa grandiflora, its peculiarly formed flowers and colours of such dazzling brightness catching the eye at a moment, and causing one to linger and admire its singular and attractive forms. These now should be growing apace, and the forms of some of the growths just showing the commencement of the spike from its centre, to be followed by others as the growths attain sufficient strength and size. In some cases these succeed moderately well in the Odontoglossum house, and, providing they are not subject to an atmosphere overcharged with moisture, they may remain here; plenty of air, however, must be given, otherwise they are apt to be very soft and weak. Another evil of keeping them in the Odontoglossum-

house is, that after flowering they are very apt to start growing sooner than is desirable, and thus the breaks become very weak, the foliage narrow and unable to stand its own weight, and in course of a season or two the plants get less, and ultimately die away. For managing these thoroughly there is no better place than a small greenhouse, where a few plants are grown that require less air than is given to the ordinary greenhouse, and where a blind can be run down during the hottest part of the day. Now that the growths are well advanced they must be well supplied with water at the roots, and about once a week treated to some liquid manure; and under this treatment they will carry on and attain a strong and healthy appearance. Another that will be in flower at the present time is Cypripedium spectabile; this has been imported in such quantity, and the greater part in such good condition, during the last two or three years that one may have been able to obtain it who before that time found it a very difficult matter to get even a small piece. A mistake, however, is often made with plants that come to us from localities similar to those from whence these are received. Because they are found freely growing in some of the boggy places of North America, it is thought they must stand almost as much cold as we get during any part of the year, and on being planted outside, in however sheltered a spot, they have in most cases died. These should be grown in pans crocked about a third of their depth, in a mixture of leaf-soil, rough peat, and sphagnum. In potting it will not be in requisite, as in the majority of other Orchids, to keep the crowns very high above the rim; at the same time, the crowns must not be covered with soil. If, however, a little moss may have grown around the stems during the summer, no harm will result from that, as on standing them outside after flowering, the moss will dry down and cause no injury by an excess of moisture. After the flowers have all died off, the plants should be stood out-of-doors on an ash border under a wall. Here the stems will ripen and fall away, and, after keeping them till about the latter end of September, place them in a cool frame for the winter. A frame without fire-heat is best, and, during severe weather, besides throwing a mat over the lights, it will be of great service to cover the plants entirely with some dry leaves. By February or March, the litter having been taken away, the shoots will push up and start away. They may then be taken into the greenhouse one or two tof early blooming, then in two or three weeks the remainder should be taken in where they will soon come on very quickly, the stems and foliage stout and vigorous, and at last its pure white flowers with a rose-coloured labellum, will appear on the top of the growth, and add a novelty and richness to the conservatory that is to be found in few other plants. Although apparently this is dormant from August to February or March, it must not be neglected, for during those months it will require care and treatment that it may be forming and developing the beauties that are for the time hidden. *W. Swan, Faltonfield.*

FRUIT HOUSES.

PEACHES AND NECTARINES.—The propitious change in the weather which has taken place will, if it continues, greatly facilitate the operations connected with these subjects, and advantage should be taken of such influence to air the houses in which the fruit is ripening very liberally, as it does contribute so much towards perfection, both in point of quality and colour. When the fruit begin to soften, frequent syringings should be discontinued, excepting about those parts of the trees which are near the pipes, and where it can be applied without detriment to the fruit. In addition to this, its fitness will much depend on the purpose for which it is required, although it will attain the highest degree of excellence if it be allowed to ripen completely on the tree, but for packing for market purposes it should be gathered somewhat before that time; go over the trees every morning and remove carefully every ripe fruit, and if any means are employed to prevent the fruits which may drop from being injured, it should be seen to before the fruit is quite ripe. Netting is the best material to place beneath trellises below the roof of the house, and in the case of those which are vertically placed a good layer of soft hay or similar material placed at the base will answer the purpose likewise. To prolong the supply of fruit, discontinue fire-heat as soon as it is ripe, excepting under most unfavourable conditions. Moderate the surface of the border "to render the air cool," and open the house fully during sunny weather, and keep it partly so constantly. In later houses proceed with the training in of the shoots as they advance, and so regulate the growths as to give free access to sunshine, &c., about them. Stop all exuberant shoots which issue from about the base of the trees between, and also those of a similar nature which start on the same shoot from behind where fruit is left, and the laterals at the first leaf, excepting those on terminal shoots where the trellis is unoccupied. In this case a few should be left untouched. Continue the weekly sowings of guano over the surface of the mulching materials in the house. Keep the borders in a moist condition, and copiously syringe the trees twice every day. *G. T. Miles, Wyomte Abbey Gardens.*

CUCUMBERS.—If the supply of fruit from pits and frames is sufficient for the demand, houses which are light and well adapted to winter work should now be cleared, thoroughly cleansed, and devoted to the growth of Melons, the crop from which will be cleared in time for the earliest batch of winter Cucumbers. Nights being still cold, the temperature in houses, unaided by fermenting materials, will fall lower than is good for the rapid production of fine young fruit; it will therefore be necessary to turn on just sufficient fire-heat to prevent the glass from standing lower than 68° at midnight. After a very hot day, a degree or two, more or less, will not affect the plants; but, as a rule, a minimum of 70°, with a bottom-heat of 85°, should be maintained. Pay unremitting attention to the weekly dressing over and removal of old Vines and leaves. Top dress with good loam as the roots appear on the surface, and water freely with tepid liquid-manure. Damp the beds and floors two or three times a day, and syringe over and under the foliage sufficiently early in the afternoon to allow of the heat running up to 90° after the house is closed. Frames and pits now in bearing will also derive great benefit from weekly supplies of liquid-manure, and from the surface of the soil without wetting the foliage. Sprinkle overhead with tepid water, and close about 3.30 p.m. Tilt cap glasses on the south side as Ridge Cucumbers advance in growth. Cover the beds with short hay, lump on lump to prevent the escape of moisture, and elevate the glasses on four half-bricks for a few days prior to their final removal.

ORCHARD-HOUSE.—The wholesale destruction of fruit and fruit trees by severe frost and cutting north-east winds will cause many horticulturists to turn their attention to this useful structure, particularly if their gardens are not well sheltered from wind and sufficiently high to escape the disastrous effects of 14° of frost early in May. At this place Peaches the size of Hazel-nuts were killed under glass copings with a screen of Frigi Domo in front, and I can now count more fruit on a dozen pot trees than will be gathered from 100 yards run of brick wall. Wood espaliers or trellises are cheap, and although the hot-water span-roof is most ornamental, the lean-to answers very well, as retarding rather than forcing is generally practised. Fruit trees established in pots may at all times be obtained in endless variety, but it is better to have duplicates of early, midseason, and late varieties of proved value than to run into an endless list of names. We need not advise the owner of a well-stocked orchard-house to pay extra attention to his trees; we may, however, remark that pot trees must not be overtaxed to make up for deficiencies out-of-doors. A fair crop of finely-swelled fruit will give more satisfaction than a larger quantity, which ripen off instead of taking their last swelling, and the trees will retain their vigour for many years. The thinning of fruit requires great firmness, as well as judgment, and it is always well to err on the safe side. A healthy established tree in a medium-sized pot, if growing in near proximity to a good manure-heap and liquid manure tank, will, in all probability, ripen off better fruit than the tree which cannot be well mulched and watered with tepid liquid. Next to judicious thinning cleanliness is of great importance, and insects of various kinds will now begin to be troublesome. These must, of course, be kept in check by the constant use of Read's patent syringe, a most formidable instrument in skilful hands. If black-fly does not succumb, the points of the shoots may be dipped in tobacco-water. Perform this operation after sunset, syringe well the following morning, and repeat if necessary. Ordinary green-fly may be kept down by fumigation. From this time forward, if early fruit is ripening, the watering must be kept constantly open, but fruit always attains the largest size when the ventilators are closed for an hour or two after the afternoon syringing. *W. Coleman.*

KITCHEN GARDEN.

The kitchen gardener amongst the multifarious sowings, thinings, and plantings, which press for daily attention, has to take into consideration what will be required in the kitchen many months hence, and is therefore frequently obliged to take stock, in order that if any important crop has failed, or only partially failed, he may take such timely means as are available to him for supplying deficiencies. Hence small supplemental sowings of any of the sorts certain to be required, are always useful in case of failure, or if not required the value of a pinch of seed is not commensurate with a possible loss of crop. The probability of any such deficiencies will now be developed, and should be at once provided for if possible by timely supplemental sowings, or, if too late, by purchase or exchange of plants.

It is about this time when work presses so heavily in all departments, but particularly in the flower garden, that weeds are apt to come creeping along, and if means are not adopted by setting on a good strength with the hoe in bright hot weather, they soon get so much ahead as to require double the labour to get rid of them. Hence the great advantage resulting from the following out of our repeated injunctions as regards surface stirring amongst advancing crops, which should never be omitted on all favourable occasions during the spring. This will allow of a portion of the strength being relegated to other departments during bedding out time, provided also that the necessary plantations of Autumn Cauliflowers and Broccoli have been attended to; if not, no consideration should be permitted to interfere with its immediate performance. A good breadth of spring sown Cabbage, such as Carter's Heartwell or Veitch's Improved Matchless, should be got in at once; the latter has proved itself to be by far the best Cabbage that has stood through the last winter; not anywhere in this neighbourhood have I seen any thing like them. Our own old favourite sort called Early Seal, and which has been grown continuously in these gardens over forty years has failed to approach them this year. In addition to the immediate necessity of securing the planting of a good breadth of Brussels Sprouts for the coming winter, for which, as it is one of the most important of our winter vegetables, the ground should be deeply trenched and highly manured, attention must also be paid to getting out a sufficient breadth of Early Drumhead Savoy, one of our most useful early winter supply, and as these will be supplemented by later plantings of other varieties sown later, the supply will be carried on well through the winter into the spring. Look to the successional sowings of Walcheren Broccoli and Cauliflower for the latest plantings, and pride out the young plants from former sowings, and where space is at liberty lose no time in getting in the plants from the earliest sowings; this, as I before observed, is imperative, for if left too long either in the seed beds or when pricked out they receive too severe a check, and frequently do not grow away sufficiently free to arrive at their proper stable development, but commence early to throw up inflorescence which is often of very inferior quality.

The main crops of Celery should now be planted, and if the trenches are not already prepared no time should be lost in getting them ready, as they must be planted should be all trenched over to a depth which must be regulated by the bottom of the trenches in which the roots will run, and as the ground round is moved to an uniform depth, the roots will be able to penetrate through the whole mass, and the depth of the trenches in which the plants are placed will become a very secondary consideration, but may safely be regulated by the nature of the soil and the position of the subsoil, both with regard to its texture and drainage. Light and warm soils of sufficient depth may be indulged with deeper trenches than would be advisable in the case of stiff, retentive soils with a cold bottom, where shallow trenches very little below the level of the ground will be most likely to ensure good keeping qualities; this remark will apply more particularly to that part of the crop which is intended to furnish a supply from Christmas to well on into the new year, which is the most trying time, as it is then most liable to decay, and that decay will be very much accelerated by planting deep down in ill-drained trenches. For early crops which will come to perfection and be used off before the trying time it is not needful to be so particular as to the depth of the plants in the ground. In preparing the trenches for the plants mark them out 4 feet apart, throw down, throw out right and left one good spade's depth, leaving what is called the shovellings in the trench, then fill up with rich but well decomposed manure, which turn over and incorporate with the soil and plant at once, taking care that it is as near the supply of water as possible; the space between the trenches for the early and quickly used crops need not be more than 3 feet, but for the long keeping 4 feet is not too much, because at the final earthing up the bottom of the bank should be considerably below the roots and thus act as drainage. Although the season is an unusually backward one, most of the root crops will be ready for the final thinning out. Onions especially must have early attention, leaving them at from 4 to 6 inches apart, and transplanting to fill up vacancies, afterwards hoe up the soil between the drills, and if dry weather should prevail, the crop will be very much benefited by a liberal application of water in which a few pounds of common washing soda has been dissolved. I believe this to be a good antidote against the rotting of the roots, and therefore worthy of a trial. Thin out the main crops of Red Beet, leaving them at about 8 inches. The second sowings of Turnips will be ready for thinning in the usual manner, and a good sowing should be made for the main early autumn crops. Early Snowball is a good sort for this sowing. Look to the Cucumbers and Vegetable Marrows on ridges, as they may want earthing up and pegging out. *John Cox, Kelleaf.*

THE

Gardeners' Chronicle.

SATURDAY, JUNE 9, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	June 11	Sale of Plants at Lee's Nursery, Hammersmith, by Stevens (two days).
WEDNESDAY,	June 13	Royal Botanic Society: Summer Show.
FRIDAY	June 15	York Floral Fête (three days). Scottish Pansy Society's Show.

AT the Society of Arts on Tuesday last, Mr. ANDREW MURRAY raised the difficult and well-nigh insoluble problem of State interference in agricultural matters. When we say insoluble, we mean insoluble *secundum artem*. No amount of logical argumentation or neatly-drawn conclusions will avail in the determination when or how Government ought to interfere. The line between State aid and individual enterprise must be drawn somewhere, but it is impossible beforehand to say where the demarcation should best be made. The severe logic of facts, however, in many cases ultimately forces the enactment of compulsory legislation or of State aid.

The immediate object of Mr. MURRAY'S paper, a full abstract of which will be found in another column, was to press upon the Government the consideration of the nature and amount of the INJURY INFLICTED ON GROWING CROPS BY INSECTS, and the best method of preventing or remedying these disasters. In the case of the cattle plague Government has interfered with the liberty of the cattle dealers and graziers to an extent that a few years ago would have been thought unbearable by free-born Britons. But the restrictions are quietly submitted to, because the necessity for such has become apparent to the generality even of the most unthoughtful of farmers. Continental farmers, said Dr. VOELCKER, do not feel the restrictions to which they are subjected as onerous, because they are so well-instructed in the principles, as well as the practice, of their business that they understand the necessity when it arises, and are consequently obedient to the law. And so we take it, that when once the farmers or the gardeners become sufficiently aware of the importance of the question, they too would submit to Government interference when they were convinced of its necessity and act on the principle of choosing the least of two evils.

But perhaps the most astonishing thing that came out in the course of the discussion was the testimony given as to the amount of ignorance among the general body of agriculturists throughout the country, of the nature and especially of the amount of damage done by insects. Farmers in general appear to be not nearly so well informed on this matter as gardeners, and do not seem to have anything like an adequate conception of the amount of the loss they sustain every year by some plague or other. True, when a particular crop is ruined, or a particular field is specially infested, they recognise the enemy and realise his powers for destruction, but in an ordinary way they seem wrapped in nescience or apathy.

This may be illustrated in various ways, but it was strikingly shown by the circumstance that not one of the agricultural societies or chambers of agriculture to whom the Privy Council submitted Mr. MURRAY'S proposals took the slightest notice of them, even though they were deemed by a Government department of sufficient importance to be disseminated broadcast among the agricultural bodies of the kingdom. This betrays a want of appreciation of the amount of injury inflicted by insects which is almost incredible on the part of those who have to get their living by the cultivation of plants, because, if it were not so, whether Mr. MURRAY'S proposals are judicious, or whether they are not, they are clearly of a nature to elicit discussion, if their purport be fully appreciated. In point of fact, when the Society of Arts did institute a conference of representative agriculturists, horticulturists, and men of science to hear Mr. MURRAY'S paper read, a discussion ensued of a most valuable character, and one which, when it comes to be circulated, as it probably will be in the *Journal* of the Society, will do much towards enlightening the public on the matter. The general principle that some action should be taken was universally assented to, but direct Government interference was evidently not held in favour, Mr. CLARE SEWELL READ emphatically stating that in such a matter the Government would be sure to make a muddle, and concluding his speech by recommending that the Government be asked not to do anything in the matter. On matters of detail there was, as might have been anticipated, considerable diversity of opinion, Mr. MACLACHLAN pointing out that the evil effect of insects might often be overcome or compensated for by increased vigour of growth of the plant. Several of the speakers, we are glad to say, denounced the indiscriminate slaughter of small birds, and more than one speaker endorsed Mr. MECHI'S assertion that birds are the farmer's best friends. This of itself is a healthy sign. Twenty years ago, or even less, we do not think such a statement would have been received with so much assent as it was by the representative men gathered together at the Society of Arts on Tuesday. Having heard this discussion, and having balanced what we know of the state of the question with the opinions expressed by some of the leading agriculturists at the Conference, we can but come to the conclusion that Mr. MURRAY'S proposals as to State interference are premature, and that before anything like compulsory legislation can be proposed with any chance of success, those most concerned must become much better informed of the nature and extent of the losses they now often blindly incur.

Of the extent of injury inflicted by insects we are in a very fair position to judge. Ever since the establishment of the *Gardeners' Chronicle*, entomology in its relation to cultivated plants has constituted a prominent feature in our columns. We can point with justifiable pride to the long series of articles on this subject from the pens of such men as CURTIS, as WESTWOOD, as MURRAY, MACLACHLAN, and others. Week after week, too, often daily we receive inquiries relating to insects, and specimens of the injury they inflict. Week after week these are referred to the most competent entomologists of the day; and the number of these inquiries, in addition to what falls under our own personal observation, enables us to form some idea of the amount of injury really inflicted. The Scientific Committee of the Royal Horticultural Society also does good service in this way by giving information to inquirers, by naming the specimens sent to it for identification, and suggesting the most appropriate remedies.

We have heard the Royal Horticultural Society so much abused of late, especially by those who do not know that, amidst all its troubles, it has still done good work, that it was cheering to find the merits of its Scientific Committee thus publicly and independently vindicated. But the number of persons whom this and other horticultural or agricultural journals reach, or who could avail themselves of the Scientific Committee of the Royal Horticultural Society, are few compared with the number of those who suffer from the depredations of insects. It would appear, then, that in place of compulsory legislation, which at present, we believe, would be impracticable, it would be better to appoint a State entomologist (as has been done with such conspicuous success in America), and whose duty it should be to examine and report upon all cases of insect injuries submitted to him, and who should make known to the widest possible extent, and in the clearest and most intelligible manner consistent with accuracy, the nature of the insect, its habits of life, the character and extent of the injuries inflicted by it, and the best method of prevention and of cure. Every agricultural and horticultural society in the kingdom, every chamber of agriculture, should have a scientific officer competent to advise in these matters, and these local or district officers should be in communication with the Government entomologist or some other central authority. In this manner knowledge would be diffused and extended, much of the loss now incurred would be entirely prevented, and some materially lessened. In time public opinion and enlightened self-interest would know when to ask for or to submit to Government interference.

We may remark, in passing, on the great waste of power for good of our horticultural societies in general. Throughout the country their whole aim seems to be to get up one or more flower-shows in the year; often these shows are confined to one class of flowers even. Now, we have nothing to say against this, except that it should be supplemented by other means of doing good, now entirely neglected. We have often alluded to the unprofitableness of horticultural societies and of flower-shows, as also to the many ways in which they might, at little cost, do good service to horticulture and promote the general welfare. Each of these societies should be in communication with the Royal Horticultural Society, and avail itself of the opportunities of gaining that information which the Royal Horticultural Society or other central body is capable of giving, and would give more freely than they do if outside pressure were put upon them.

—— IT is a matter for sincere congratulation to men of science in general that their official leader, the President of the Royal Society, and to horticulturists and botanists in particular, that their acknowledged chief, the Director of the Royal Gardens, Kew, should have been created "Knight Commander of the most exalted Order of the Star of India." There is peculiar significance in the affiliation of Sir JOSEPH HOOKER, K.C.S.I., to the Order of the Star of India, as it was in India that he consolidated the reputation he had early won in the antarctic regions; it was in India that he made his largest scientific collections; and it is in connection with India that he has so largely worked in scientific matters since his return a quarter of a century ago. It is from India that he sent home those gorgeous Sikkim Rhododendrons, while the services he has rendered to India and to the colonies in general in his capacity of Director of the Royal Gardens, Kew, though little known to the outside world, are alone sufficient to justify an honour which has been too tardily bestowed, but which will cause him to rank, not only among the most eminent of botanists, but among the greatest benefactors to his fellow-men.

—— We have received from our correspondent, "A. W.," a very CURIOUS CASE OF DISEASE IN PEACHES AND NECTARINES. Dark red spots appear, either at the apex or on the sides, which after a time slightly collapse without showing, what we at first supposed, any trace of Gloeosporium læticolor (BERK., in *Gardeners' Chronicle*, 1859, pp. 604), though it is possible that it may still be in abeyance, like the red spots on Sloe leaves, which seldom come to perfection. It is observable that these coloured parts exhibit the odour and taste of imperfectly-ripened fruit. In this condition the microscope shows nothing but abundant crystals and minute particles with Brownian motion. In the next stage, still while the cuticle is unbroken, though collapsed, the contents of the cells are greatly altered, sometimes showing contracted granular masses, sometimes strings of minute particles, the whole body of cells, but especially those in the centre, becoming pulpy, as if some ferment were at work. Still, there is no trace of mycelium; but the moment the parenchym is

exposed to the air, abundant threads traverse the mass, and the cell-walls are much decomposed, added to which a glazy matter oozes from the edges of the spots, which is full of Vibrios, resembling what are commonly called the eels in decomposed vinegar. Finally, the fruit, or part of it, becomes a pulpy mass of decay, in one case covered externally with Cladosporium herbarum. The pulpy condition, however, occurs before the cuticle is broken, and calls to mind the observations which have been made on contagious diseases in animals, as dependent on specific germs. Such may also be the case with vegetables, though we are not in a condition to give any positive opinion on the subject. The best advice we can offer is, carefully to gather every affected fruit, and at once commit it to the flames. *M. J. B.* [Since we sent the specimens above alluded to, to the Rev. M. J. BERKELEY for examination, we have received others from other sources, which induce us to caution forced Peach growers against a plague which threatens to be serious. EDS.]

—— That the "wind bloweth where it listeth" is an old maxim that was most forcibly displayed on the Museum, together with a pamphlet containing the opinions of many medical men in India on its efficacy. This preparation is, as most of our readers know, made from the red Cinchona bark (Cinchona succirubra), grown in the Government plantations at Darjiling, and contains, as we are told, "all the febrifugal alkaloids of that species in the relative proportions in which they exist naturally in the bark." In the treatment of fever the efficacy of this febrifuge has been proved at the Medical College Hospital, Calcutta, the General Hospital, the Howrah Hospital, and by numerous experienced members of the medical profession. All the reports show that it possesses very nearly to the same extent as quinine all the anti-periodic properties of that more expensive drug, so that it may safely be substituted for it in the treatment of ordinary fever and ague. This new medicine is issued by the Government in India at a low price, as a cheap and efficient febrifuge for the poorer classes; and we read that it "is not intended to replace quinine in very serious and complicated cases, or among those who can afford to pay for the more expensive drug." It is to be had by application to the Superintendent of the Botanical Garden, were incalculable. We believe that a satisfactory portrait exists—the work of an eminent artist—and it is hoped that this also might be secured by the aid of private subscriptions.

—— A visit to Mr. WARE'S nursery, at Tottenham, though it is chiefly confined to outdoor plants, is always a matter for pleasurable remembrance. The Narcissi, including that very useful double form of N. poeticus, are nearly over, but the visitor even now can hardly fail to be struck with the enormous quantities of these favourite bulbs grown here, even if he has just returned from Holland. Among the herbaceous plants best worth notice at this time are Corydalis nobilis, a grand golden-flowered Fumitory, an old plant no doubt, but a grand one and one seldom seen. Dodecatheon Jeffreyanum makes a show at this season, as also a splendid patch of Trillium grandiflorum. Ferulas are always strikingly handsome, but now, when they are coming into blossom, they are particularly so. Aster alpinus is a plant so much in request that it is difficult to get enough of it. Iris susiana, its flowers more than 3 inches across, is simply magnificent. The beautiful and sweet-



FIG. 117.—CYPRIPEDIUM OCCIDENTALE (SEE P. 727).

opening days of this the present leafy month of June. We might well have been excused in imagining as we awoke on the morning of the 1st that we had indulged in a RIP VAN WINKLE state of somnolency, and had slept until the period of the autumnal equinox. Such fierce winds have left their mark on trees and in gardens, and have been productive of much mischief; our only consolation being found in the assurance that no human foresight could have stayed the storm or allayed its force. The young and tender foliage has been terribly cut in exposed places, and the trees will bear traces of the damage for some time. Fortunately we are a sanguine people, and with a few days of warmth and sunshine past disasters are soon forgotten.

—— We hear that His Royal Highness the Prince of WALES has given up Chiswick House, the lease having expired. The grand garden parties will, in future, be given in the gardens at Buckingham Palace. We are also informed that Mr. JOHN WILLS, of South Kensington, will have the honour of supplying the floral decorations at Marlborough House.

—— A sample of THE NEW CINCHONA FEBRIFUGE, or mixed Cinchona alkaloids now being used in India, has recently been received at the Kew Howrah, near Calcutta. With regard to the administration of the medicine, it is said to be given in the same doses as quinine. The "natives frequently prefer to swallow it in the state of powder, or to rub it up for themselves with a little goor or honey before taking it. It may also be conveniently made into pills with a little lime-juice." With regard to price, it is sold to the general public at 20 rupees per lb. tin wholesale of 20 lb. at a time; and to public officers for charitable institutions at 16 to 18 rupees. The more general use of this febrifuge should affect shortly the price of quinine itself.

—— At the Royal Horticultural Society may now be seen a portrait of the late G. U. SKINNER (Lycaste Skinneri, &c.). This portrait, we believe, is for sale, and should most assuredly be added to the portrait gallery entrusted to the trustees of the LINDLEY library, for the benefit of the Royal Horticultural Society. A small subscription from those who knew and respected the late MR. SKINNER should at once be made, so as to secure this portrait; the likeness is excellent. We shall be pleased to forward such contributions as may be sent to us for this purpose. Another portrait deserves to find a place in this or in some other suitable locality, viz., that of the late J. C. LOUDON, whose services to horticulture

scented Aponogeton distachyon flowers here in an open tank unprotected, and is as hardy as the beautiful Buck Bean, Menyanthes trifoliata, by its side. Aquilegia cærulea is now in full bloom, with sepals of a delicate lavender blue surrounding pure white petals. Armeria grandiflora, a magnified representation of the common Sea Pink, is striking at most seasons, especially in spring. A fine lot of the very striking Eryngiums depicted by Mr. FITCH in our columns in January, 1876, is here to be seen, as also a large selection of hardy Cypripedia. Lilies, such as Humboldtii Szovitzii, californicum, pyrenaicum, and giganteum, are remarkable for the sturdy growth they are making. Mesembryanthemum uncinatum proves hardy here on the rockwork, and is one of the most singular plants for the curious. For those of more conventional tastes there are bedding Pansies in great variety and of great merit, while the loveliness of some of the Pinks and Carnations will attract flower-lovers of all denominations.

—— The superb bank of HERBACEOUS CALCEOLARIAS staged by Mr. JAMES, of Isleworth, at the recent show at the Orleans Club, illustrated far more forcibly than any descriptive notes can, the marvellous excellence, beauty, and high quality of the famous Redlees strain. As with the Cineraria, so

with the Calceolaria, Mr. JAMES holds the foremost place as a raiser and grower, for his strains of these fine greenhouse flowers are unrivalled. Mere size of plant or of flower is no indication of quality, but in the plants shown at Twickenham there was seen at a glance a singularly even, compact, yet robust habit, large trusses, huge, full, finely-formed flowers, and these of the richest and most varied hues, ranging from a pale cream down to deep crimson-maroon.

—— We learn that it is proposed to erect at Ootacamund, in the Neilgherry Hills, a STATUE of the late Mr. MACIVOR, to whom the successful cultivation of Cinchona on those Indian slopes is so preeminently due.

—— Among the plants shown at the meeting of the Royal Horticultural Society, on Wednesday last, was a nice plant of AOTUS GRACILLIMA, a New Holland shrub, with slender recurved whip-lash-like branches, covered with small papilionaceous flowers of a yellow colour flecked with darker orange. The plant is exceedingly attractive, but, according to Mr. BAINES, has the disadvantage of speedily casting its flowers.

—— Messrs. VEITCH's group of thirteen species of MASDEVALLIA at the last Floral Committee was noteworthy. The species represented were M. coccinea, orange; M. Veitchiana, orange-scarlet; M. Harryana, lilac; M. Barleana, orange; M. ignea, orange; M. amabilis, orange-scarlet; M. Davisii, bright clear yellow; M. nycterinia, a weird looking species, with purplish brown spots on the hairy sepals, and long-tailed flowers. Of small flowered curiosities, gems in their way, were ionocharis, infracta, ochthodes, Peristeria, and simula.

—— The last issued part of the *Journal of the Linnean Society*, contains a notice of the root stock of MARATTIA FRAXINEA by Mr. J. BUCHANAN. The chief interest lies in the circumstance that the Maories of New Zealand use the rootstock as an article of food, and propagate it by crushing it. Every separate piece will form a new plant. The rhizome or stock, it appears, is composed of an irregular mass of thick fleshy scales, which separate by an articulation from the stalks of the fronds of which they form the lower portion. These scales, placed under favourable circumstances, form buds.

"The growth of the Marattia rhizome is remarkably slow, being under favourable circumstances only 1 inch diameter in one year; and as the height is less than the diameter, it may be safely calculated that a Maori will consume in one day the growth of five years, which fact may account for this Fern becoming rare in certain localities. The rhizome, by a process of renewal and movement, lives for an indefinite time, shifting its position in the ground by its growth outwards from a centre, the exhausted scales accumulating in a hard mass on the original site. In this way, as in certain fungi, rings or detached clumps may be formed at equal distances from the centre if no obstruction exists."

—— Recent advices from New South Wales inform us that a successful experiment has been made recently in the cultivation of the JUTE plant at Grafton. The seeds were obtained from Mr. CHARLES MOORE, of the Botanic Garden, Sydney, who, judging by this result, anticipates that JUTE FIBRE will become one of the most valuable products ever introduced into the colony. We learn also that the cultivation of TOBACCO is to be attempted in South Australia.

—— Mr. EDWARD PEACOCK, writing in the *North British Advertiser*, says:—"I was informed yesterday that in felling a wood in the parish of Scotton, near Kirton-in-Lindsey, several horse-shoes were found buried under the roots of ASH TREES. It seemed, said my informant, that a horse-shoe had been put into the hole and the young tree planted on it. Have any of your readers ever heard of such a practice, and can any motive, magical or otherwise, be suggested for the custom, if custom it be?"

—— As much has been said of the late AMSTERDAM EXHIBITION in its horticultural aspect as its merits deserved. It is a singular circumstance, however, that the banquets and the pleasure trips on the occasion, the excursions to Haarlem, to the Gardens of Prince HENRY, at Soestdijk, and other outings of a like character, were as well managed as the more serious business was the reverse. We fancy we see our Dutch friends laughing—*dulce est desipere in loco*. Three hundred jurors tied to the desk or countinghouse at home, or always "going through the houses," may well welcome a little change from the daily routine, and thoroughly enjoy, as they did, the hearty hospitality of their hosts. And, besides, as we have said, the hospitality was not only hearty, it was scientific, well ordered, and well managed. Gastronomy was not forgotten, but catered for in the most delicate and appetising manner, but the jury-man was made to feel that there was something else worth living for than *f. s. d.* or even good dinners. Intellectual recreation and mental food were provided in abundance, and highly relished. A capital account of the several excursions is given in the *Gardeners' Magazine* of June 2, but how or when Alphabetagamma, for that is the reporter's name, managed to sketch that "pretty greengrocer," we don't know.

—— The new ANTHURIUM DECHARDI, shown at the last Floral Committee by Mr. WILLS, is not likely to receive much popular favour so long as people are dazzled by A. Scherzerianum, though it will be valuable to collectors. It has a whitish spathe and a white spadix, the tip of which, covered with unexpanded flowers, is green. The leaves are stalked, broad, oblong, and prominently veined.

—— The current number of the *Journal of Botany* contains a coloured plate and description by Mr. W. G. SMITH of a new fungus, XEROTUS SANGUINEUS, a "remarkable species of a very rare genus collected by Mr. SHUTTLEWORTH, Mr. BULL's collector, on stumps and on the ground in the State of Santander, United States of Columbia, South America."

—— We understand that the GARSTON VINEYARD, near Liverpool, formerly the property of Mr. MEREDITH, of Grape-growing notoriety, and latterly of the Cowan Patents Company, has been purchased by Mr. JOHN COWAN, the late managing director of the Company.

—— A matter has been brought to our notice, which, whether more or less founded on fact, or entirely suppositious, is worth a few moments' consideration. In SONNENSCHEIN'S *Handbuch der gerichtlichen Chemie*, p. 13, is the following:—

"In the year 1864 occurred in London a case of poisoning, of which a gipsy was suspected, and a physician stated that the gipsies possess a peculiar poison called Drei or Dri. It is a fine brown powder originating from the spores of a Mushroom. These spores are capable of germinating and developing in animal organisms, so that they form greenish-yellow filaments 12—18 inches in length. This powder is given in lukewarm water. The spores attach themselves to the mucous membrane, and develop very quickly. The symptoms are, first, those of hectic fever, cough, and sometimes hæmoptysis. Death follows in from two to three weeks. A case was observed by this physician in Italy. The filaments, whose growth is brought to a standstill through the death of the individual, and the consequent want of warmth, soon decompose, so that in a few days later there is no trace of them."

Now, making allowance for a slight degree of exaggeration, there is here still enough to command attention, and the more so, because there is a fungus which in great measure answers the condition. Mucor Phycomyces, BERK., which was considered an Alga by AGARDH, is sometimes developed in enormous quantities on oilcasks, walls impregnated with oil, and casks of grease, which it intimately reduces to a *caput mortuum*. We have cultivated it with success on the latter, and doubtless any quantity of spores might be collected by any one who cared to do so. The mycelium is just what is described in the passage quoted above, is green, but grows darker with age, and the threads which have the fertile cysts are of considerable length. But this is not all; we have specimens on excrement from Alabama, and we remember seeing, in Dr. MONTAGNE'S herbarium, specimens which had grown on fat broth, we believe rejected from the stomach. It is, however, very possible that the spores, like those of some other moulds, are capable of germinating on the mucous membrane in certain conditions, and if so they might not only produce great constitutional derangement, which would possibly be increased by something mixed with the spores, or by something which would favour their germination. At any rate, we have here a possible solution of the problem. It is quite certain that gipsies do possess some valuable or dangerous matters which are not generally known, and this may be one of them. *M. J. B.*

—— The freedom with which several varieties of SUCCULENT PLANTS can be PROPAGATED BY LEAF CUTTINGS was recently exemplified at the Crystal Palace, Mr. THOMPSON exhibiting with a large number of plants of the Sempervivum tabuliforme—of sizes varying from 10 inches down to about 4 inches in diameter—the one parent plant of the whole lot, a small insignificant thing, which, because its lower leaves had constantly been taken from it, had assumed a rotund form, about the size of the half of a cricket ball, and might have passed for a distinct species. As this plant is one of the most decorative in succulent bedding, a knowledge of the ease with which plants can thus be propagated may be useful. Not less easy to propagate are the Pachyphytons, two of the most valuable of which for bedding as pot plants are bracteosum and roseum. The extremely fleshy nature of the leaves renders the smallest amount of moisture necessary to produce rootlets from them. We have found leaves that have been thrown down on the damp floor of a greenhouse to root freely in a few weeks, but it is both neater and more systematic to place the leaves with their base resting upon a surface of sand and kept in a nearly perpendicular position by means of a support of moss; an occasional sprinkling will suffice to maintain the requisite amount of moisture. We have recently seen a curious instance of leaf rooting exemplified on a plant of Pachyphyton roseum that had been kept in a cool house all the winter; a side leaf was partially broken off some time since, but enough of the outer cuticle remained attached to the stem to prevent its falling off. Roots have now been thrown out at the base of the leaf, and a young plant formed; thus showing that a very small amount of moisture is needed to ensure growth.

—— Baron VON MUELLER'S fourth part of *Descriptive Notes on Papuan Plants* confirms the supposition that the Frog Bit, HYDROCHARIS MORSUS-RANÆ, is indigenous to some countries in the Southern Hemisphere. In HOOKER'S *Students' Flora of the British Islands* the distribution of this interesting plant is given as Europe, except Turkey and Siberia; but its area has, since the publication of this work, been ascertained to be much wider. In BENTHAM'S *Flora Australiensis*, vi., p. 256, Wide Bay, in Queensland, is given as a habitat, and one or two other stations are indicated. MUELLER, in this part of his Notes, dissipates any doubt that might previously have existed respecting its being at home in Australia, and also in New Guinea. The specimens from the latter country were collected by D'ALBERTIS in the Fly River, and, although devoid of flowers and fruit, the anatomical structure of the leaves of the specimens is sufficient to determine the plant to which they belong. Growing along with the Hydrocharis in New Guinea was another widely dispersed aquatic plant, namely Ceratophyllum demersum. In Australia the former has been found at Moreton Bay by Mr. W. HILL, and at Rockhampton by Mr. A. THOZET. It is associated with Drosera Aldrovandi and Brasenia peltata, a plant occurring in tropical Asia and Africa, and subtropical North America.

—— We have more than once mentioned the forage plant, REANA LUXURIANS, which caused so much stir in France, and which, like too many new plants of this class, has failed to fulfil the promises made for it by its enthusiastic friends. From trials made in the most favourable parts of France in respect of climate, the hope that it would prove a valuable source of food for cattle has been frustrated. It is a native of Guatemala, and although flourishing there at a considerable elevation it enjoys a climate so different from that of continental Europe, that it could hardly be expected to succeed here. But this is not the point we wish to call particular attention to now, which is this, the correct name of the plant. It will be remembered by those interested in the matter that we stated (see p. 566, vol. v., 1876), on the authority of Prof. DECAISNE, that it was no other than Tripsacum

monostachyum. In a paper on the genus Euchlæna, read by Dr. ASCHERSON before the Gesellschaft Naturforschender Freunde, of Berlin, and reported in the *Botanische Zeitung* for March, the author declares this to be an error, and that DURIEU DE MAISONNEUVE was right in his first determination. However, the generic name, Reana, falls before Euchlæna, and ASCHERSON gives the name of the plant in question as Euchlæna luxurians, DURIEU et ASCH. He also credits FOURNIER with having corrected this blunder in the *Illustration Horticole*, p. 143, 1876.

—— Manchester can boast a young and rising artist in Mr. WILLIAM RATHJENS, a member of the Manchester Academy, who possesses considerable ability in painting flowers. There have been recently on view at Manchester two pictures by this artist, in which flowers were painted with a wonderful fidelity to Nature. One was a bunch of dark Wallflowers—just such an one as would be seen in Covent Garden Market, and so bold and life-like was the artist's work, that the bunch appeared to stand out from the canvas; and this, too, without a trace of formality in the rendering. Perhaps even more successful was the painting of a group of some four bunches of Violets, such as are sold in the streets of London—a necessarily formal subject, but depicted with amazing life and skill. A third picture of a dish of fruit was equally successful. Mr. SAMUEL BARLOW, of Stake Hill House, possesses a little picture by this artist representing a bunch of cut blooms of Pansies in a small vase, with a flower of Great Eastern in the foreground. So truthfully is the bloom depicted, that it is at once recognised by all who are acquainted with the variety.

—— As the result of some experiments made by M. AUDOYNAUD, Professor in the School of Agriculture of Montpellier, on the influence of manures containing POTASH on the growth of the VINE, and recorded in the *Annales Agronomiques*, it is stated (1) that sulphate of potash and chloride of potassium have a marked influence on the development of the Vine, and nitrate of potash still more so, while carbonate of potash is less efficient. 2. That weak plants of Vines appear to appropriate as much manure as strong ones. 3. An excess of nitrogenous manure is more hurtful than useful. 4. Potash should enter into the composition of manures for the Vine, that which exists already in the soil being usually not in a fit condition to be readily absorbed. The absorption of the potash seems to be associated with that of the other fertilising principles. 5. The potash from the root passes to the stem, to the leaves, then to the shoots, and ultimately to the fruit. 6. Only a part of the potash taken up by the root is used up, since after the ripening of the fruit a considerable reserve store is found in the wood. It will be seen that M. AUDOYNAUD'S researches are quite in conformity with the plan advocated by Mr. WILDSMITH of employing wood ashes as a manure for Vine borders.

—— On the occasion of the Celebration of June 4, at Eton, Dr. GOODFORD, the Provost, mentioned a circumstance in connection with the splendid Elms in the playing fields that are the admiration of all who see them. His statement was interesting from the fact that it would appear that Eton is under considerable obligations to OLIVER CROMWELL, of all people in the world. The Protector of the Commonwealth, who happened to be an intimate friend of the Provost of that day, exerted his influence to save the venerable pile of buildings from desecration, and while on a visit to Eton, he suggested the planting of the trees which have been so conspicuous an ornament of Eton for the last century, but whose numbers have been sadly diminished during the past few years. No great historical character is credited with the commission of so many acts of Vandalism as the Lord Protector; and it is interesting to find that something can be produced as a set-off on the other side in the character of one of the greatest of Englishmen.

—— The seventeenth anniversary festival of the ROYAL AGRICULTURAL BENEVOLENT INSTITUTION was held on Wednesday evening, at Willis' Rooms, under the Presidency of the EARL OF DUNMORE, who in proposing the toast of the evening, stated that one of the best feelings of our fallen nature was that of sympathy, and it was that very feeling which had started this very necessary institution, and which had kept it going until now. It was the sympathy of farmers for farmers. Since 1860 no less than £55,000 had been expended in relieving distressed farmers, and 610 persons had been recipients during the same period. At present 362 persons were receiving relief, comprising 70 males, 37 married couples, 204 widows and unmarried daughters, 14 octogenarians, besides 50 orphan children fed, clothed, and educated. The total annual expenditure was upwards of £9000, of which £800 was derived from property, the remainder being supplied by voluntary subscriptions. Mr. J. J. MECHI, whose name was coupled with the toast, dwelt on the great need of such an institution, and stated that about twenty years ago two cases of distress among farmers came under his notice, and to his great astonishment he discovered that there was no society in existence for the purpose of relieving them. The present were very bad times for farmers, and he should like the funds of the Association to be very largely increased. The Secretary, Mr. J. BOUSFIELD SHAW, read a list of the principal subscriptions, the total amount subscribed for this year being nearly £11,000.

—— The following passage is from "Pencillings of the Week" in *Land and Water*:—"Why do the Covent Garden people wrap their flowers in blue paper of that uncompromising shade that 'goes with' nothing on earth? It is all very well for grocers to put tea and coffee in, but flowers ought to have a little more consideration shown them when they come to town. Dark purple Pansies, or pale blue Nemophila must particularly resent such unsympathetic proximity."

—— We understand, though we have received no official intimation of the fact, that the Council of the Royal Horticultural Society have decided to hold a PROVINCIAL EXHIBITION at Preston, in Lancashire, in June next year.

—— A medium-sized specimen of COCHLIOSTEMMA JACOBIANUM is now in splendid flower at the Victoria and Paradise Nurseries, Upper Holloway, N.; it has ten branching spikes, from 12 to 18 inches in length, and each spike has from twenty to sixty flowers and buds on it. It would be difficult to find a more beautiful temperate-house plant, and would well repay a visit to the above-named nursery.

—— A committee has been formed, having for its object the presentation of a testimonial to Mr. F. W. WILSON, whose connection with the Crystal Palace, after twenty-five years' service, has just terminated. Mr. CHARLES EDWARD ELLIOTT, of the Ceramic Court, Crystal Palace, has consented to act as honorary treasurer and secretary.

—— Lord ABERDARE announced on Wednesday last, at South Kensington, that he had received an intimation of the intention of their Royal Highnesses the Prince and Princess of WALES to visit the great summer exhibition to be held on the 19th inst.

CYPRIPEDIUM OCCIDENTALE.

THE pretty little Cypripedium, of which an illustration (fig. 117, p. 725) is here given, is a native of many parts of the Rocky Mountains, and has been recently introduced under the name of Cypripedium occidentale. I do not know the authority for this name, but I find numerous specimens of what I think is the same plant in the Kew Herbarium as C. parviflorum, and C. montanum of Douglas.

Cypripedium parviflorum of the Eastern States, as I know it, is a smaller, usually one-flowered plant with yellow labellum; whilst the Western form seems to have two or three flowers, with white labellum, and is also very sweet-scented. According to Asa Gray, C. parviflorum passes into pubescens, and our plant seems also very close to C. candidum, Muhl., from the Eastern States, which I flowered this year.

I would add that though all these Orchids are hardy they thrive much better in a sheltered frame, as the leaves and flowers get much cut and torn by the bitter winds and frosts, which have been so prevalent this spring.

I shall be glad to know if Cypripedium ventricosum and guttatum from Siberia are now in cultivation, as I am anxious to get them. *H. J. Elwes.*

[We may add that the Cypripedium occidentale was introduced and distributed last autumn by the New Plant and Bulb Company, and our drawing printed at p. 725, was prepared from a plant sent to us by them. EDS.]

Home Correspondence.

The Royal Horticultural Society and the Education of Gardeners.—My last letter was to have been my final one, and on the general question I need write no more, as your leading article of Saturday week puts one part of the matter, at least, with more knowledge than I have at command. I cannot, however, leave quite unnoticed Sir Charles Strickland's courteous suggestion that any promising efforts made here in the direction of scientific horticulture might meet with encouragement at the hands of the Royal Horticultural Society. The proposal is not new to me. Two years ago I drew up such a scheme, and would have tried to carry it out had it been possible for me to find any leisure to organise it. My rare times of leisure are, however, times mostly of weariness also. I had intended to seek my help from the Yorkshire College of Science, and in any case I should be unwilling to commit the Royal Horticultural Society to the failure or success of any local movement. I believe I can nevertheless speak privately to you, and Sir Charles Strickland, at least one large horticultural centre where scientific lectures would be warmly welcomed by professional gardeners, and would perhaps be self-supporting, even from the first. It is rather, however, from above, that I think any important and vital development must come. When gardeners see their employers earnest in desiring to carry horticulture from the empirical into the scientific stage, they will themselves soon follow the example. Horticulture is even behind Agriculture in its scientific aspects, and in the position in which engineering would find itself without physics, mining without geology, medicine without anatomy and physiology, and law without history. I think I may say without offence, that amateur horticulturists do not as a body profess to have much knowledge of the sciences of plant life—of vegetable physiology, morphology, or chemistry. But a warm interest in these aspects of their favourite pursuit would soon be lighted up if such a man as Dr. Reichenbach, for instance, delivered a course of lectures on scientific horticulture at the Society's rooms, and if such work were begun at Chiswick as is done in Germany by Dr. Goeppert, Dr. Sorauer and his assistants at Proskau, and others, and I may add in England by private persons such as Mr. Darwin and Sir John Lubbock. The work at Kew is of course more exclusively botanical in its methods and purposes. I think, too, I have said before, that meetings of the Horticultural Society for discussions, such as those of the Geographical Society, the Geological Society, and other such bodies, would give a great impulse to scientific gardening, both in themselves, and in the reports of the meetings in the journals. Would not a summer gathering of horticulturists, again, at such places, say, as Chatsworth or Trentham, if permitted, be at least as attractive as the meetings of the British, the British Medical, the Social Science, or the Archæological Association, not far more interesting and useful than the gigantic provincial flower show so often talked about? Here, sir, I must take leave of the subject, and trust that this discussion at any rate may not remain wholly fruitless. *T. Clifford Allbutt, Leeds.* [We entirely sympathise with our correspondent so far as general principles are concerned. It is disheartening, however, to have to record that the lectures given at various times at South Kensington, by men eminent in their several departments, have been failures. EDS.]

Wild Lily.—It is fortunate for me that you are better able to take in a very mild joke, than is apparently the case with your correspondent of last week. That the wild convolvuli are "the lilies of the field," was a piece of information which I received from a Sussex countrymaid more than half a century ago, and which was not only implicitly believed at the time, but for some years after. *K.*

Double White Narcissus.—The cause of the failure your correspondent experiences in not obtaining flowers of the Superb Double White Narcissus is due, no doubt, to lack of moisture. We grow many thousands for the Dutch bulb growers (coals to Newcastle, you will say), and our practice is to give copious waterings as soon as the flower bud is apparent, without which they cannot bring the flowers to perfection. We have cut some hundreds of blossoms, and hope to "cut and come again" for some time. *W. Hopwood & Sons, Jersey Gardens, Cheltenham.*

—— Your correspondent, Mr. W. E. Heathfield, appears to have found some difficulty in getting the double white Narcissus to flower satisfactorily. We have a large quantity here, and we have found, from experience, that to bloom them properly they want lifting occasionally and the bulbs to be singled out and planted, when perfectly at rest, in some good light rich soil. They should have an open situation, where they get plenty of sunshine, to well mature the growth. I should say the cause of

your correspondent's Narcissus not blooming as they should was either poor hungry soil, or too much shade, as under such conditions we have found they will remain years without flowering. *Robert Maher, The Gardens, Boyne House, Tunbridge Wells.*

Helix pomatia (see p. 692).—I have found this fine Mollusk at Charing in Kent, at Caterham in Surrey, and at Hemel Hempstead, in Hertfordshire, in each case on chalky soil. This week I found several of it near Godstone, at least a mile from the chalk, and close by were specimens of a plant which I have, likewise, always regarded as a chalk species, Poterium Sanguisorba. There was nothing abnormal in the appearance of the burnet or the snail; the former is good in a salad, and I know no reason why the latter, cold boiled, should not be just as good therewith as a plover's egg. *W. T. T.*

—— I think Helix pomatia is pretty plentiful in Gloucestershire. When a boy I remember seeing it often, on the Witcombe Park Estate, near Gloucester. I also remember, when living in Hampshire, a lady of the neighbourhood requesting a few specimens for her cabinet, she asked a Gloucestershire friend to send her a few. The request was soon complied with; the gentleman sent her a hamper full. A few specimens were selected, and the remainder turned out in the garden, to the great annoyance of the gardener. They came from Colesborne near Cirencester. *W. Robin.*

Dendrobium thyrsiflorum.—I was glad to see that Mr. Day has called your attention to the account that you gave of Dendrobium thyrsiflorum. It would be interesting to know on what principle the Royal Horticultural Society grant first-class certificates to new plants. Mr. Wilson, late gardener to W. Marshall, Esq., Enfield, and myself (when gardener to the late G. Cooper, Esq., Camberwell) each received a first-class certificate for it in March, 1866, two months before Mr. Day flowered it, and four years before the Royal Horticultural Society gave Messrs. Veitch a certificate for it as a new plant. I may also say that Mr. Cooper's plant was bought from Messrs. Low. *John Robson, Beechfield Nursery, Bowdon, Cheshire.*

Fuchsias serratifolia and fulgens.—Plants that will bloom naturally in winter without forcing, and which will stand in a moderate temperature, such as that of an ordinary greenhouse, are not over plentiful; and few as there are, one of the best, the good old Fuchsia serratifolia, appears to have been almost entirely lost sight of, except in gardens here and one or two other places, where I have given my gardening friends either plants or cuttings, I do not remember to have met with it during the last twenty-five years. Possessing, as it does, the double merit of being free-flowering and of exceedingly attractive appearance, it is very remarkable that it should have dropped out of cultivation in the way it has, and in order to resuscitate such an old favourite and one that has rarely failed me when most wanted, I have thought a few lines in the *Gardeners' Chronicle* might be the means of bringing it to the front again, as I am sure many would be glad to make the acquaintance of such a really deserving serviceable plant. Unlike most Fuchsias, F. serratifolia is an evergreen, and flowers on the ends of the shoots much after the manner of those once popular plants, F. corymbiflora and F. fulgens, that are also fast disappearing, and will soon be quite a fete of so many others that were once considered almost indispensable; but then we had not the great choice we have now, since all the world has been laid under tribute to furnish our gardens, and skilful hybridisers at home have not, meantime, been idle in turning any new thing to account. Would that they would take the above Fuchsias in hand—not that my old friend could be greatly improved, but other varieties having some of its valuable properties might be raised to help us at a season when really choice flowers are scarce. Noticing how late F. Madame Cornelissen continued in bloom, I have endeavoured to effect a cross between the two, but as yet unsuccessfully, although I am not without hope of doing so, as I have had several seed-pods swell and ripen, but from some cause or other the seed did not germinate. Although not so generally useful, the old Fuchsia fulgens forms a capital companion plant to F. serratifolia, except that it requires forcing and more heat than the latter to have it in good condition, but where this can be afforded its foliage alone renders it worth growing for window decoration, especially where small plants are required for rooms in window recesses or the embellishmeht of dinner-tables, as they are in most places. To get good useful-sized plants of F. serratifolia by the autumn, the cuttings should be put in at once where they can get a brisk moist heat, in which they will soon root and start away rapidly into growth. Like its congeners, it delights in a rich soil, plenty of moisture and moderate shade, but being altogether of a more fleshy character, it requires more sun to harden the wood so as to get it to bloom freely; this may be done towards the end of the season by gradually withdrawing the lights and exposing the plants, which will tend greatly to get them matured, and enable them to pass well through the winter. As its habit is naturally shrubby, it is useless attempting to grow it in pyramidal form in the way others are usually trained, and it never looks better or shows to greater advantage than when allowed to have its own way, except an occasional stopping to induce any strong unruly shoots that appear to be taking the lead to break back. The best place to grow them during the summer is any deep pit or frame where they can be stood on a firm bottom of cinder ashes, and kept well syringed to prevent the attack of red-spider to which they are otherwise rather subject. After their final shift into 8 inch pots, which are quite large enough, and they have got full possession of the soil, liquid manure should be given to afford the necessary stimulus to aid them in pushing forth a good head of bloom. Plants so treated will flower during the greater part of the winter, and will not be the least attractive among the occupants of the greenhouse or conservatory in which they may be placed. The free-branching habit of Fuchsias renders them well adapted for cutting to arrange in vases to droop over the side, and F. serratifolia comes in admirably for this purpose, and from its comparatively soft stems, that take up water freely, lasts in good fresh condition longer than any other kind. *T. S.*

Our Rural Grounds.—The thought has many times occurred to me how easy a matter it would be to convert all our closed burial grounds, which are most unattractive during summer in their present arid state, into plots of refreshing verdure. If this were once accomplished it would no doubt be considered as indispensable. Beautiful green spots here and there in our overgrown city (London) would afford a grateful relief to the eyes of its plodding inhabitants when drawn away from the never-ending rows of houses. But the question will be asked, How could this be accomplished, considering that nearly three-fourths of the surface proposed to be thus covered is covered with monumental stones, and since there is no doubt a strong feeling against any kind of interference with these? But as this conservative feeling has been in some measure already broken in upon, and many of the memorial stones have had to be in an upright position have been laid down flat, or, better still, built into or against the walls of the enclosure, it may not be beyond the bounds of possibility to go a little further in this direction. I should only propose a little further interference with these stones to bring about the desired effect. First of all, then, it is suggested that an accurate plan should be taken of the burial ground, and that the exact position of the stones should be marked upon it. This done, I would sink the stones from 6 to 9 inches under the surface, being particular to keep them all in their exact position, so that at any time, if it became necessary, they could be readily got by removing the small quantity of soil laid over them. After having covered the stones the surface should be made quite smooth by digging it all over, then treading and raking it, preparatory to laying down the turf. The soil should be considered unfit for turf, a small quantity of fresh soil being all that is spread over the surface, say half an inch thick, which would quite overcome any irregularity of this description. The turf might then be got and laid on, watered and well beaten. Water should be laid on, and a hose provided, so that during dry, hot weather, the grass may be copiously watered when necessary. This operation would pleasantly affect both the senses of seeing and smelling in its immediate neighbourhood. A mowing-machine must be provided, and the grass properly mown about once a-week. There would be no difficulty in doing all this provided the preliminary one of lowering the stones could be got over; and who would not say it would be well worth the trial, especially if they have had the good fortune to have seen the many small spots in the very heart of the city of Paris during the balmy days of the Empire, and to have witnessed how refreshing they looked, and what a boon they conferred upon the denizens of that city. Would it not confer a much greater boon on our citizens, whose city is so much larger than that of Paris? I commend the subject most earnestly to all within its range of influence, and beg of them to "Try it." The grass would probably want renewing every spring, but this would be only a very small consideration in our city, where so much money is annually spent for sanitary purposes. If, however, in any instance the turfing process should prove too expensive, the same result or nearly might be realised in a year or two's time, by sowing the plots with carefully-selected grass seed, and mowing the grass down occasionally. I strongly urge the adoption of this plan, or at least a trial of it, in a few cases where its practicability could be fairly tested, *Ed.* [We expect people would say it was so distressing to have to bury their friends, that they would not care to add to their sorrow by burying their tombstones! However, we presume our correspondent is alluding to the memorials of the forefathers of the hamlet. EDS.]

The Weather and the Fruit Crops.—As if to complete the wreck and ruin wrought by the frost, a strong gale of wind from the south-west set in here on the morning of the 1st, and gathered force till it culminated in a perfect hurricane during the afternoon, strewing leaves and branches of trees about in all directions. The damage it has done to these on the weather side is quite distressing to see, as the foliage is lacerated, battered, and bruised to such an extent as to preclude the possibility of their looking much better till they have made their midsummer shoots. To-day (June 2) the wind has abated a good deal, but it is still blowing strong, and is very cold for the time of year, which keeps things very much back, a fortunate circumstance perhaps, as the season turns out so exceptionally bad. Nothing grows, and altogether gardening has been carried on under unusually adverse circumstances since last autumn, for, with the incessantly wet and mild winter, slugs abound everywhere, and the land is so cold and close that only the harder seeds can germinate, and such as French Beans rot in the ground. The wind shows unmistakably the damage the frost caused the past year, the Pear blossoms, for the ground is covered with fallen fruit, if it may be said to have reached that stage, and although walls have a fair share that appear likely to swell off, pyramids are an almost total failure, as are Plums and Cherries, except the latter on walls where, from present appearances, there may be about one-third of a crop. Never did a season open with greater promise for all kinds of fruit, or end more disastrously than this has done. Even Apples, that opened so late and appeared a certainty, are now so sadly knocked about that they too must be thin and inferior, as it is impossible, should they set, for them to swell regularly, owing to the injury they have received from being chafed about in the manner they have been for the last two days past, independent of the effect the frost and cold has had on them, and which will no doubt show itself later on. As to Peach and Apricot trees I never saw them in a worse plight, as the latter keep dying away, and the former have scarcely a leaf that is not more or less blistered and deformed, and unless fine warm weather soon sets in many of them will be too much crippled to recover.—Since writing the above a most favourable change has set in, and to-day (Monday) we have real summer weather, which it is to be hoped may continue, as everything stands much in need of the aid of sunshine, of which we have had so little for many months past. Although as yet we have only had a few degrees increased temperature and a slight shower, vegetation has responded at once, and a marked difference may already be seen in the grass, and a decided advance in all garden crops. *J. Sheppard.*

Abies Menziesii.—Whether A. Menziesii at Boston, U.S., has reflexed scales, while those of the Derbyshire plants are erect, is not a matter of much moment to those of your readers who are not botanists. The question is this—Is Abies Engelmanni, the seeds of which were collected by M. Roezl, and distributed by M. Ortgies in Europe, the same plant as that which I have spoken of as Abies Menziesii Parryana,- after having admired it in Professor Sargent's garden near Boston? I say it is not. Since I wrote before, I have seen authentic specimens of A. Engelmanni from the nurseries of M. Durand of Geneva—a botanist able to compare this plant with A. Menziesii and its varieties. The slightly recurved and appressed leaves of A. Engelmanni are much less sharply pointed, so that the shoot can be drawn through the hand without pain. In A. Menziesii, on the other hand, the leaves are excessively sharp, so that they cannot be drawn through the hand with impunity. The habit of A. Engelmanni is much closer and more fastigiate than that of the other species, and there are other differences which it is unnecessary to mention here. I maintain that the Abies Menziesii Parryana, of which last autumn Mr. Waterer possessed the only specimen in Europe, and who obtained the plant from Mr. Sargent himself, is a splendid variety of unique colouration, and one which I hope to see widely distributed ere long. *Ed. André, 67, Rue Blanche, Paris.*

Paraffin Oil as a Dressing for Seeds.—In spite of all that your correspondents have said in favour of paraffin oil for the above purpose, I should say it is a remedy that requires using with great caution, particularly as paraffin varies so much in strength, as it is quite possible to get five or six kinds of oil in a small town; and if the seed should remain in the oil long enough for the oil to penetrate the outer capsule, it would destroy the vitality of any seeds. A few years since paraffin oil was recommended as a cure for mealy-bug. On visiting a neighbour —we were going through a range of vineries—we came to a house where the vines were dead to where they entered the house. I asked what was the matter, as the other Vines looked well. Oh, he said, I had

a few stove plants in the house and got bug on the Vines, and was persuaded to use paraffin oil to cure it; so I gave them a winter dressing, and you see the result. I was so well satisfied with its curative properties that I should want a good deal of persuading to use it. *R. Maher, Boyne House.*

Effects of Paraffin on Peach Trees.—My Peach trees were well formed and healthy, and bore crops equal to any in the county. Scale having appeared on them, I was strongly recommended to brush them over with paraffin oil, which I did on December 21. It not only destroyed the scale, but the trees also. There were no signs of harm done until the fruit was set, when gradually branch after branch showed signs of decay, and now they are more like fire-wood than growing trees. I also know others in this neighbourhood who have suffered through using paraffin, and would therefore, like "R. W.," recommend your readers to consider before using it on trees or Peas. I have also tried an experiment on a plant of Prickly Comfrey, which it destroyed in two days. *S. Laird, Dunninald Castle, by Montrose, N.B., June 6.*

The Cultivation of Seakale for the London Market.—This differs so much from that described by your able correspondent in a former number that I will attempt to give your readers a short account of how it is grown in quantities of from 10 to 20 acres. Sets are only used, and these are obtained from the strongest of the roots cut of the Kale when lifted to force. They are cut into sets 4 inches long. It is advisable to make two sizes of sets, so as to have as many as required at planting time. Planting the smaller ones last they come in for later forcing. It is surprising how small a set will produce a fine Kale an inch in diameter. As the sets are made they are laid in soil, thick end upwards, and a little litter thrown over them till April. When they are dibbled in between either cabbages or lettuce, a set between each plant, barely covering the set, when dibbled so deep, they don't produce such fine crowns. It is never grown as a crop by itself, sometimes the third crop on the ground, as the autumn cabbages are cleared off, there is a row of spring-sown lettuce planted between the rows of Kale, and those are cleared off before they interfere with the growth of the Kale. The sets planted between the cabbages are 12 inches apart, and those between the lettuce 9 inches apart, and from 16 to 15 inches between the rows. As the cabbages and lettuces are cleared off, they are gone over, and all the shoots but one taken off, and then well hoed. Keeping clean is all that is now requisite till the middle of November, which is about the time forcing begins for Christmas. The Kales are then carefully lifted, and prepared for forcing by cutting off all the roots to within an inch or two of the crown. The trenches for forcing are previously prepared by marking of the beds 4 feet wide; and the soil from every alternate space is thrown on the top of the next space till the beds are 2 feet deep. These are filled with fresh fermented manure and well trodden in the trenches. The Kale is planted in the intervening spaces between the manure, in rows nearly as thickly as they will sit, and about 4 inches between the rows. As the beds are planted short stakes are inserted thickly over them, and then a little short litter is loosely shaken in between them, as the Kale lifts it up in its growth over the top of the stakes. Mats are then laid, and the beds and the fermenting material well covered with loose litter, of which there is always a good supply in hand. As the manure comes from town most of the litter is shaken out and stocked for covering purposes. It is only the shortest and best that is used for digging into the ground, and that is used freely and in great quantities, several crops being produced from one manuring by market gardeners. The Kale is ready to cut in a month or so from the time of planting. The beds are generally cleared at two cuttings, the outsides first and the centres next. As the beds are cleared the stakes, mats, and litter are removed to others. I may notice that for small quantities similar trenches are thrown out, and filled with fermenting material, and the soil returned on to the top, to the depth of 12 inches, planting the Kale as the soil is returned, and covering up as noticed. This mode is as good as the former, but not generally practised, though I think preferable for small growers. Kale produced in this manner is tenderer and whiter than that generally produced in drier atmospheres. Forcing the roots out of doors from year to year is very uncertain, and attended with much labour and anxiety. I strongly recommend making annual plants, and forcing as above.—*E. W.*

The Calville Blanche Apple.—At the February meeting of the Fruit Committee, Mr. Stevens, gr. to the Duke of Sutherland at Trentham, exhibited a leafless, pot-grown tree of this grand variety, on which ten very fine fruits were still hanging. Since then a beautifully coloured plate of the Apple has appeared in the *Florist and Pomologist*, and on the same subject Mr. Stevens has contributed some notes to the May number, from which we learn that some trees of the Calville Blanche were introduced to the gardens at Trentham more than fifty years ago by the then Marquis of Stafford. The trees were planted against a south wall, and fruited regularly until their removal to make room for glass-houses. The Apple, under such circumstances, was said to attain a fair size, but to be wanting in flavour, by comparison with samples subsequently grown in pots. The climate at Trentham, says Mr. Stevens, is so uncertain and unfavourable for the growth of Apples out of doors, that the late Mr.

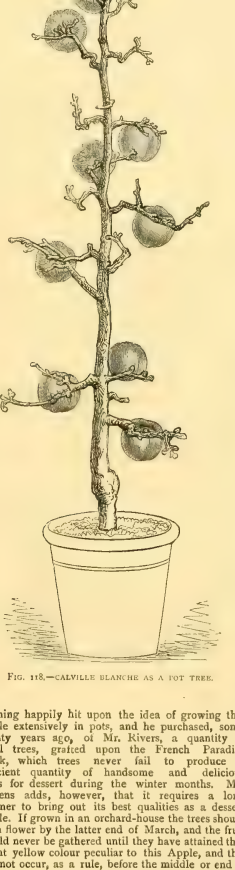


FIG. 118.—CALVILLE BLANCHE AS A POT TREE.

Fleming happily hit upon the idea of growing this Apple extensively in pots, and he purchased, some twenty years ago, of Mr. Rivers, a quantity of small trees, grafted upon the French Paradise Stock, which trees never fail to produce a sufficient quantity of handsome and delicious fruits for dessert during the winter months. Mr. Stevens adds, however, that it requires a long summer to bring out its best qualities as a dessert Apple. If grown in an orchard-house the trees should be in flower by the latter end of March, and the fruit should never be gathered until they have attained that bright yellow colour peculiar to this Apple, and this will not occur, as a rule, before the middle or end of October. The fruit should be gathered as they attain their full colour, but not before. They will then ripen perfectly, with a firm, crisp flesh, vanishing in the mouth like that of a Peach, and leaving a delightful impression on the palate. Our illustration (fig. 118) well represents the pot specimen shown by Mr. Stevens on the occasion above alluded to. When used in the leafless state for decorative purposes, a few adventitious leaves can be supplied by the *coiffeur!* ED.

Blair Athole Plants.—Your correspondent, Mr. Evershed, in his interesting account of Blair Athole, says that Anthericum canaliculatum is not rare in the vicinity of the Castle. Surely there must be some mistake here. A. canaliculatum is a Cape plant. The only plants of this family grown in the United Kingdom are Lloydia serotina, an inhabitant of the more inaccessible parts of Snowdon; and Simethis bicolor, a denizen of sandy Pine woods near Bournemouth. Does Mr. Evershed allude to either of these plants? *H. Harbur-Crewe.*

Teedia lucida.—This pretty plant is just coming into bloom with me. In leaf and habit it much resembles a Scrophularia, to which genus it is closely allied; but it has umbels of delicate mauve flowers, somewhat like a miniature Franciscea. It has been in the greenhouse during the winter, but has a hardy look. *H. Harpur-Crewe.*

Malva campanulata.—This rare and pretty Chilian Malvad is now nicely in bloom here. It has stood out all the winter in the open border. It has pretty foliage, and numbers of pale rosy lilac flowers, about the size of a shilling, with dark purple anthers and stigma. I was struck with its beauty some years since at the Wellington Nursery, and procured a plant; but both Mr. Henderson and I lost our stock during the ensuing winter, and I tried in vain to procure another plant. Last year Mr. Max Leichtlin very kindly sent me some seed, and I raised a few plants. *H. Harpur-Crewe, June 4.*

Myosotis dissitiflora.—As on more than one occasion special allusion has been made in the *Gardeners' Chronicle* to the manner in which this beautiful early spring flower has been cut with the frost this season, and, fearing that this may tend to bring a most useful spring bedding plant into disrepute, I desire to state that I have never had this Myosotis in more luxuriant or lengthened bloom than is the case this year, although, because of the cold and dull weather of March it was at least a month later than usual coming into bloom, yet it has more than compensated for this in the fact that now, in the first week in June, it is still a mass of flower, and has been so from the first, only excepting the week of the May frosts, when it was cut as though seared all over with fire; but in a few days all traces of the frost were lost in the renewed and abundant bloom. This Myosotis is incomparably the best of all blue spring bedding plants yet that can be got true from seed. *Alex. Dean, Bedford.*

Reports of Societies.

Royal Horticultural: *June 5.*—The Rt. Hon. Lord Aberdare, President, in the chair. The medals which had been awarded at previous exhibitions were presented by his lordship, and after thanking the exhibitors for their generous support to the Society, stated that he had received an intimation that their Royal Highnesses the Prince and Princess of Wales would honour the great summer flower show, on the 19th instant, with their presence.

SCIENTIFIC COMMITTEE.—Dr. Maxwell T. Masters, F.R.S., in the chair.

Plants Exhibited.—The Rev. H. H. Crewe exhibited cut blooms of the following plants:—Malva campanulata, from Chili; Muscari armeniacum, the latest, and in some respects the most beautiful, of the genus; a white-flowered variety of Geranium pratense, an accidental hybrid Poppy between P. arenarium and P. bracteatum, with the habit of the latter and intermediate in colour between the two supposed parents; Lunaria rediviva, Orchis pseudopallens, Tulipa carinata, and one part of Mrs. Bateman a singularly laciniated Parrot Tulip.

Mr. Elwes forwarded blooms of Ismene viridiflora, a curious green-flowered Amaryllid from Peru; Cypripedium macranthum, a hardy purplish brown Orchid from Siberia, very rarely seen in cultivation; Fritillaria recurva, from California, very distinct in its orange-coloured flowers from any other Fritillary; three terrestrial Orchids from northern Italy, to illustrate a case of natural hybridism as generally supposed, but the plant, Isias triloba or Serapias papilionaceo-lingua, which was figured (from the same plant now sent) in the *Botanical Magazine* recently, t. 6255, is so rare that it deserves further examination. For this purpose the two supposed parents, viz., Serapias lingua and Orchis papilionacea, are also sent. A

small-flowered Cyrtanthus, from Natal; and a curious plant which Mr. Elwes received from Van Houtte as Cyrtanthus species, but which evidently does not belong to that genus. It is not bulbous, but has a rootstock like Agapanthus. [Tulbaghia alliacea. J. G. B.]

Xiphion tingitanum, the true species, I believe, not the same as the one figured in the *Botanical Magazine* as X. tingitanum, which is only a form of X. filifolium. [X. latifolium certainly. J. G. B.] [Specimens were also sent of Colchicum elegans, lilacinus (tetrastemon) and Bentbami, the last new to cultivation. J. G. B.]

Narcissus Flies, &c.—Mr. Murray exhibited specimens of a two-winged fly—Merodon—which he had raised from larvæ taken from Narcissus bulbs. They exhibited so much variation as to give rise to the suggestion, that some of the so-called species are merely varieties of one and the same. Mr. Murray also showed eggs of a Mantis enveloped in a frothy secretion, and having the appearance of a cocoon.

Diseased Medlar Leaves.—Dr. M. C. Cooke reported as follows on the leaves (sent by Mr. Lee) submitted to him at the last meeting:—

"The leaves submitted to me for report, were all deeply discoloured in a large brown spot which occupied half the superficies of the leaf. Out of four leaves, two had a whitish frosted appearance on the upper surface, caused by the presence of a white mould, whilst the other two exhibited no such an appearance. A microscopical examination demonstrated that the white mould was a species of Oidium, with small oval spores arranged in chains, the spores not exceeding .008—.01 of a mm. None of the described species to which this mould can be referred. At first I thought it might possibly be the same species as that which attacks young Pear leaves in spring, and which I published in *Grevillea* for December, 1875, as Oidium farinosum, but this is by no means probable, as the spores in that species are .03 × .012—.014 mm., or fully three times as large, and there are no discoloured spots.

"The next question which arises is whether the disease is caused by the fungus? As far as I have yet seen I do not think that the fungus is the cause of the disease, but a consequence. In the leaves on which there was no external evidence of mould I could not satisfy myself of the presence of mycelium, or of any other indications of fungoid disease. The spots were in a condition of decay, and that decay appeared to be as great where no fungus was present as where the mould was distinctly evident.

"In other species of Oidium there appears to be no habitual decay or decoloration of the leaves. Such species are the species of Erysiphe like that of the Maple and the Hop, do not in this way affect the leaves, and even the Oidium of the Vine is not preceded by decayed spots. It is always necessary to be cautious in making strong confirmations on the faith of a single examination or a single series of specimens, but I certainly am of opinion that in this instance the cause of the disease must be sought elsewhere than in the Oidium found on some of the leaves. Unless it were to be an advantage that another parcel of leaves should be sent to the committee for further examination, and it should also be stated whether one tree or many are injured, because if some should escape it would be important to know under what different conditions the uninjured trees are growing. Still more, it would be an advantage to learn if the same disease has appeared elsewhere, because, if not, some local cause would then have to be sought for its appearance.

"It is not by any means satisfactory to characterise these moulds, which probably are not autonomous, as distinct species, still it is an advantage to have at least a temporary name by which to speak or write of them, and for such purposes the Medlar mould may be known as Oidium mespili."

Larch Disease.—Rev. H. H. Crewe forwarded on the part of the Duchess Dowager of Athole specimens of trees affected with this disease, together with the following communication from Mr. M'Gregor, forester to His Grace the Duke of Athole:—

"I send a box containing a few specimens of portions of the stems and branches of Larch from the Ladywell plantation, showing the blister with which many young plantations of Larch in this part of the country have been affected for years back. There is also enclosed, wrapped in paper, some branches with fresh foliage containing the insect, which I believe is the cause of the blister; and another paper containing Scots Fir branches, also infested with insects, although on Scots Fir I never noticed blisters.

"With reference to this matter, I may mention that the appearance of insect life on Larch was noticed by the fourth Duke of Athole in 1795, as is shown by the paper on the Athole Larch plantations in the Highland Society's *Transactions*, New Series, vol. xvi., p. 197, March, 1832. It is also referred to in the edition of Gilpin's *Forest Scenery*, edited by Sir Thomas Dick Lauder, vol. i., pp. 137—8, printed in 1834, where it reads:—'The Larch is much infested in this country with a blister peculiar to it, which we shall call the Chermes pini (Adelges laricis). The male of this insect is an active-winged fly, whilst the female is without wings, and one of the most inert of the things possessed of life. The female is generally found adhering to the axillary angles of last year's buds, like a brown scale. It lives upon the resinous sap of the tree, which it seems to pump up by inserting its proboscis into the bark, and the resinous matter exudes in a flocculent and white state from certain tuberculated pores in the thorax, abdomen, and cauda, covering the creature with what to the careless observer looks like a woolly or cottony substance. When the period of its oviposition arrives it attaches the eggs to the bark, one by one as they are excluded, by minute resinous filaments spun from a mamillary protuberance in the breast. It lays eighty or a hundred eggs or more, of a long kidney shape, and the attaching filaments are applied to the ends of them, so that, when one is touched by a delicate instrument, the whole are thereby put in motion. It appears that instinct teaches the insect to leave the end of the egg at liberty where the pupa lies, and the wonderful provision of the Great Creator of the universe is such that the heat necessary for the enclosed pupæ, and that for the growth of the young shoot being equal, the shoot so nourished creates the condition which makes it fit for food to the insects than they are ready to burst their cerements, and revel on its juices. The pupæ have six legs, and are very active. Our examinations of these creatures were minute and frequent and long-continued, and our observations many; but we have not room to give them in detail here. We may remark, however, that in the plantations subjected to our inspection, the trees were whitened as with hoar-frost; we could discover but two or three Larch trees which appeared to be actually killed by the insect, though many were manifestly much retarded in their growth by their operations, but their vitality was not fatally on the wane. In the Alps we could not detect the insect at all, except, we think, on one occasion, and then a few individuals merely were observable on one tree." During the last two years the insect did not appear to be so numerous as it was ten or twenty years ago, and it is to be hoped it may soon disappear altogether, as it has been the cause of great loss in young Larch plantations."

"Her Grace the Duchess Dowager of Athole has also desired me to communicate any further particulars regarding the insect, and other diseases affecting the Larch that might be interesting. But I fear I can add nothing to the above, which is complete on the subject. There is one circumstance I would desire to bring under notice, and which is exhibited on the specimens sent—it is a fungus of the genus Pezica, which is almost invariably found on the lower portions of the tree, but only after the bark has become dead, but while attached to the standing tree. Sometimes large patches of young Larch trees have quite a blasted appearance from the effects of the aphis, and hundreds of trees are killed by it. The insect attacks trees of all ages from the seedling of one year to trees of upwards of 100 years, and it is found on every variety of soil and situation. There is also another insect on the Larch, is subject in this part of the country, but it has nothing to do with the aphis—it is a decaying of the tissues of the wood, and is most noticeable in old trees." *John McGregor.*

Mr. Andrew Murray described the changes in this well-known bark little understood disease. The disease consists in ulceration of the tissues under the bark, and an exudation of resin, owing to some derangement of the nutrition of the plant; but how that derangement is brought about is at present uncertain. The insects and the fungi which are found accompanying the disease appear to be the consequences and not the causes of the malady. The nature of the soil will not account for it, as the disease is steadily progressing, and occurs on soils of very different character. Mr. Murray had seen young plants of only one year's growth, and on which there was no trace of insects thus diseased.

Action of Scion on Stock.—Dr. Masters contributed the following communication from Mr. Syme, of Elvaston:—

"In the spring of last year I had a few of Mr. Richard Smith's golden Laburnum grafted out-of-doors on the common Laburnum. Five or six of the scions died, the stocks starting freely from 1 inch to 2 inches below the level of the dead scions. These stocks were allowed to grow all the season undisturbed, the branches next to the dead scions having made from 1 foot to 3 feet of growth. The uppermost branches of three out of the five have now golden-yellow bark and leaves exactly similar to Mr. Smith's variety. I do not hesitate to say that, while the scions lived, their sap, which was too thin to effect a union with the stocks—the scions having been put on rather late—influenced the stocks for a considerable distance below where they were grafted. There is one thing in connection with them that I am not certain about, and that is, as to whether these branches that are now golden were last year; but really I do not believe they were, because, if they had been, I have a conviction that I would have noted it."

Dr. Masters alluded to other instances of the same kind in Laburnum and other plants.

Asplenium Farleyense.—Mr. Syme also sent a portion of a frond of A. Farleyense, showing an attempt to produce spore-cases, the condition is all over the plant, and is quite unusual to this species of Adiantum.

Hybrid Aquilegiæ.—Dr. Masters showed, on the part of Mr. Douglas, flowers of a hybrid raised between Aquilegia chrysantha and A. cœrulea; the flowers were large, the sepals of a pale-blue, the petals pale-primrose, and almost flat. The flower was of great beauty. Another hybrid was shown between A. californica and A. chrysantha, with large flowers intermediate in colour between the parent forms.

Various Malformations.—Dr. Masters showed, on the part of Mr. Pilgrim, of Cheltenham, a spadix of Richardia æthiopica with three spathes. Also flowers of the curious condition of the wall flower in which the petals are reduced to linear threads, and in which the stamens are converted into carpels, so that there is a ring of imperfect carpels surrounding the normal central pistil. This is the form called var. gynantherus by De Candolle. The specimens were obtained from Mr. Ware, of Tottenham, who also sent greenflowered Primula japonica. A remarkable Gloxinia was also exhibited, the peculiarity consisting in the development from the outside of the normal corolla tube of a supplementary series of petalline lobes, constituting an imperfect corolla outside the first. This malformation has been made the subject of a memoir by Professor Edward Morren.

FLORAL COMMITTEE.—W. B. Kellock, Esq., in the chair.—As was to be expected but few subjects, comparatively speaking, came under the notice of the committee to-day. The finest contribution to the meeting was a large group of Orchids from J. G. Hepburn, Esq., Sidcup Place, Kent (Mr. Loveland, gr.), and which included two very fine specimens of Vanda suavis Veitchii, with five good spikes between them; a very large and well-flowered Dendrobium nobile cœrulescens, a very good example of Lowe's variety of Sobralia macrantha; Angulua Clowesii, with overa dozen of its large cup-like yellow flowers; Dendrobium Dalhousianum, Odontoglossum citrosmum, with several very fine spikes; Cattleya Mossiæ, with eight flowers; Cypripedium caudatum, C. barbatum grandiflorum, C. Stonei, and C. Roezlii; Odontoglossum vexillarium, Cattleya Mendelli, Oncidium flexuosum, Phalænopsis Luddemanniana, P. grandiflora, Oncidium crispum, Masdevallia Veitchii, &c. A silver medal was awarded. From Mr. John Wills came a small but showy group of Odontoglossums and Cattleyas, together with a large plant of a very fine variety of Anthurium Scherzerianum, which promises for size to run Ward's variety very close, if it does not prove to be identical. A silver medal was also voted to this group. Another very showy group of Orchids was contributed by Mr. Agutter, gr. to Sir W. H. Peek, Bart., M.P., Wimbledon House. This included a good-sized and exceedingly well-flowered example of Dendrobium amœnum, Brassia Lawrenceana, with four good spikes; the showy Dendrobium formosum giganteum, several fine Odontoglossums, notably O. Alexandræ, Zygopetalum maxillare, and the exceedingly good spikes; the high-coloured Aerides affine roseum, the charming Odontoglossum nævium majus, Cattleya maxima pallida, C. purpurata, Odontoglossum Roezlii album, and O. citrosmum, &c. Mr. Dillenbeck also sent a fine and particularly well-flowered bush of Aotea gracillima, a good old plant very seldom seen. A silver medal was also awarded to this collection, as well as to Messrs. James Veitch & Sons for an interesting group of Masdevallias and a few other Orchids. The former consisted of flowering plants of M. Harryana, M. tricolor, coccinea, tovtensis, simula, ionocharis, infracta, ochthodes, amabilis, Davisii, Barlæana, Peristeria, and ignea. The other Orchids shown were a very good specimen of Odontoglossum nævium, a beautifully coloured Cattleya Mossiæ, Cypripedium Parishii, Oncidium concolor, Cypripedium caudatum, &c. Messrs. Baker & Sugden received a bronze medal for a very showy group of cut blooms, brilliantly coloured varieties of Sparaxis. From Mr. Holmes, Whittington Nursery, Lichfield, were specimens of Juniperus virginians variegata, the young shoots on which are tipped with silvery white. Messrs. Osborn & Sons, gr. to Mrs. Messel, Dane

chrysantha. The flowers in this case are larger than those of its first-named parent, the petals being yellow in colour, and the sepals and spurs dark crimson. In habit both of the hybrids are intermediate in character between the parents, and what is most curious is connected with them is that from the same pods of seed, a great proportion of the progeny proved to be identical with those shown. To Mr. Turner for show Pelargoniums Eloquence (Foster), dark crimson with dark maroon blotches; Venus (Brehaut), white, with a faint mauve blotch, a promising decorative variety; Virgin Queen (Smith), white spotted with puce, also a showy decorative variety; and Mr. King (Turner), one of the fancy section, lilac, shaded with dark rose, and of fine form; and to Mr. C. Burley, Brentwood, for Pelargonium Tom Bowling (Fostana), a Zonal variety with large, smooth and very refined scarlet blossoms.

FRUIT COMMITTEE.—John Lee, Esq., in the chair. Nothing of particular importance came under the notice of this body to-day. Mr. H. J. Barnes, gr. to Colonel Taylor, Montrose, Weston Park, Bath, sent specimens of a Cucumber named Montrose, which was not considered to be any improvement on many existing kinds. A cluster of Cucumbers, one of which was slightly fasciated, an occurrence which is very frequently met with, came from Mr. Cuthill, gr. to T. Swanwick, Esq., Chesterfield. An exceedingly fine dish of Hathaway's Excelsior Tomatos was shown by Mr. Iggulden, gr. to R. B. W. Baker, Esq., Orsett Hall, Essex, and a Cultural Commendation was awarded. Messrs. James Carter & Co. showed examples of their Silver Head Broccoli, which by no means white-flowered variety, to which the committee made no award. A new variety of Broccoli was also shown by Mr. Gough, The Gardens, Westwood Park, Bristol, and which, though past its best, appeared to be a promising sort. Samples of a Broccoli named Model were also shown by Mr. Howard, gr. to J. H. Johnson, Esq., St. Osyth Priory, Essex. This was considered to be quite distinct, but no improvement on existing sorts. A fine dish of Strawberries, unnamed, but said to have been grown under the name of Sir Joseph, was shown by Mr. Cadger, gr. to N. Mayer de Rothschild, Esq., Tring Park, and a Cultural Commendation was awarded. Mr. Gilbert, gr. to the Marquis of Exeter, Burghley Park, Stamford, sent a netted variety of the Victory of Bath Melon, which proved to possess a fine flavour, but was not considered distinct enough to warrant the award of a Certificate. Two pots of Garibaldi Strawberries, a sample of a batch of 1000, were shown by Mr. Denning, gr. to Lord Londesbrough. The general opinion seemed to be that they were not distinct from Vicomtesse Hericart de Thury. A letter of thanks was voted.

Royal Western Horticultural.—The spring show of this Society took place on May 29 and 30, at the Plymouth Guildhall. The show on the whole was a good one. Though smaller than on previous occasions, the quality more than made up for the quantity. The plants shown by Messrs. Lucombe, Pince, & Co., of Exeter, must be awarded the highest commendation. No one could help being struck immediately on entering the hall with the magnificent plants occupying the centre of the room, and with a stand of Azaleas to the left. A splendid Palm (Latania borbonica) overshadowed the other plants in the centre of the room, but there were also Azaleas with twenty-four beautiful bloom-heads, very full and perfect; a nicely flowered Aphelexis macrantha rosea, Dendrobium densiflorum, with fourteen spikes of bloom; a fine Stephanotis, and a splendid Yucca. Messrs. Lucombe, Pince, & Co. also had several exhibits not for competition, among them a box of very lovely cut Roses (Niphetos) of perfect shape and delicate —almost pure white colour. Mr. P. G. Taylor, of Beaconfield, Plymouth, had some exceedingly good exhibits. The Chorozema he sent to compete among the specimen plants in bloom was one of the finest ever shown in Plymouth. Mr. Taylor's Ferns, too, were very fine, but in them he was closely run by Dr. Metham, of Stoke. So close was the competition between these gentlemen in the class for six varieties that the judges, after careful consideration, eventually decided to award the first prize, and the second to them together were exceptionally fine. In the class of twelve varieties, as well as that for six, the judges had much difficulty in awarding the prizes. The competition here was between Mrs. Fisher, of Stoke, and Dr. Metham. The former showed some beautifully cultivated plants, among which Lomaria gibba and Pteris tricolor were specially good; but the 1st prize went to Dr. Metham, principally, perhaps, because his plants were of far greater value. The most noticeable among them were fine specimens of Adiantum peruvianum, and the very pretty Davallia Tyermanni. In addition, however, to the 2d prize, the judges highly commended Mrs. Fisher's plants for their superior cultivation. The Pelargoniums were a beautiful show; those of Mrs. Fisher were of splendid growth and flower. In tricolors the competition was very keen, Mr. Fittock, who was awarded the 1st prize, being very ably seconded by Mr. Johns, of Morice Town; and Mr. C. Prideaux's were so good that, in addition to receiving 3d prize, he was highly commended. In the class for nine Pelargoniums, Mr. Harvey, of Mount Play, exhibited a splendid lot, far distancing all competitors, but, in the class for "three," Mr. J. Watts, of Plymouth (who was a large and successful exhibitor in other classes), had a lot with the best blooms of any in the show. In Calceolarias Mr. Taylor was very prominent with good plants, very full of bloom; and in Petunias Mr. Steer's contributions were especially admired, particularly Madame Hengest and the Countess of Morley. Mr. G. H. E. Rundle was the only exhibitor of Roses. His lots had fine blooms, but the plants were small. The two exhibits of Mignonette were very fine, especially that of Mr. Prideaux. The cut flowers were few in quantity, but very good.

The fruit and vegetables were a good show, rather smaller, though, than usual, probably owing in the case of the latter to the lateness of the season. Earl Devon's 1st prize Grapes were a picture, and though Mr. Harvey's were larger in the berry they were not so good in colour. Mr. Hawke, of Liskeard, showed a very good Pine; and Mr. Rundle's basket of seedling Strawberries were much admired. The most noticeable exhibits among the vegetables was a remarkably fine hundred of Asparagus, sent by Mr. C. Prideaux, and though Mr. Watts' were exceedingly good, the judges evidently had no difficulty in awarding the 1st prize. Mr. Watts made many other capital contributions to the department. His collection of vegetables and new Carrots did him credit. Mr. Speed's Broccoli well deserved the extra prize awarded them; and his 1st prize Rhubarb was remarkably fine. *Western Morning News.*

Bath and West of England and Southern Counties Association: The novelty in the floral department, is the introduction of two large-pointed cups for Tea and Noisette Roses, three trusses to be shown by nurserymen, and one by amateurs. Mr. C. Turner, of Slough, met not only no foe worthy of his steel, but, we regret to add, no foe at all, and the judges, Mr. Curtis, of Torquay, and Mr. Arkwright, of Herefordshire, had no difficulty in awarding to him his well deserved cup. His groups of Devoniensis, Maréchal Neil, and Madame Willermoz, have been nowhere excelled. The other Roses shown in this collection were Celine Forestier, Niphetos, Gloire de Dijon, Safrano, Souvenir d'un Ami, Marie Van Houtte, Madame de Saint Joseph, President and Madame Falcot.

Only two competitors meet in the class for amateurs, which number we hope will next year be multiplied by ten. Mr. Chard, gr. to Sir T. Bathurst, wrests the laurel wreath from Mr. Hann, gr. to R. B. Cater, Esq. The former had in good form Catherine Mermet, Souvenir d'un Ami, Maréchal Neil, Devoniensis, Celine Forestier, and Adam, and we were pleased to greet a very old friend in a beautiful blossom of Amabilis.

Mr. Arkwright sent two boxes not for competition. Though it is a matter of much regret that such liberal prizes did not entice more growers, still a point has been made in proving that at Oxford next year a grand collection of Roses may be got together, if it becomes generally known that renewed efforts will be made in this direction. Most vast and liberal exhibitors were at the last moment, one that he cannot manage the weather, another that his plants have blossomed out, another that they are still in bud, and so on. Teas are far more amenable to management than any other class of Rose in this respect, and we may safely look to growers to keep the first week of June, 1878, constantly in their memory from this time forward—for no stand in the show of this year at Bath has given more genuine pleasure than the four boxes we saw to-day. A new feature, we are told, at Oxford will be a mixture of twelve Teas and twelve Hybrid Perpetuals, arranged alternately in the same box of twenty-four. Here will be a grand opportunity for nurserymen to make the most of natural effects in contrasting the delicate shades of pink, straw, and white of the Teas with the brilliant reds and crimsons of their more robust cousins, especially if, as Mr. Curtis has suggested, encouragement, or rather leave, be given to cut the Rose in distinct stages of its development. Growers should hail this latitude given, for it will consign many an effete blossom to its proper place to make room for a bright successor in the dawn of its youth and beauty. We cannot conclude without complimenting Mr. Boscawen on being the originator of this most acceptable feature in the horticultural tent, and expressing a hope that the committee of the National and other Rose shows will view with favour this proposed innovation in making it essential to mix Teas with Perpetuals in equal proportions. *A.*

Central Horticultural Society of France, Paris.—On the 28th, 29th, 30th, and 31st of May last the Horticultural Society of France held its annual flower show in the Palais de l'Industrie, in the Champs Elysées. This show took place as usual during the time the Salon (that is our Royal Academy) is opened. There were about sixty exhibitors, all of them being, with a few exceptions, nurserymen. The winner of the 1st prize (Objet d'Art) was M. A. Chantin, who staged a fine collection of Palms, Pandanus, Ferns, Agaves, Aloes, Bromelias, Anthurium, Araucaria, a fine Corypha Gebenga, and sundry other hothouse and new plants. The 2d prize (Objet d'Art) was awarded to M. Savoye for a collection of Palms, Ferns, Crotons, Marantas, Dracænas, and other hothouse plants, but the show that attracted the attention of all the visitors was that of M. A. Bleu, who showed the finest collection of Caladiums we ever saw put together: he was awarded a silver and a gold medal. Amongst the sixty varieties, which were all fine plants, and in splendid condition, we noticed the following:—Madame Alfred Bleu, Impératrice, Eugénie, Devinck, Lamartine, Princess of Teck, Burel, Madame Andrieu, Adolphe Audiffe, Vicomtesse de Roquefeuil, Madame Verdier, Pyrrhus, Perle du Brésil, Arsinoe, Mrs. Laing, Agrippine Dimitri, &c. The Roses were generally very poor, nothing equal to what we are accustomed to see in London. MM. Lévêque & Fils, who sent 600 plants, received a medal of honour. The best Rose was—La plus belle des Panachées, Alice Leroy, Virgile, Adam, Louis Van Houtte, Prince Napoleon, Climbing Devoniensis, Esmeralda, Thérèse Levet, Marguerite Dombrain, Mrs. Bosanquet, Maréchal Niel, Annie Alexieff, Abbé Brameri, Louis Jacob, Marie Baumann, Belle Lyonnaise, Princess Alice, Gloire de Santhenay, Comtesse de Bresson, L'Eclatante, Camille Bernardin, M. Margottin Fils received also a medal of honour for his collection. We remarked the following: Captain Christy, Pauline Labouté, Madame Falcot, Madame Lacharme, Caroline Gurtis, Anna Diesbach, Aug. Oger, Charles Lefebvre, Jean Cherpin, Monte-Cristo, Vicomte Vigier, and Paul Neron. We may here state that a grand gold medal has lately been awarded by the Society to M. Levet for his having raised the now well-known Rose Paul Neyron. A silver medal was given to M. Damesnil for his collection of 150 varieties of Roses.

M. L. Herivaux had a splenaid collection of Cocos Weddeliana, for which he received a silver-gilt medal. M. Malet (silver medal), showed six fine plants of a new Zonal Pelargonium, Lucania, a good plant, flowering well. M. Mézard (bronze medal) for two new Zonal Pelargoniums, Duchesse de Magenta and Troeins d'Hennin. M. Durand, gold medal, for Palms, Bromelias, Ferns, Evergreens, &c. A collection of 130 Pansies brought by M. Falaise, secured a silver medal. M. Vallerand (fils) had a silver-gilt medal for above a hundred varieties of Gloxinias in fair condition. M. Moser, of Versailles, took a medal of honour for his Rhododendrons and Azaleas. MM. Chantrier Frères, of Mortefontaine, were awarded two medals, a gold and a silver one, for hothouse plants, Crotons, Dracænas, &c., their best plants were Croton Veitchii, C. grandis, C. Disraeli, and amongst their new Dracænas, D. Verlotii, D. Bergmanni, D. spiralis, D. erecta, D. purpurea. M. Dural, of Versailles, gold and silver medals for his collection of hothouse and new plants.

The fruits and vegetables were not numerous, and they were placed in such a part of the building that owing to its darkness they could scarcely be seen. However three gold medals were awarded, one to M. Millet, Fils, for his vegetables, amongst which the new China Cucumber "Soolqua," and the Tomato, one to M. Crémont Frères, for Fine-apples, Peaches, &c., and one to M. L'Hérault, for his Asparagus. You will remember no doubt that some two years ago, he exhibited some very fine ones, we might say enormous, at the summer show at Kensington. It was to be regretted that there was not a single English exhibitor.

The exhibitors of horticultural implements numbered above a hundred, but only two English firms, William's lawn mowers, and Ransomes, Sims & Head's lawn mowers. The well-known French firm of M. P. Loyre, of Passy, exhibited as usual their round cases for Orange trees. This firm was the first to manufacture them in 1847. Nothing new amongst the other implements, which were as follows:—pumps, syringes, lawn mowers, rollers, garden seats, tables, awnings, tents, wire works, all sorts of hot-water apparatuses, greenhouses, &c. The flower show was opened to the visitors of the Salon, and *vice versâ*, and during the four days, one day being a free day and the others only 1 franc), 70,000 people passed through the gates.

Royal Botanic: *June 2.*—A special meeting of the Council of this Society was held on Saturday—his Serene Highness the Duke of Teck, President, in the chair—to consider a letter from his Royal Highness the Prince of Wales, respecting the Paris International Exhibition next year, and expressing a hope that the Society would help in promoting a due representation of British horticulture at the exhibition.

The meeting, entering fully into the importance of the subject, have promised that the influence of the Society will be used to the utmost in promoting the best representation of horticulture in its many features at the exhibition. His Serene Highness the President, attended by several of the Vice-Presidents of the Society, after the meeting, inspected the exhibitions of American plants and Clematis now on view in the gardens.

Apiary.

HONEY IN DRONES' CELLS.—In my notice of the massacre of drones at page 594, I omitted to state that the furious bees cast out the eggs and unhatched males from their cells, which in good seasons are soon filled with honey. Those who doubt this have only to examine drones' cells, which have the slight angular elevation of the others for holding honey. Thus instead of drones' cells being an evil, they are of more service for holding honey than those of the workers, which are chiefly occupied either with pollen or brood during summer, while drones' cells are seldom filled with brood after the defenceless insects are destroyed. This brings to mind, that a correspondent in a back *Chronicle* spoke of the utility of cutting out drones' cells to prevent their increase, because they contained no honey. Those, however, conversant with the structures of bees' combs, know that the drones' cells are usually in the centre of them, or at least surrounded with others, so that the act of extracting them must injure the combs, while the process may be useless because the bees may soon fill up the gaps with the same kind of cells. Again, such operations are not practicable, except with Grecian or bar hives, some of which are really worthy of notice. Anyone to extract drones' cells from a common hive must have the courage of Bonner, who, it is said, could face enraged bees in his kilt, with only a tobacco pipe in his mouth. Likewise he took an extra glass in the evening of the day when drones appeared, because their presence not only foretold swarming, but also that their empty cells may soon be filled with honey, as noted by *J. Wighton*.

Law Notes.

A DISPUTED LIABILITY.—At the City of London Court, on Monday last, before Mr. Commissioner Kerr, the case of Williams *v.* Kaye was heard, in which the plaintiff, described as a florist of Thame, near Oxford, sued the defendant, a merchant, of St. Mary Axe, in the City, to recover the sum of £15 14*s.* for plants and exotics supplied to the defendant's son. Mr. Boydell appeared as solicitor for the plaintiff and Mr. Absolom for the defence. From Mr. Boydell's opening it appeared that his client during 1875 and 1876 supplied the defendant's son, who was then an undergraduate at Merton College, Oxford, with the goods sued for in the particulars before the Court, which consisted of rare exotics and choice plants, and was told at the time the plaintiff would be paid by the defendant's father whenever he liked to send in his account, as the defendant always paid his son's accounts, when at the University, and from inquiries the plaintiff made, he felt no hesitation in giving the defendant's son the credit he required.

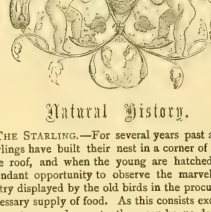
The plaintiff being called corroborated this statement, adding, that after he had made repeated applications to the defendant for payment without receiving any reply, he was obliged to bring the present action.

In reply to his Honor, the plaintiff said, that all the goods had been delivered, and that the charges were fair, and reasonable, and by no means exorbitant. In cross-examination the plaintiff said he knew that some Oxford tradesmen were in the habit of charging undergraduates exorbitantly, but it was not his practice to do so, nor did he think a guinea and thirty shillings too much for bouquets, nor five shillings a large charge, and could prove they were not so by calling a skilled florist to prove they were not.

Mr. Antell, a florist from Edmonton, was then called, who said, considering the character of the goods supplied, he did not think the charges at all extravagant.

This being the plaintiff's case, Mr. Absolom urged on the part of the defence, that it was preposterous to suppose that any parent could be rendered liable for such unnecessary extravagance as the plaintiff had been guilty of, as in reality in the present instance the sum of nearly £16 had been charged in the months of May and June in 1875 and 1876, and it was impossible to suppose that such things were necessary for any student. Further than this, if his Honor considered the defendant had incurred any liability at all, he, Mr. Absolom, could call witnesses to prove that the charges were most exorbitant, and could not be sustained in any court of justice. At this stage of the case the learned Judge recalled the plaintiff, who said he had never seen the defendant, nor had he received any reply to the letters he had written to him. At this stage of the case his Honor told Mr. Absolom it would not be necessary to call his witnesses, as there could be no doubt that the defendant was in no way liable. There was no doubt that the love of flowers was a very pure and innocent taste, which he would like to see cultivated by every one having the means to do so, and, however much he might like to see young men in the position of the defendant's son cultivating such tastes, it must not be recklessly indulged in. Judgment must therefore be for the defendant, and his Honor hoped his decision would operate against university tradesmen giving indiscriminate credit.

Judgment was accordingly entered for the defendant, with the costs of attorney and witnesses.



Natural History.

THE STARLING.—For several years past a pair of starlings have built their nest in a corner of my cottage roof, and when the young are hatched I have abundant opportunity to observe the marvellous industry displayed by the old birds in the procuring the necessary supply of food. As this consists exclusively of insects or garden pests, there can be no doubt that the service they thus render me is incalculable. It is strange that there should still be found people so entirely obtuse as to be unable to see or appreciate the immense services that the birds render to man. Of course, it is trying to see a little fruit injured or abstracted, but this mischief is too evident, whilst the enormous benefit birds produce for us is only evident to those who are generous enough to be impartial observers. *A. D.*

SCALE INSECTS—ASPIDIOTUS FANDANI.—Among these pests of the hothouse we have lately had our attention drawn to a species that very persistently affects plants of Pandanus filiformis. It is the same that is described by Signoret as living exclusively on Pandanus utilis, showing that its predilection or allotment is generic and not specific, to which we may add that it appears even to wander a little from its special plant, some being found on neighbouring plants of totally different families.

It is a round, flat, blackish brown scale, with a whitish umbo in the centre. The female under the scales is rounded, of a whitish yellow colour, and the characteristic clusters of secretors (called *filières* by Signoret) on the terminal segment are four in number, and each consists of a very small number of openings —four or five in each of the upper lateral ones and three in the lower. The isolated *filières* are peculiar; they are long hairs, pointed at the extremity, having a small bituberculiar head at the base, so elongate and so abundant that at first sight they look like spermatozoids. The terminal segment is a very difficult part to decipher under the microscope, requiring previous boiling in potassic-water, &c., and few microscopists are so qualified to deal with it as long practice has rendered Dr. Signoret. *Andrew Murray.*

Obituary.

WE regret to announce the death of Mr. ROBERT WHITE, the much respected proprietor of the Poole and Parkstone Nurseries, Dorset. Mr. White, who was in his sixty-seventh year, died at his residence, Constitution Hill, Parkstone, on May 28.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, JUNE 6, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading at 32° and Sea Level.	BAROMETER. Departure from Mean of 18 years.	TEMPERATURE OF THE AIR. Highest.	TEMPERATURE OF THE AIR. Lowest.	TEMPERATURE OF THE AIR. Range.	TEMPERATURE OF THE AIR. Mean for the Day.	TEMPERATURE OF THE AIR. Departure of Mean from Mean of 18 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity, Saturation = 100.	WIND. Average Direction.	RAINFALL.
	In.	In.	°	°	°	°	°	°			In.
May 31	29.43	−0.37	66.7	44.1	22.6	54.2	− 2.1	48.3	80	S. S.W.	0.00
June 1	29.40	−0.40	60.4	49.6	10.8	52.9	− 3.6	47.1	81	S.S.W. S.W.	0.18
2	29.74	−0.06	59.5	49.1	10.4	52.6	− 4.1	48.6	87	S.S.W. S.W.	0.00
3	29.59	−0.21	80.5	47.4	33.1	64.0	+ 7.1	44.8	50	S.S.W. S.W.	0.00
4	29.56	−0.24	82.7	52.8	29.9	65.0	+ 7.9	53.6	67	S.S.E. S.	0.01
5	29.83	+0.03	68.0	52.2	15.8	57.9	+ 0.6	45.2	62	S.W.	0.00
6	29.83	+0.03	65.9	46.6	19.3	55.3	− 2.2	43.0	64	S.S.W.	0.18
Mean	29.63	−0.17	69.1	48.8	20.3	57.4	+ 0.5	47.2	70	S.S.W.	sum 0.37

May 31.—Fine day, but very cloudy; cold wind.
June 1.—Dull, cloudy, with frequent rain. Fine at times, Gale in early morning.
— 2.—Overcast and dull till evening. Cloudless at night. Cold and windy.
— 3.—A brilliantly fine hot day. Cloudless till evening, cloudy at night. Temperature at 9 A.M. = 70°, being higher than any day at 9 A.M. since August 16, 1876. Max. for the day = 80°.5, being 21° higher than the max. of the preceding day; and higher than the max. of any day since August 17, 1876. Mean temperature of the day = 64°, being 11°.4 higher than that of the preceding day.
— 4.—A fine bright hot day. Dull, with a smart shower of rain at 11.30 A.M. Lightning at night.
— 5.—A fine day, partially cloudy. Cool wind.
— 6.—Fine, but very dull and cloudy at times. Frequent rain between 5 and 9 P.M. Cloudless at midnight. Cold wind.

LONDON: *Barometer.*—During the week ending Saturday, June 2, in the neighbourhood of London the reading of the barometer at the level of the sea decreased from 30.07 inches at the beginning of the week to 29.27 inches by the afternoon of May 28, increased to 29.68 inches by the evening of the 30th, decreased to 29.58 inches by the morning of May 31, increased to 29.69 inches by the evening of the same day, decreased to 29.44 inches by noon on June 1, and increased to 29.93 inches by the end of the week. The mean reading for the week at sea level was 29.62 inches, being 0.56 inch below that of the preceding week, and 0.35 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 66° on May 31 to 59½° on June 2; the mean value for the week was 63°. The lowest temperatures of the air observed by day ranged between 43° on May 30 and 49½ on May 28 and June 2; the mean for the week was 46¾°. The mean daily range of temperature in the week was 16¾°, the least range in the day was 10½°, on June 2, and the greatest, 22¾°, on May 30 and 31.

The mean daily temperatures of the air were as follows:—May 27th, 53°.5; 28th, 54°.2; 29th, 51°.5; 30th, 52°.9; 31st, 54°.2; June 1, 52°.9; 2d, 52°.6; and the departures in defect of their respective averages were:—1st, 1°.4, 4°.3, 3°.1, 2°.1, 3°.6, and 4°.1. The mean temperature of the air for the week was 53°.1, being 2°.9 below the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 126½° on May 27, 121° on the 29th, and 125¾° on the 30th; on June 2 the reading did not rise above 97°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 37¾° on May 27, and 38½° on the 30th; the mean of the seven low readings was 42¾°.

Wind.—The direction of the wind was S.W., and its strength brisk throughout. The weather during the week was generally fine and cold, but at times dull. Gales of wind prevailed on May 28 and June 1 and 2.

Rain fell on two days during the week, to the amount of 0.31 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 72½° at Leicester 70½° at Cambridge, and 70° at Manchester; at Portsmouth 62° was the highest temperature in the week. The mean value from all stations was 66¾°. The lowest temperatures of the air observed by night were 39° at Wolverhampton, and 40° at Truro, Sheffield,

and Eccles; at Plymouth 48° was the lowest temperature. The mean value from all stations was 42½°. The range of temperature in the week was the greatest at Leicester, 31°, and the least at Portsmouth and Plymouth, both 15°. The mean range of temperature from all stations was 24°.

The mean of the seven high day temperatures was the highest at Cambridge, 66½°, and the lowest at Portsmouth and Liverpool, both 59°; the general mean from all stations was 62°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 43°, and the highest at Brighton, Portsmouth, Plymouth, and Norwich—all 48½°; the mean value from all stations was 47°. The mean daily range of temperature was the greatest at Manchester, 20°, and the least at Portsmouth, 10½°; the mean daily range from all stations was 15°.

The mean temperature of the air for the week from all stations was 53°, being 1° lower than the value for the corresponding week in 1876. The highest was 55½°, at Cambridge, and the lowest 51°, at Wolverhampton and Eccles.

Rain fell on every day in the week at Wolverhampton, Sheffield, and Manchester. The amounts varied from 2 inches at Sheffield to three-tenths of an inch at Portsmouth and Brighton. The average fall over the country was 1 inch nearly. The weather during the week was generally fine, but cold and stormy; thunderstorms occurred at Bristol on May 31, and at Portsmouth on June 1.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 63° at Dundee to 59° at Glasgow; the mean value from all stations was 61°. The lowest temperatures of the air ranged from 38° at Paisley to 43° at Dundee; the general mean from all stations was 40°. The mean range of temperature in the week from all stations was 21°.

The mean temperature of the air for the week from all stations was 51°, being 3° lower than the value for the corresponding week in 1876. The highest was at Dundee, 52°, and the lowest at Aberdeen, Greenock, Paisley, and Perth, all 51.

Rain.—The fall of rain in the week was somewhat large everywhere. At Greenock 3¼ inches fell, at Leith three-quarters of an inch fell, and with this exception at no place did less than 1 inch fall; the average fall over the country was 1¾ inch.

DUBLIN.—The highest temperature of the air was 65°, the lowest 38°, the range 27°, the mean 53°, and the fall of rain 0.41 inch.

JAMES GLAISHER.

Variorum.

THE LUMBERMEN OF THE NORTH PACIFIC.—Long education is necessary for any one to become an adept in the use of the axe. It is really a fine-art sight to see a thorough axeman at work. How easily —almost without an effort one would think—he swings the axe over his head, but every time brings it down within a hair's-breadth of the right place. Not a blow is wasted. At every stroke a huge wedge-shaped chip flies; and with a sound that makes the silent forest echo, the great tree shivers, creaks, and then crashes to the ground, bringing down with it often a thicket of its smaller relatives, which have grown up under its shade. The work of an axeman is well calculated to bring into play all the muscles of the body; accordingly, the *physique* of the Canadian and State of Maine men—who are all accustomed to this work—is splendid. Most of them are unusually tall, and without having that yellow sickly colour so common in the American townsman. The lumberman who passes his life in active, healthy work, inhaling the reviving breath of the Pine forest, has not an ounce of superfluous fat, while every muscle is developed to its normal size. . . . . The axe used in chopping is a small one, of American make, with a long handle. The English manufacturers, though furnished with samples of this axe, do not seem to have succeeded in making it so as to satisfy the woodmen. A true woodman hardly knows what to do with his hands unless he has an axe in them. It seems indispensable to him, and it is astonishing how quickly and well he can fell trees, make roads, or build cabins with it. During the axe, the lumberman, like most Western men, is fond of whittling, and when sitting in the summer evening in front of his often picturesquely-situated cabin, is usually seen leisurely and heartlessly shaving down a "shingle," or, still better, the soft cheese-like white Pine, if he be fortunate enough to lay his hands on a piece. The loggers of the North-west are a fine, manly, intelligent set of men. They have generally been fairly educated, and have seen a good deal of the world. Having few opportunities of spending money in the woods, and being well paid, those of them who resist the temptation to spend their earnings when they visit the towns are able to save money, and can get on to be logging contractors themselves. *From "The Countries of the World," by Dr. Robert Brown, for May.*

THE CLIMATE OF CEYLON.—The following climatal details relating to Ceylon are taken from Dr. King's report on Cinchona cultivation in India, as a result of six and in some cases seven years' observations. The elevation is 4600 feet:—

	Shade temp.		Exposed. Max.	Exposed. Min.	Rain.
	Max.	Min.			
	°	°	°	°	Inches.
January ..	80	45	128	33	3·9
Feburary ..	81	45	126	42	2·2
March ..	84	46	126	30	2·1
April ..	84	49	136	42	7·0
May ..	81	50	133	46	6·6
June ..	78	56	116	43	15·4
July ..	78	54	120	48	17·1
August ..	79	54	134	48	9·3
September ..	80	50	132	46	15·2
October ..	79	51	132	46	11·0
November ..	79	48	132	46	7·7
December ..	79	44	133	41	4·4
Mean of year	80	44	136	33	107·7

This table is one of great significance for the home cultivator, especially the details relating to the extreme temperatures in the sun.

KEW GARDENS.—If any man's heart be sore and his eyes heavy let him forthwith take horse or rail to Kew and live an afternoon in the garden there. If that cure him not nothing will. The Azaleas are in all their glory, and the Camellias are bursting from their buds. A walk through hothouse No. 4 is a kind of mild intoxication unattended with headache: the air is full of a hundred delicate scents, and I can testify to an instantaneous cure of heavy eyes effected by one plant of Erica Cavendishiana in this house. A lady, who is on her first visit to England, was walking in Kew Garden the other day. She was, on the whole, much pleased, but was greatly shocked at the notice which she read at every turn—that "birds'-nesting is strictly forbidden." "How you are severe and cruel in this country," she at last sorrowfully exclaimed, "that even the little birds may not make their nests in your public gardens. *Vanity Fair.*

THE CLIMATE OF THE SIKKIM HIMALAYA AND NILGHIRRI HILLS.—We glean the following details as to the climate of the Sikkim Himalaya (Rungbee) from Dr. King's *Manual of Cinchona Cultivation*—fractions omitted:—

1866.	Altitude, 5321 feet.		Altitude, 2555 feet.	
	Mean Temperature.	Minimum.	Mean.	Minimum.
	°	°	°	°
January ..	44	31	56	44
February ..	41	39	57	40
March ..	57	41	71	55
April ..	57	43	71	51
May ..	61	48	75	58
June ..	64	57	78	67
July ..	62	56	76	69
August ..	62	53	78	68
September ..	61	56	77	66
October ..	54	42	71	50
November ..	50	39	66	36
December ..	42	34	57	42
Mean of year	55·4	44·8	70·1	55·5

The annual average of two years' rainfall near Rungbee, at a height of 3300 feet, is 152 inches, the greatest of all being in July, 40 inches; while in November, December, January, and February, next to none fell.—The daily mean temperature and rainfall of the Nilghirri Hills (Ootacamund) during the year ending March 31, 1869, is thus tabulated—fractions are omitted:—

1868.	Deg.	In.	1868.	Deg.	In.
April ..	64	·75	November ..	57	3·
May ..	62	7·	December ..	56	·34
June ..	57	8·	1869.		
July ..	56	10·			
August ..	57	3·	January ..	58	·44
September ..	57	7·	Feburary ..	60	·30
October ..	58	9·	March ..	61	2·

The mean temperature of the year is noted as 59°.28. The maximum temperature in the shade was 77°.87, in April; the mean maximum of the year, 70°.59; the minimum temperature is, unfortunately, not given. The total rainfall was 52 inches.

ROXBURGH CASTLE.—On suddenly emerging from the leafy gloom, one of the most brilliant landscapes in Europe opens to the eye—the splendid mansion and embellished grounds of Springwood Park; the demesne of Fleurs, with its noble ducal castle and stately terraces; the two beautiful rivers of Teviotdale, each spanned by a magnificent bridge; Kelso with its vast ruins, and the green tufted knoll, where once stood the great Border Castle of Roxburgh, a bulwark against England, and the key of the Merse. On one hand, the eye can look along a valley 10 miles in length, covered with the finest timber, and on the other, an open and diversified prospect for double that distance, away to the summits of Carter-Fell and other mountains. Looking over all this, from the height of Dunse Law, where the army of the Covenant unfurled the standard in 1639, the eye commands a prospect so extensive, rich, and varied, so abounding in all the sweetest elements of rural landscape, including three great castles, renowned in ancient wars, and a peep at the German Ocean, as to defy a succinct description. The town of Roxburgh—which was a place of great note in the twelfth century, and in the days of David I. had an encincturing wall and ditch, with schools that flourished under the abbots of Kelso, which was the seat of a mint, where coins of William I. and James II. were struck, having in the time of the former a weekly market, and in the fourteenth century enjoying the reputation of being the fourth town in Scotland—has so completely passed away, that not a stone of it remains. It stood over against Kelso, on a rising ground, at the western end of a fertile plain, insulated by the confluence of the Tweed and the Teviot. The remains of its castle still appear on a steep and wooded knoll on the margin of the Teviot, about 40 feet above the plain, and indicate it to have been a place of vast extent and strength. *From "Picturesque Europe" for May.*

A FOREST SCENE IN CENTRAL AMERICA.—We were now again in the midst of a dense Pine forest, with tall trees—every one fit for a spear for the Titans when they warred against the gods—on either side of us. The rude little path which the settlers have hewn out of this dense wooded mass is every now and again barred by one of these forest giants, which the wind has thrown athwart. How painfully silent are these Fir forests of the North Pacific! At one portion of my life it was my happy lot every morning to walk through one of the most tropical forests in Central America. Fragrant odours of many flowers and spices were wafted in the sultry air, and everywhere the forest rang with the scream of tropical birds of gorgeous plumage, and the chatter of the long ringtailed monkeys, which swung themselves from branch to branch, and seemed in utter astonishment at this degenerate descendant of theirs, who was permitted to walk afoot, while they disported themselves among the leaves of the indiarubber trees, and ate the luscious fruits from among the waves of flowers which rolled in masses from forest tree, until, as you looked from a rising ground, the whole expanse of country before you seemed in places like a sea of foliage and flowers. Above all, filling up as it were every vacant space, was the never-ceasing din and hum of insect life which arose from among the trees. That forest seemed like one huge temple, where ten millions of unseen choristers sang a never-ending hymn of praise to the "Unknown God!" Here, 40° to the north, all is different. There are odours, but they are those of Fir trees and turpentine, and you may listen for hours without hearing the sound or beholding the sight of living being. We sit down and draw breath for a few minutes. From overhead comes a gentle tapping, and from a tree close at hand another similar sound; we look up and find that it proceeds from two species of woodpeckers boring a tree for insects. They are, Audubon's Picus Auratus and P. Gairdneri, the only two species found on the island. We almost repent what we said about the scarcity of life in the forest, for down jumps from a tree a little brownish squirrel, which stares at us for a second, then, as we nod, skips along a fallen tree, tears open a Fir-cone, extracts the seed, and then skips off on the errand he is bound. There are several species of squirrels in the North Pacific slope of the Rocky Mountains, but this is the common one (Sciurus Douglasii). In the mild climate of this region it does not hybernate, but may be seen all the year round jumping about, fearlessly approaching the traveller, and then tossing up its tail as it runs off scolding and barking. As we are moving off, a pretty fawn ambles into the pathway just before us, and after eyeing us for some time, again trots into the bush, and in a minute is lost among the trees. *From "The Countries of the World," by Dr. Robert Brown, for May.*

THE ELDER.—The Elder, Bour-tree, or Boon-tree (Sambucus nigra), is one of the hardiest of our indigenous plants, growing freely and even luxuriantly in high and exposed situations where few other shrubs can exist, braving the stormiest winds and severest winters in such places with the greatest impunity. We have often seen it used with excellent effect for fences and shelter around high-lying farms and cottages, whose inhabitants appear to appreciate it as their best friend for mellowing the blast and sheltering their stock and garden crops from the cold and boisterous winds to which they are exposed in elevated parts of the country. When once it has established itself, which it quickly does in almost any soil and situation, it is not easy to eradicate it, which makes it rather troublesome when growing amidst young plantations; but there is no better tree or shrub for planting thickly along the skirts of new plantations in high and exposed parts, where it speedily gives the necessary shelter to the young trees to leeward of it, protecting them from being tossed about and injured by the cutting blast, and enabling them to quickly start into strong and healthy growth, which is a most

important point gained towards the future value of the plantation, and one to which those who have to plant in high and exposed places should devote their most careful attention. When it has once been decided to plant such exposed places, no time should be lost in erecting the necessary fences, but as these are not generally of a nature to afford much shelter, such quick-growing and hardy plants as the Elder ought to be thickly planted inside the fence, extending 3 or 4 yards inwards, especially on the sides most exposed to the wind. When possible this should be done the season before the timber trees are planted, so that the shelter may have the start, and afford immediate protection to the young trees. *Journal of Forestry.*

Enquiries.

He that questioneth much shall learn much.—BACON.

187. COLT'S FOOT.—Can you inform me of any way of getting rid of Colt's-foot? It runs very deep here, and after breaking it up twice, and picking out all the little bits that men will pick out, it seems to come up as fresh and luxurious as ever. Some of the land will not be planted until the autumn with Firs. Would gas tar hurt this? Some is grass land and lawn, where the weed is a terrible eyesore, and some of it is flower-bed, where the weed collects about the roots of shrubs, &c. Any chemicals you may recommend I will try. *E. W. W.*

188. VERBENAS.—Can any of your readers tell me where I can procure a few plants of Verbenas, Lilac and Mauve Perfection? *H. H. C.*

Answers to Correspondents.

ANTS IN A CUCUMBER FRAME: *H. E. W.* Sink some saucers in the soil up to the rims, and pour a little olive oil into them. This is one of the best traps we know of.

ASPARAGUS: *J. E Barton.* It is quite late enough for planting Asparagus, but as the season is very backward it would probably succeed, if attended to at once. We should plant but moderately deep, and make up the beds afterwards by additions of manure and light soil.

AZALEAS: *J. M. W.* No doubt the insect is the cause of the mischief. Make some strong tobacco-water, and to every gallon add 1 ounce of Gishurst Compound. When the liquid is cold turn the plant on its side, over a tub and give it a thorough good syringing. Repeat the dressing in a week's time. If you were to do this once every spring and autumn you would be but little troubled with insects. Reine des Belges is the name.

BOOKS: *A Constant Reader.* Hooker's *Student's Flora* (MacMillan), of which we hear that a new edition is in the press.

DAHLIAS, &c.: *D. Munro.* Plant out the Dahlias and Hollyhocks in well-worked, that is, in well-pulverised ground, as you say it is heavy; and when the plants are in full growth, much freely with good hotbed or farmyard manure, watering freely over the manure in dry weather. The Carnations and Pansies must not be so heavily dressed as the others.

DISA HERSCHELII *alias* HERSCHELIA CELESTIS: *T. T.* We are not aware that this Orchid has ever been flowered in Europe. Our correspondent would be glad if any one could tell him how he managed it, as it has been unsuccessful with two parcels of tubers, and is now trying a third.

FUNGUS: *C. C.* The fungus you forward is not a Truffle, but the young state of the Stinkhorn (Phallus impudicus), a fungus with a most disgusting odour.

GLOXINIAS: *Cliftonia.* We cannot assign any reason for the flowers rotting off. Do not keep them too wet at the roots or in too moist an atmosphere.

GRAPES AND PEACHES: *F. W.* The dark coloured Grapes are affected with the well-known rust, which, it is believed, arises from sudden chills when they are very tender; the white Grapes have the ordinary spot to which they are so subject. The Peach is attacked by an undescribed species of Gleosporium. The sooner you gather the affected Peaches and burn them the more likely you are not to have a recurrence of what may prove a formidable enemy. *M. J. B.*

NAMES OF PLANTS: *A. A. Ferguson.* 1, Lysimachia nemorum; 2, Lamium Galeobdolon; 3, Sherardia arvensis.—*A., Hayes.* Ajuga reptans.—*F. K. Hardy.* Berberis dulcis. Remove the side suckers or layer it.—*L. Hartley.* Dendrobium amœnum and Cattleya intermedia.—*H. J. C.* We have no means of identifying specimens of Myrtle Ghost Orchis.—*A. M.* Epidendrum cochleatum, the grandfather of the genus.—*H. H. I.* Pteris aquilina; 2, Adiantum Capillus-Veneris; 3, *A. assimile*; 4, Selaginella Mertensii; 5 and 6, *S. uncinata*, a species of garden; 7, Pteris Herbsii aureoreticulata.—*J. Scott.* The Acer is a slightly different variety of A. polymorphum to palmatum, being incised at the edges more than that variety—*W. J.* 1, Sedum acre; 2, Sedum glaucum; 3, Rhinanthus sallcornioides; 4, Frunus Padus.—*Elstree.* Arabis hirsuta, Melica uniflora, Luzula pilosa, Carex remota. The numbers have been accidentally misplaced.—*W. T. T.* We have mislaid your specimen, but think it was Pennisetum longistylum.

PLANTS FOR CONTRAST: *Doncastriensis.* We cannot advise you without some knowledge of the species you wish to plant. You had better consult some of the plans and arrangements of plants published in our number for May 12. You might get some papers of the colours of the plants, and arrange them according to taste as a guide to planting.

ST. KATHERINE'S LILY: *J. E. Haig.* The common white Lilium candidum.

VINE LEAVES: *Fruit Grower.* The affection is very common on Vine leaves, and consists in an abnormal growth of certain of the cells on the underside of the leaf. It does not appear to be injurious. It indicates, however, something wrong about the root action, which may require attention. It is more common in pot Vines than in those planted in the ground. *M. J. B.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED:—Messrs. Read & Co. (35, Regent Circus, Piccadilly, London), Illustrated Catalogue of Garden Watering Machines, &c.—Messrs. M. C. Alkemade & Son (Zeestraat, Noordwijk-Binnen, Haarlem, Holland), Catalogue of Dutch Flower Roots and Bulbs.—Messrs. R. Van Til & Co. (Hillegom, near Haarlem, Holland), Wholesale Catalogue of Dutch Flower Roots.—Messrs. Leonard Roozen & Sons (Overveen, near Haarlem, Holland), Wholesale Catalogue of Dutch Flower Roots.

COMMUNICATIONS RECEIVED.—J. E. D.—J. H.—J. L. D.—G. E. L.—B. M.—R.—T. T.-Exhibitor.—W. D. (we really cannot interfere in the matter)—J. R. J.—J. R.—A. D. M.—R. D.—P. S.—J. S. Lyon (Book-keeper, consult your own convenience).—E. Paris (many thanks)—J. T. B.—W. T. T.—C. T. (best thanks).—J. P.—A. (many thanks).—E. J. N.

Markets.

COVENT GARDEN, June 7.

Business has been brisk during the week, and all classes of goods have been well cleared. English Pines will now be in demand, those coming from the Azores falling off very much. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apricots, per box	2 0	4 0	Oranges, per 100	8 0	16 0
Apples, per bushel	2 0	5 0	Peaches, per doz.	0	8 0
Cherries, per box	2 0	3 6	Pears, per doz.	12 0	—
Cobs, per lb.	0	0	Pine-apples, per lb.	2 0	16 0
Grapes, per lb.	3 0	8 0	Strawberries, p. oz.	0	6 0
Lemons, per 100	4 0	10 0	Figs, green, each	0	9 1 6
Melons, each	1 0	2 0			

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per bush.	4 0	—	Herbs, per bunch	0	2 0 4
— Eng. Globe, doz.	4 0	6 0	Horse-Radish, p. bun.	4 0	—
Asparagus, per bundle			Leeks, per bunch	0	2 0 4
Giant, per bunch	8 0	20 0	Lettuces, Cos, p. doz.	6 0	—
— English, p. bun.	2 0	6 0	— English, score	2 0	—
— Fr., natural bun.	1 6	3 0	Mint, green, bunch	0	6 —
— Sprue, per bun.	1 6	—	Mushrooms, per pott.	1 0	2 0
Beans, French (new),			Onions, per bush.	10	0 15 0
per 100	1	3 0	— young, per bun.	0	6 —
Beet, per doz.	1 0	2 0	Parsley, per bunch	0	0 —
Cabbages, per doz.	1 0	2 0	Peas, green, per lb.	0	2 0 —
Carrots, per bunch	0 7	0 10	— shelled, per qt.	4	0 —
— New French, per			Radishes, per bunch	0	1 0 3
bunch	1	2 6	— Spanish, per doz.	1	6 —
Cauliflowers, per doz.	2 0	6 0	— New Jersey, doz.	2	0 —
— Eng., new, doz.	8 0	12 0	Salads, per punnet	0	1 0 3
— French, doz.	4 0	6 0	Salsafy, per bunch	1	0 —
Celery, per bundle	1 6	2 0	Shallots, per lb.	0	6 —
Chilis, per 100	1 0	—	Spinach, per bushel	1	0 —
Cucumbers, each	0 4	1 6	Tomatos, per doz.	3	0 —
Endive, per doz.	1 0	2 0	Turnips, per bundle	0	4 0 6
— Batavian, p. doz.	2 0	3 0	— new, per bundle	1	0 1 6
Garlic, per lb.	0	6 —	Vegetable Marrows,		
Gooseberries, green,			each	1	0 —
per quart	0	8 1 0			

POTATOS (old). — Kent Regents, £7 to £8; Essex Regents, £6 10s. to £7; Kidneys, £10 per ton.—(New)—Jersey Kidneys, 20s. to 30s. cwt.; Rounds, 14s. to 20s. cwt.

CUT FLOWERS.

	s. d.	s. d.		s. d.	s. d.
Azaleas, 12 sprays	0 6	2 0	Pelargoniums, 12 spr.	0 9	2 0
Blue Bells, 12 bunches	1 0	2 0	Primroses, per doz.	1 0	2 0
Bouvardias, per bun.	1 0	4 0	Primula, double, per		
Calceolaria, p. bunch	1 0	2 0	doz.	1 0	2 0
Camellias, per doz.	2 0	4 0	Ranunculus, 12 bun.	4 0	9 0
Carnations, per doz.	1 0	4 0	Roses, indoor, per		
Eucharis, per doz.	6 0	12 0	dozen	1 6	12 0
Gardenia, per doz.	4 0	9 0	Rose de Meaux, 12		
Heliotropes, 12 spr.	0 6	1 0	bunches	0 9	24 0
Lily of Val., 12 bun.	6 0	18 0	Sprays, 12 sprays	0 6	1 0
Mignonette, per doz.	1 0	2 0	Stephanotis, 12 spr.	2 0	9 0
Myosotis, 12 bunch	3 0	12 0	Stocks, 12 bunches	4 0	9 0
Narcissus, double, 12			Tropæolum, 12 sprays	0 6	1 0
bunches	4 0	18 0	Tulips, per dozen	0 6	2 0
Narcissus, Pheasant's-			Violets, p. doz.	4 0	9 0
eye, 12 bunches	3 0	9 0			

PLANTS IN POTS.

	s. d.	s. d.		s. d.	s. d.
Azaleas, per dozen	24 0	60 0	Hydrangea, per doz	12 0	30 0
Balsams, per dozen	4 0	12 0	Lilums in var., each	1 0	10
Begonias, per doz.	6 0	12 0	Lily of Valley, each	0	1 6
Bouvardias, do.	18 0	24 0	Mignonette, per doz.	5 0	9 0
Calceolarias	12 0	24 0	Myosotis, per dozen	4 0	12 0
Cineraria, per doz.	6 0	18 0	Myrtles, do.	3 0	9 0
Clematis	24 0	60 0	Palms in variety, each	3 6	21 0
Cockscombs, per doz.	6 0	12 0	Pelargoniums, p. doz.	12 0	36 0
Coleus, per dozen	3 0	9 0	— scarlet, per doz.	4 0	9 0
Cyperus, do.	6 0	12 0	Retinuas, per doz.	9 0	24 0
Dracæna terminalis	30 0	60 0	Rhodanthe, per doz.	6 0	12 0
— viridis, per doz.	18 0	24 0	Richardia æthiopica,		
Ferns, in var., p. doz.	6 0	30 0	per doz.	0 0	18 0
Ficus elastica, each	2 6	15 0	Roses, per dozen	24 0	60 0
Fuchsias, per dozen	9 0	18 0	— fairy, per dozen	9 0	18 0
Heaths, variety, doz.	12 0	60 0	Salvias, per doz.	12 0	30 0
Heliotrope, per doz.	6 0	18 0	Valotta purpur., doz.	12 0	18 0

SEEDS.

LONDON: *June 6.*—More disposition to speculate in Clover and Trefoil seeds is now shown, and for the choicer qualities, especially, there is an improved inquiry. For the comparatively few parcels which have, as yet, changed hands, full rates have been obtained; and a more healthy feeling, generally, is observable. There has been some business doing this week in new French Trifolium, the delivery to be made early in August, and the quality to be fair average of the season. The Canary seed trade is without change, in the almost complete absence of inquiry quotations go against holders. A revived demand has during the last few days sprung up for spring Tares—by sowing at intervals farmers are, of course, enabled to secure a successive supply of green food. There is an improved sale for Rapeseed, and the late advance is well supported; the same can also be said of white Mustard. Blue Peas are now getting into narrow compass. In feeding Linseed there is no change. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade at Mark Lane on Monday was quiet. As regards Wheat, there was little disposition shown to operate, and prices obtained last week for certain samples on Friday last was entirely lost. For Barley quotations drooped. Malt was steady without particular change. Oats met with a moderate inquiry where no improvement was asked upon the rates of Monday last. The lower qualities of Oats were perhaps rather dearer than last week. Maize supported last week's prices, while there was little or no change in Beans, Peas, or flour.—Trade on Wednesday, owing to favourable weather and other reports, was very quiet, dealers and millers buying only for immediate wants, in expectation of more advantageous terms. The supply of English Wheat was very light, and of foreign nothing pressing for sale; prices consequently remain unchanged. Flour was written nominally the same as on Monday. Barley was dull as regards feeding sorts; fine weather for green crops and the cheapness of Maize having set against this article. Malting sorts were firm. Beans upheld their value. Peas were quiet and unchanged. Maize continued unsettled.—For Oats, whilst prices were not quotably lower, the tone was dull.—Average prices for the week ending June 2:—Wheat, 60*s.* 11*d.*; Barley, 36*s.* 2*d.*; Oats, 27*s.* 2*d.* For the corresponding period last year:—Wheat, 46*s.* 4*d.*; Barley, 32*s.* 7*d.*; Oats, 28*s.*

CATTLE.

At the Metropolitan Market on Monday there was a considerable increase in the supply of beasts, with an adequate demand. About 900 Canadian arrived in good condition. The attendance of purchasers was large, owing to the withdrawal of the prohibitory order respecting the movement of cattle. The supply of sheep was equal to the demand, and prices did not advance. The trade for lambs and calves was firm. In the absence of choicest beasts only being in request. Quotations:—Beasts, 4*s.* 4*d.* to 5*s.* 2*d.*, and 5*s.* 6*d.* to 6*s.*; calves, 5*s.* 6*d.* to 6*s.* 8*d.*; sheep, 4*s.* 10*d.* to 5*s.* 4*d.*, and 6*s.* to 6*s.* 4*d.*; lambs, 7*s.* to 8*s.*; pigs, 4*s.* to 5*s.*—Arrivals of stock on Thursday were small, which circumstance, with scanty supplies in the dead meat markets, caused a rather better trade, with some slight improvement in prices. In the best market Shorthorns were dull, in some cases rather exceeded. Sheep and lambs cleared off at full to slightly dearer rates. Calves brought full value. Of pigs there were none offered.

HAY.

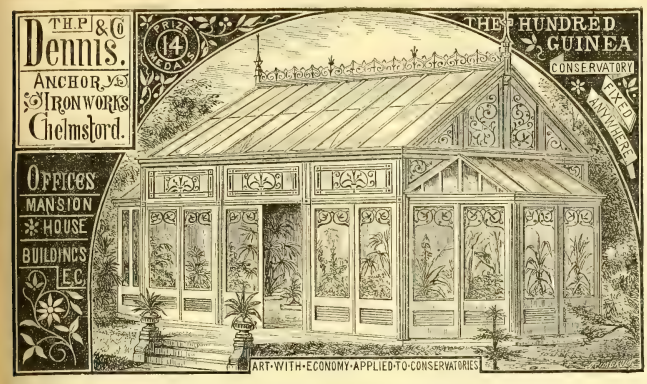
At the Whitechapel market on Tuesday, with supplies not so heavy, and a steady demand, prices ruled very firm. Quotations:—Clover, 118*s.* to 128*s.*; inferior, 95*s.* to 115*s.*; hay, 115*s.* to 124*s.*; inferior, 75*s.* to 110*s.*; straw, 42*s.* to 57*s.* per load.—On Thursday supplies were moderate, the trade continuing steady. Quotations:—Clover, best, 118*s.* to 128*s.*; inferior to good second, 95*s.* to 115*s.*; hay, best, 115*s.* to 124*s.*; inferior to good second, 75*s.* to 110*s.*; and straw, 47*s.* to 57*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 128*s.* to 135*s.*; inferior, 95*s.* to 112*s.*; superior Clover, 132*s.* to 140*s.*; inferior, 112*s.* to 120*s.*; and straw, 57*s.* to 60*s.* per load.

POTATOS.

From the Borough and Spitalfields markets reports of Tuesday we learn that the supply was very scanty, and meet trade dull. Quotations:—Victorias, per cwt., £10 to £12; other grades, £9 to £10; Regents, £7 to £10; English, £9 to 10*s.* to £10; Kocks, £7 to £8; German reds, £7 to £8; Belgian kidneys, £7 10*s.*; Maltese new sprngs, £16 to £18; ditto winter, £10 to £12; Lisbon, £12 to £14 per ton.—The arrivals in London from abroad last week were—from Antwerp, 28,838 bags; Hamburg, 6746; Boulogne, 938 sacks; and from Leghorn, 12,207 packages, besides large quantities from other ports.

COALS.

At Monday's market "best" house coals declined 1*s.* per ton in value. "seconds" remaining unaltered. Quotations:—East Wylam, 18*s.*; Holywell Main, 18*s.*; Walls End—Lambton, 18*s.* 6*d.*; South Hetton, 19*s.* The quotations of Wednesday are as follows:—Walls End—Hetton, 20*s.*; Hetton Lyons, 17*s.* 9*d.*; Hawthorn, 19*s.* 9*d.*; Lambton, 18*s.* 6*d.*; South Hetton, 19*s.*; Tunstall, 16*s.* 9*d.*; South Hartlepool, 17*s.*



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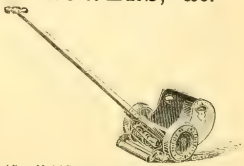
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Royal Prize Medal Patent "Anglo" American Lawn Mower.

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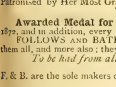
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FOLLOWS AND BATE here abstain from enumerating in detail the various good points "claimed" for other Machines, and content themselves with saying that their Lawn Mowers possess them all, and more also; they therefore solicit the favour of an application for one of their CATALOGUES, with Testimonials, BEFORE PURCHASING.

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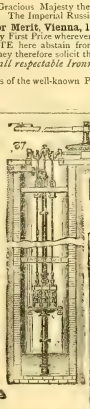










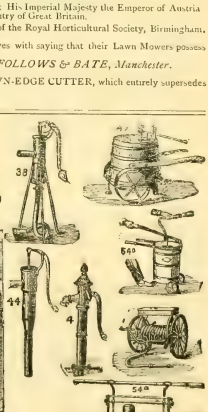


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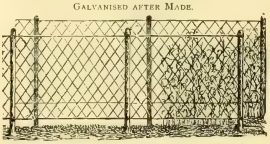
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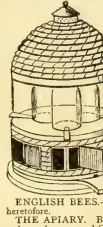
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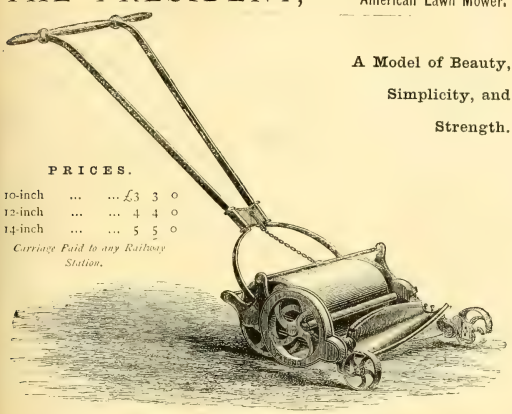


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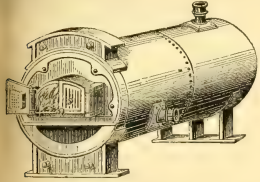
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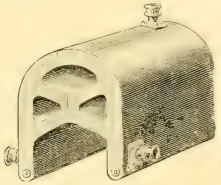
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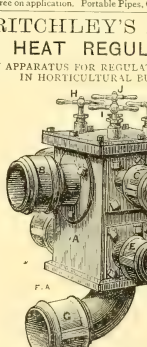
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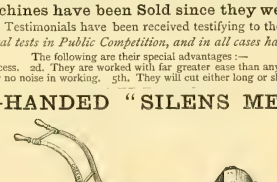
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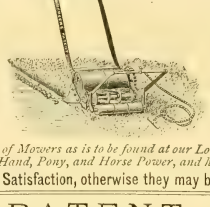
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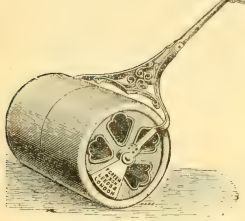
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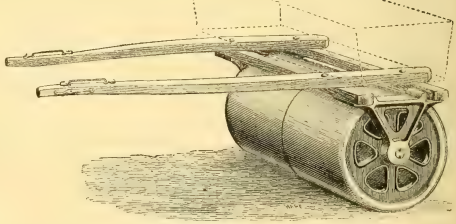
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C. Fasenbergdel.

CYCLAMEN PERSICUM COMPACTUM MAGNIFICUM

SUPPLEMENT TO THE GARDENERS' CHRONICLE.

POPULAR GARDENING.

THERE are certain plants among our popular favourites which seem to assert their claims to general favour in a manner which is quite irresistible, and, moreover, quite apart from the influences of fashion. Fashion, indeed, may set its mark upon flowers which, apart from such approval, would be looked upon as ugly, or as nearly ugly as flowers can ever become; but there is no mistaking those which seem to have been selected by Nature herself as examples of her beauty and resource. Such a one, for instance, is the beautiful Astilbe barbata, the "Spiræa japonica" of popular garden nomenclature, with its graceful, pure white spikes rising straight up from the centre of the elegant, spreading, dark green foliage; and other examples are furnished by the Cyclamens, of which it is our present intention to speak.

The order to which the Cyclamens belong is one which, although small, contains a large number of ornamental plants. Such, for example, are the Primroses, British and foreign—from our own Primrose and Cowslip to the Chinese P. prænitens, the Himalayan P. denticulata, and the majestic P. japonica—not forgetting all the varieties of Polyanthus and Auricula, which were at one time much more popular than they are at present. Then we have the North American "Shooting Stars" (Dodecatheon), the various Loosestrifes (Lysimachia), including the "Creeping Jenny" (L. Nummularia), which is so frequent and so graceful an ornament of London balconies; Pimpernels, "of sorts," as the old writers would say; the Water Violet (Hottonia) and Winter Green (Trientalis). All these are furnished by the Primrose tribe (Primulaceæ), which is thus shown to have many and varied claims upon our admiration.

It is not because they are new that Cyclamens are such important favourites among our spring flowers. Two species were in cultivation in Gerard's garden as long ago as 1596, namely C. hederæfolium and C. coum, while C. persicum was brought from the Island of Cyprus by Sibthorp in 1731. We follow Mr. B. Daydon Jackson in his identification of Gerard's species: Aiton, however, considered his plants to have been C. hederæfolium and C. europæum, while he assigns the same date of introduction to C. coum as to C. persicum. Parkinson, in his *Paradisus*, enumerates and figures ten kinds of Cyclamen, some of which are mere varieties in colour. Among them, however, is a double variety, described as being "of Antioch," which is very rarely met with at the present day, though examples of it have lately come under our notice, and it has been described in these columns.

According to recent authors eight species of the genus are to be recognised, being natives of Central Europe, West Asia, and the Mediterranean region, in which North Africa is, of course, included. C. hederæfolium



FIG. 1.—SPECIMEN PLANT OF CYCLAMEN PERSICUM (ABOUT HALF NATURAL SIZE), DRAWN FROM A PLANT IN THE COLLECTION OF MR. HENRY LITTLE.

was at one time regarded as a British plant, but the balance of evidence tends to show that even if still found in the neighbourhood of Sandhurst, and Hawkhurst, in Kent, it is to be regarded rather as a naturalised than as a truly native species. It is not now, however, so frequently met with in cultivation as its merits deserve. This species, indeed, is not as handsome as C. persicum, and its flowering time is very different, as the blossoms appear from August to the end of October ; they are purplish red or pure white, and several varieties are occasionally met with in gardens. It is a hardy species, doing well on rockwork, in borders, or in woodland walks.

C. persicum, the Cyclamen *par excellence*, is a more tender species, which must be raised in warmth, and requires a certain amount of care. Of this most lovely plant there are many varieties, passing from the purest white to a rich deep red-purple ; few of them, however, are prettier than the common form, in which the base of the flower is of a rich red-purple hue, and which is moreover deliciously and delicately fragrant. It is a native of Lebanon and other parts of the east, and is deservedly the most popular representative of the genus.

The round-leaved C. coum is a pretty and attractive plant, with a neat habit and pretty bright red-purple flowers, which are much shorter than those of C. persicum ; this is a spring bloomer. There is a handsome Algerian species (C. africanum) which is remarkable for its large leaves, and which flowers in spring ; while the very pretty little C. cyprium, a recent introduction, has the habit of C. persicum, which it also resembles in the colour of the flowers.

The ugly English name of these plants—Sow-bread—is an equivalent not only of the old Latin name panis porcinus, but also of the French pain du porceau, and the Italian pane porcino. It is stated that pigs are very fond of the tubers in the districts where Cyclamens abound, and they are indeed said to be the food of large herds of swine in Italy and Sicily. The tuber of C. europæum is purgative in a fresh state ; and it is said that the juice of the tuber of one species (C. africanum) is used by the natives of Barbary for poisoning their arrows. The Cyclamen was also formerly endowed by the credulous with another remarkable and dangerous property ; and readers of Gerard will remember the good old herbalist's precaution "least any woman should by lamentable experiment finde [his] wordes to be true." With this trifling exception, however, the Cyclamen is singularly devoid of popular history ; from which we may perhaps conclude that the beauty of its appearance was sufficient to render it a general favourite, without the additional attraction of other properties, real or imaginary.

CULTIVATED CYCLAMENS.

WHEN the horticultural records of the third quarter of the present century are carefully analysed, it will be observed that among many flowers brought forward several stages in the pathway of improvement, the Cyclamen persicum holds a somewhat important position. And not only has this improvement been seen in the production of larger flowers, and these, too, of brilliant hues, undreamt of a quarter of a century ago ; but in respect to its cultivation there has been a marked advance. The requirements of the Cyclamen are better understood, and the cultural process is more intelligently apprehended. Perhaps human eyes never before looked upon such a marvellous exhibition of this beautiful autumn and spring flowering plant as was presented at the spring show at the Royal Aquarium at Westminster on April 12, 1876, when all the leading growers were found in competition, and the productions were in the highest degree excellent. Plants, too, three and four years old, were of great size, finely grown, and loaded with beautiful flowers in such numbers as to give fit occasion for the rapt expression of the poet :—

"How lovely are the common things of God !"

It was about the year 1731 that Cyclamen persicum was introduced to Britain from Cyprus, and it would appear that three varieties were received, namely, albiflorum, the white form ; inodorum, the scentless variety ; and odoratum, the scented kind. How it fared after it was introduced—whether any attempts were made to cross these forms, or what success attended the efforts of the early cultivators, it would be difficult to say. Perhaps it would not be unsafe to hazard the opinion that the Cyclamen was not very well understood, and that ill success was the rule with cultivators rather than the exception. Some of the earlier floricultural works teem with inquiries for information as to the successful cultivation of the Cyclamen, from growers who had been disappointed in their productions ; and it is noticeable that but little information was forthcoming.

In the first volume of the *Florist*, published in 1848, a writer on the Cyclamen remarks :—"Although this beautiful bulb has been upwards of a century in our possession, yet we do not seem to have made that progress in its cultivation which its merits would give us reason to expect." The difficulty seems to have been to flower it, for there were frequent complaints that the Cyclamen did not bloom. It was also considered a proper practice not to repot frequently, and the late Mr. John Dobson, of Isleworth, a man of mark in floricultural circles in those days, writing to the *Florist*, in September, 1848, stated, "Mine (Cyclamen plants) are now starting into growth after their season of rest, and look very promising. This makes the fourth year since they were last potted. I merely take the green surface off the top, and replace it with a little fresh soil to give the pot and plant a neater appearance."

IMPROVEMENT OF THE FLOWER.

It must not be supposed that the fine varieties of the Cyclamen now in course of cultivation are wholly the products of the past few years. A quarter of a century ago Messrs. E. G. Henderson & Son, of the Wellington Road Nurseries, were among those who took the Cyclamen in hand, and were successful in obtaining new and improved forms. Then came a kind of pause, or if the work was still going on, the results were not recorded, and the Cyclamen was only occasionally produced at the leading shows. Then Mr. J. Wiggins, of Isleworth, took up the cultivation of the Cyclamen, and was so successful that to him may be attributed a good deal of the notoriety the flower has achieved in recent years. Mr. Wiggins, and others working contemporaneously with him, not only succeeded in obtaining a larger size in the flowers through improved cultivation, but they originated forms displaying new colours, a greater breadth of petal, and a general advance towards that high degree of quality of which growers can now boast. Mr. Walsh, of Hillingdon ; Mr. Clarke, of Twickenham ; Mr. Edmonds, of Hayes ; Mr. Egerton, of Twickenham ; Mr. James, of Isleworth ; Mr. Stevens, and, later, Mr. H. B. Smith, of Ealing ; and, last but not least, Mr. H. Little, of Twickenham, with others too numerous to mention, have all materially aided this development, and helped to bring the Cyclamen to such a surprising degree of perfection.

The production of high-coloured flowers has proved a most valuable contribution to contemporary floriculture ; these are surprisingly varied, and some of the most brilliant hues. Rich plum-coloured flowers approaching violet, purple, and blue ; and bright flowers approaching carmine, red, scarlet, and crimson are now frequently seen ; and altogether they are now very much earlier in the season than they were to be had years ago. Tipped, margined, and flaked flowers can now be seen, with the colours in charming combination ; and some of the pure white flowers are most delicately beautiful, as well as large in size and of the finest form.

It is owing, no doubt, to the improved system of cultivation now followed, that the Cyclamen is to be had much earlier in bloom than it was a few years ago. Indeed, a most successful amateur cultivator, Mr. B. Hooke, of Bradfield, writing to us a short time since, states, "I most earnestly advocate the opinion that the Cyclamen is not a flower for March and April only, but for October, November, and December, and onwards ; to be in bloom when there are fewest flowers in the greenhouse or conservatory." In a good and well-grown collection the Cyclamen can be had continuously in bloom for six months in the year, and longer.

Like most other plants, the fine development of a batch of Cyclamen depends mainly, if not altogether, on its cultivation, when a good strain is in the hands of a grower. Those who grow the Cyclamen so finely round London have to a considerable extent abandoned the old customs formerly observed, viz., the period of rest during summer—rest in the sense of withholding water for weeks, and literally roasting the plants in the sun—and the mode of propagation by dividing the bulbs. Now the Cyclamen is kept growing for a good portion of the year, and when it may be said to be at rest is preserved in a cool place and supplied with water, to keep the soil moist about the roots. The production of stock is depended on from seed ; in the dividing of the corms a great risk is run of destroying them outright, and cultivators state that any particular variety will be pretty certain to reproduce itself in some part of its progeny ; and this fact has found abundant illustration in practice.

THE CYCLAMEN AS A WINDOW PLANT.

One of the best amateur cultivators of the Cyclamen that we are acquainted with thus writes concerning it :—"The property of the Cyclamen consists in its being one of the most easily grown of any of our winter favourites. It has a compact habit, lively foliage, exquisite fragrance in the flowers of some of its varieties, long continuance of bloom, and to these must be added its greatest recommendation, viz., being of all flowering plants the best adapted to indoor decoration. I have frequently had it in my sitting-room, and with ordinary care it will flourish as well, or almost as well, as in a conservatory. The only attention it demands is to have its leaves brushed over every morning with a soft camel's-hair brush dipped in a little luke-warm water." Indeed, the Cyclamen makes an admirable window plant, as many cultivators can testify.

The same writer thus pictures a good specimen Cyclamen, and the fact that what he here sets forth can be accomplished, illustrates, in a remarkable manner, the improvement in the cultural process as compared with that of a quarter of a century ago. "I consider," he states, "that the Cyclamen at fifteen months' growth ought to be at least 1 foot in diameter, having a dense mass of thick variegated leaves standing almost erect, and the flowers not more than 2 or 3 inches above the foliage. The flowers themselves should be broad in the petals, about 2 inches in length, nearly round at the points, and having a slight regular twist in each segment of the corolla." It is a fact that such plants can be produced at the age of fifteen months.

HOW TO GROW CYCLAMENS.

To effect this the seed is sown almost as soon as it is ripe—at the end of July or early in August : the earlier the better. It is sown in shallow pans or in pots in a light rich sandy soil, and placed in a house or frame where there is some bottom-heat, in a temperature of about 65° or thereabouts. By the end of November the seedling plants are large enough to be pricked off into 60-sized pots, a dozen or so of plants in a pot, and still kept in a warm moist atmosphere. During the winter the young seedling plants, whether remaining in the seed-pans or potted off, require to be kept in a warm house, and near the glass, where the temperature will not fall below 45°. It is to be remarked that it is necessary that the young plants should be screened from the effects of hot sun during the summer by means of some material placed over the glass, which, while it will exclude the hot glare, will not interfere with the passage of light. The cultivator will do wisely to push on his plants as quickly as possible, and to do this he should pot off singly into small 60-pots as many as he can that are large enough to be so treated. During the dead of the winter but little growth is made, but as soon as the days lengthen a little, the plants make speedy progress, especially if the weather becomes warm.

In March and April the plants potted in the autumn will require a shift into a larger sized pot, and those yet requiring to be potted off from the store-pots should be so treated, and all put into a frame with a little bottom-heat for a few weeks ; then about the end of May put into a cold frame facing south-east, kept close for a few days, but eventually fully exposed during the daytime.

While the plants occupy this cold frame they should not be too much crowded. Space between them is absolutely necessary, so that the leaves can be well-developed, otherwise they will get a drawn appearance. One great desideratum in a well-finished Cyclamen is to have the habit of growth dwarf and compact, and at the same time bold and vigorous, so much does the general symmetry of the plant depend on a proper growth. Air, shading, and moisture, have much to do with this.

If the weather be hot during the months of June, July, August, and September, a sprinkling overhead

should be given once in the forenoon, besides the requisite watering of the soil about the roots; but it should be done with a watering-pot having a fine rose, otherwise the foliage will become bent down by the weight of the water, and the leaves will acquire a drooping rather than an erect habit; another necessary caution is, not to close up the lights for the night until the leaves of the plants are quite dry, as that is apt to induce a lanky style of growth.

The most forward of the plants treated in this way will come into bloom in October,—a great advantage, as it is a time of year when the greenhouse and conservatory is somewhat spare of bloom, and when the life and elegant floral expression of the Cyclamen will be found of great decorative value.

In the case of young plants, the prevalent system of culture may be said to embrace one principle, namely, never to allow the Cyclamen entire rest, but always to keep it growing till it flowers. This is how it is that such fine plants can be had in bloom in fifteen months from the time of sowing the seed. The application of this principle has done much to produce that fine character of development now seen at spring exhibitions, and to make it possible for almost any one having the convenience, to grow this plant in fine condition.

It may be remarked that, when the Cyclamen is getting well into bloom, a little weak liquid manure can be applied with great advantage, and the head of flowers will be both aided and prolonged by means of this timely stimulus.

Some of our growers bloom plants till they are five and six years of age, and those who have had an opportunity of seeing the fine plants produced at the spring shows, or in Mr. H. Little's collection at Hillingdon, or that of other cultivators, will remember the size of these plants, and their wonderful heads of flowers. Plants can then be retained till they are a few years old; and the usual custom is as soon as they have done blooming, they are placed in a cold frame in a shady position, but not allowed to suffer from drought. The plants are rested, but the bulbs are not permitted to become wholly dry and shrivelled. According to the earliness or lateness of the time when the plants flowered are they re-potted,—say in July, August, or September, if they flowered in October, November, or December: they are then placed in a cold frame, and kept close for two or three weeks. They soon push into growth, and begin to form their flower buds.

A good soil for the Cyclamen in all stages of its growth is one composed of two-fifths coarse leaf mould, the same quantity of a light soft loam, one-fifth dry cow-dung, and sufficient fine white sand to keep it from running together. Some cultivators use less leaf-mould and more loam. The Cyclamen loves a rather open light rich soil, in so far as a plant may be said to show preferences. The cow-dung should be collected in fine weather, when it is somewhat dry, and put aside ready for use when wanted; and it is advisable, in all cases where called into requisition, after breaking it up small, to pour some boiling water over it to kill any insects that may have found a lodgment there, and also seeds that might become troublesome.

Formerly, in potting, it was deemed advisable to leave the bulb almost on the top of the soil. Now, the advice invariably given by successful growers is to bury it almost entirely in the soil, as it has been found that roots spring from all parts of the bulb, and this is found of great advantage to the plants.

It is observed that the yearly re-potting is now followed by growers. The old system of leaving the bulbs in the soil for three or four years undisturbed, as well as other fallacies connected with the culture of the Cyclamen, are quite exploded.

The Cyclamen is a warmth-loving plant, especially during the autumn, winter, and spring; and some who have experienced failures, have done so because the plants were grown in too cold a temperature.

Those who grow anything like a collection of Cyclamens take care to have the plants in a house by themselves. Mr. Little's house at Twickenham, was an excellent illustration of what a Cyclamen house should be; span-roofed, narrow, low, and with a rather high level stage on either side, so as to bring the plants as near the glass as possible. It is difficult to grow Cyclamens well when mixed with other plants; but if attempted they should have the most favourable position that can be afforded them; light, airy, warm, and near the glass.

Insects and Diseases.

The Cyclamen is liable to attacks of greenfly which infest its young leaves and cluster round the flower buds close about the crown of the corm. A moist warm atmosphere assists to keep them in check, and an occasional fumigation with tobacco-smoke, or a washing with Fowler's insecticide, will speedily cleanse them of the enemy.

Old roots are liable to suffer through decay from a kind of rot, the attacks of insects, &c. This rot will affect the bulbs near the level of the soil, and soon eat away a good portion of them. When they are re-potted they should be carefully examined, and even washed with a solution of Gishurst compound, or some other cleansing agent also destructive to insect life. Any labour so expended is rewarded by a decrease of failures.

A NEW RACE OF CYCLAMENS.

Of late years there has been originated a distinct large-flowered form of Cyclamen, which has been appropriately termed giganteum. The flowers are large and well formed, the florets long and broad, and the foliage and habit of growth in keeping with the unusual development found in other parts of the plants. In 1870 Mr. Edmonds, of Hayes, introduced giganteum, a form of great beauty; and in the spring of the present year a variety called magnificum, the subject of our coloured illustration, and for the opportunity of figuring which we are indebted to that gentleman. Mr. Clarke, Twickenham, also produced superbum, a very fine variety, in 1873. The bold character of these types single them out for especial notice, and they are originating a race that will be of great value for decorative purposes. The varieties will no doubt extend as each season's seedlings come into bloom, and it may be expected that the large-flowered race will ere long embrace the range of colours found in the earlier and smaller flowered types.

The Cyclamen is a free seeder; and from the peculiar construction and position of the flowers, they can hardly help fertilising themselves. In saving seed, the cultivator should select as seed-bearers, plants having compactness of habit, allied to finely-coloured flowers, possessing broad, stout florets; or a plant having flowers possessing some of these qualifications should be crossed with the pollen of other good flowers. Mr. Clarke, Mr. Edmonds, Mr. Little, and Mr. H. B. Smith have all done wonders in the direction of producing high-coloured flowers of a fine shape by judicious crossing. When the flowers are fertilised they are carefully marked, and screened from the delicate attentions of bees and other insects.

How to Raise New Varieties.

"The best time," writes one who has been greatly successful as a cross-breeder, "to fertilise the Cyclamen is as early in March as possible, but it may be done as late as April, although I consider the later it is done after the first week in March the less chance you have of obtaining the wished-for results, as all flowering plants are more or-less fertilised and hybridised by insects and other agents in the spring and summer months. While the sun shines is the best time to cross the Cyclamen, and it should be done in the following manner:—Having selected a plant as the male parent, possessing good-shaped flowers, take hold of the stalk between the left finger and thumb, just below the flower, and with the right thumb flip the side of the bloom, and you will find the pollen lodged on the thumb-nail. Then apply this pollen to the blooms of the plant that has a good habit and a stiff, well-marked foliage, which should in all cases be indispensable in the seed-bearing parent. In performing this operation some care is required, as the parts of the flower are extremely delicate, and will not admit of much rough usage. The pollen should be gently applied to the stigma, and it will be found that at least a small portion has adhered, which is all that is required. I do not think it advisable to cross the ordinary form of C. persicum with a deep-coloured flower, except to obtain variety; but endeavour to keep them distinct, and improve each variety separately. However, if you have a flower combining good shape and high colour, but nothing else to recommend it, use this as the male parent, and cross with it another coloured flower possessing good dwarf foliage, and the result in most instances will be an improved habit, combined with a first-rate bloom. Endeavour to cross scented flowers, so as to get a heightened perfume. Not more than six flowers, on even a large plant, should be allowed to seed, for if a greater number be retained the seed will be small, and the plants obtained from it in all probability be wanting in that vigour which is at all times an important item in the raising of seedlings. After fertilising the six best blooms, all others should be at once removed, and the plants put in a rather shady part of the greenhouse, but still having as much light as possible, and no place can better suit them than a shelf protected from the hot sun by woodwork, about 1 foot or 18 inches from the glass."

Some have contended that the practice of the Floral Committee of the Royal Horticultural Society in giving First-class Certificates of Merit to fine varieties of Cyclamen on the ground that any particular one cannot be propagated. This is altogether beside the question, even apart from the fact that cultivators have demonstrated that a particular variety will to some extent come true from seed. Any one who is successful in improving any particular flower deserves that his work should be recognised, and that entirely apart from commercial or other considerations. The highest recognition of the services of a raiser is found in awarding First-class Certificates to his productions. Even if it were certain that a new plant of high-class quality could not possibly yield any increase, that is no valid reason why a First-class Certificate should be withheld if deemed worthy of it; and, slightly altering a striking passage in the works of Fichte, it may be truthfully set forth that "The peculiar nature of the florists' occupation consists in this—that science, and especially that side of it from which he conceives of the whole, shall continually burst forth before him in new and fairer forms. Let this fresh youth never grow old within him; let no form become rigid and fixed; let each sunrise bring him new joy and love in his vocation, and larger views of its significance."

Certificated Varieties.

The following varieties of Cyclamen persicum have received First-class Certificates of Merit:—

1870. giganteum (Edmonds)
grandiflorum (Edmonds)
kermesinum (Welch)
purpureum (Little)
1871. Queen of Crimsons (Little)
Snowflake (Little)
1872. fimbriatum (Wiggins)
1873. giganteum superbum (Clarke)
White Perfection (Little)
1874. Meteor (Little)
Prince of Purples (Little)
Rose Queen (Little)
1876. Purple Gem (Little)
1877. roseum grandiflorum (Edmonds)
giganteum magnificum (Edmonds)
White Swan (Edmonds)
Brilliant (Clarke)

This list may not be altogether complete, but it represents an attempt to give these flowers so distinguished in their chronological order.

It will be observed that one variety with fimbriated petals has been awarded a First-class Certificate. There is no reason why the fimbriated edge should be regarded as a disfigurement, or the smooth edge as the *ne plus ultra* of perfection. While the florist looks chiefly to the smooth edge as representing his ideal of beauty, the fimbriated edge—as in the case of the Chinese Primrose, for instance—is recognised by him, and there is no reason why the Cyclamen should not be so privileged. Let us have all the variety we can in this attractive and useful flower, and not fetter the hands of raisers by setting up inelastic and arbitrary rules. The *Properties of Flowers* might be revised with considerable advantage to floriculture.

HARDY CYCLAMENS.

The hardy species and varieties of the Cyclamen must not be altogether overlooked in this relation. There are C. europæum, the European species introduced from Switzerland in 1596, which bears reddish purple fragrant flowers. A form of this under the name of Peakeanum, from Holland, was awarded a First-class Certificate by the Royal Horticultural Society in 1865: C. coum, from the Greek Archipelago, flowering from December to March, the flowers pale rosy purple: C. hederæfolium, the Ivy-leaved Cyclamen, flowers pale pink rose, which is valuable for blooming in sheltered places during the autumn and winter months, especially under the shelter of tall trees; and C. vernum or repandum, from Southern Europe, blooming in April and May, the flowers pink changing to purple. Mr. James Atkins, of Painswick, Gloucestershire, a great lover of these hardy Cyclamens, has done something towards improving these beautiful forms, having raised, among others, C. coum album, awarded a First-class Certificate by the Royal Horticultural Society in 1868;

and C. Atkinsii, obtained from C. coum, hybridised with the pollen of C. persicum, the which, for profusion of bloom, fine colouring, and amplitude of beautiful leaves, is considered to surpass all the hardy Cyclamens.

Certain writers of a lugubrious turn of mind are found asserting that there is a marked decline in the cultivation of florists' flowers, whatever that statement may mean. It is much easier to generalise in this way than to substantiate the statement. Each generation of gardeners and lovers of flowers has its favourites, and there is a kind of unwritten fashionable rule in floriculture by which some subjects have their seasons of prominence and of apparent neglect. Some come to the fore while others fall aside, but are not wholly forgotten or altogether overlooked. Their day will assuredly come again in the onward progress of time. As long as there are beautiful flowers, there will be hearts full of love for them, and delighted natures to tend them and bring them to perfection; and some that fall aside from the highways of floriculture are never or very rarely indeed wholly lost, for up and down God's earth there are those who tend them for their own sweet sakes, caring for them till some day they shall surely emerge again into a fuller sunshine of more general solicitude, challenging and compelling attention in newer and fairer forms, and more eloquent manifestations of beauty. *R. D.*

FLORAL HYGROMETERS.—Artificial flowers called barometers are being now exhibited in the London opticians' shops. When exposed to sun and dry air the petals become deep blue; when the air is saturated with moisture they become pinky.

RAIKES' FAN-BOUQUETS.

THIS novelty in fans was designed about two years ago by the proprietor of the floral depot in Baker Street, Portman Square, and shortly afterwards he sent me the photographs, from which Mr. Worthington Smith has prepared the excellent engravings which accompany these notes. Upon my mentioning to Captain Raikes that I should like to say a few words in the *Gardeners' Chronicle* about the construction of these bouquets, he subsequently sent me one, the lasting powers of which were duly and practically tested at a ball, where its lightness and elegance were greatly admired, and where other bouquets of the ordinary type looked heavy and uncomfortable by comparison; in short, if bouquets had noses, and if noses had joints, there must have been a good many nasal dislocations on that occasion.



FIG. 2.—RAIKES' FAN-BOUQUET: REVERSE SIDE.

As might be expected from a glance at the engravings, Raikes' fan-bouquets are made in two parts, one being a flat arrangement of flowers and foliage, the other being cardboard covered on one side with satin and swansdown, and these two parts are fixed back to back. Let me first describe the latter part of the bouquet sent to me. The cardboard is a semicircle of 10½ inches diameter, of a firm consistency, without being hard, and one-eighteenth of an inch thick. To this is sewn a stout piece of galvanised iron wire, one end of which forms part of the handle of the bouquet. Around the curved edge of the cardboard there is a fringe, which consists of a quilling of white satin ribbon; the ribbon used is 2 inches wide, and the quilling, which projects 1¾ inches, is stitched on to the board. The stitching is covered by a strip of swansdown, which is also carried along the straight edge of the board. Upon the semicircular space within this belt of swansdown are sewn three puffs of the same satin-ribbon, and the interstices are filled with pieces of swansdown, so that the whole surface of cardboard is concealed.

The floral part of the bouquet (which I pulled to pieces) consisted of the following:—Five sprays of Dendrobium nobile, five blooms of Epiphyllum, three Rosebuds (Safrano), three pieces of white Lilac, three of Astilbe japonica, three spikes of Roman Hyacinth and three of Lily of the Valley, and a few Neapolitan Violets. The foliage behind the flowers consisted of fifteen fronds of Davallia tenuifolia laid upon a fan composed of five variegated Croton leaves, each stiffened with strong wire; the foliage amongst the flowers consisted of three small fronds of Adiantum farleyense and fifteen of A. cuneatum, of which last ten were dark green and five were light.

It would occupy more space than you could spare if I were to describe exactly how every flower was arranged; suffice it to say that almost every leaf and flower was wired, and that many had a little damp moss bound round each stalk. When I had released them of their wires the next day, I counted up thirty-seven Camellia wires, twenty-eight "stubbs," and fine binding wires innumerable.

It will have been observed that the back of the cardboard, and the back of the floral part, were both furnished with stout wires. By slightly curving outwards these two sets of wires, the semicircular edges of the two halves of the bouquet are brought into close contact as soon as the respective handles are tied together, and there is no need for any further

fastening. A bow and ends of white satin ribbon form the finishing touch to the handle, which consists mainly of wires covered over with white paper or common ribbon.

Inasmuch as no part of the bouquet was more than 4 inches thick, it proved to be much lighter in the hand than the engravings would lead one to expect, and much surprise was expressed by several who took up the bouquet at finding how light it was. Next to the advantage which this flat form of bouquet has over the common round form in its lightness, there is this important difference to a lover of flowers—that when the bouquet is laid down, not a single flower or leaf is bruised, injured, or put out of place.

Lastly, these bouquets pack and travel much better than round ones, each going into a pasteboard box made to fit it, and merely requiring the handle to be tied to the bottom of the box.

Not long ago, Mr, John Day, of Tottenham, was kind enough to send me a box of very choice Orchids, out of which I made my first attempt at this form of hand-bouquet, and the result was so eminently successful, that I shall never again willingly make another Cauliflower-headed one. In former years, when Orchids were less frequently seen than they are now, I have more than once enumerated in your columns the beautiful varieties which have graced many a flower vase from the rich collection at Tottenham. Perhaps it would be more charitable on my part now to confine myself to the statement, that those which formed my fan-bouquet are not procurable in any flower-market, and doubtless then made their first appearance in a floral fan. A list of them would make some people jealous: so I refrain. *W. T. T.*

FLORA IN THE HOUSEHOLD.

The use of plants and flowers for decorative purposes on all occasions of ceremony, joyous or sad, has prevailed for ages. With the ancients Roses appear to have been principally employed; in the Book of Wisdom it is written, "Let us crown ourselves with ros buds before they be withered;" and the Romans exalted the Rose above all other flowers as a decoration, Cleopatra having, it is said, expended a talent (upwards of £200) on Roses to grace the feast to be given to Marc Antony, the banquet-hall being strewed knee-deep in flowers. Even this lavish use of flowers was surpassed by the Emperor Nero, who spent 4,000,000 sesterces (about £30,000) on Roses for one supper, not only the couches and apartments generally, but even the porticos and courtyards of the palace, being thickly strewn with the beautiful and fragrant blossoms. Nor were Roses employed solely on festive occasions; for Cicero in one of his orations, inveighing against the luxurious habits of Verres, says that he made the tour of Sicily seated on Roses.

In the profuse use of flowers, thus cast in heaps upon the ground, to be soiled and trodden upon, there is a marked display of barbaric splendour, but no evidence of refined or cultivated taste; and it may be well conceived that such floral decorations were employed rather as a medium for the display of wealth than as a means of adding grace, sweetness, and beauty to the festival.

When the feast of Bacchus was held in Greece, flowers were strewed in front of the procession of virgins as they wended their way towards the Temple. They carried baskets of flowers in their hands, and wreaths of Myrtle encircled their heads.

In other times the Rose was introduced at feasts, not merely as an ornament, but as a symbol that all conversation held under it was to be kept private. Thus has arisen the saying "*sub rosa*." The practice of thus suspending a Rose over the heads of the guests is said to have had its origin from the fact that this flower was in ancient times dedicated to Harpocrates, the Egyptian God of Silence.

We have certainly improved upon the Romans in point of taste: we do not limit our ideas of indoor floral decoration to the use of one flower, we seek subjects of embellishment in almost every clime, and so modify the surroundings that we find plants decorating one apartment which have required divers condi-



Fig. 3.—Raikes' fan-bouquet.

tions of growth; nor do we think it is claiming too much for London to say it is the great centre where the art of floral ornament is studied and carried out to the highest state of perfection, standing in this respect above all the other cities of the Continent, not excepting La Belle Ville de Paris itself. Roses have long been considered a *specialité* of French growth, yet greatly as the French florist has excelled in the cultivation of new and beautiful varieties of this favourite flower, when the Empress Josephine required a rosery choice was made of an Englishman (Mr. Kennedy) to lay out and plant the famous grounds of Malmaison; our national taste in floral arrangements has been long esteemed, both at home and abroad; for "English gardens," or the natural style of landscape gardening as it is sometimes termed, has been in favour ever since an improved taste in horticultural matters discarded the barbarities of the early Dutch fashion;

that which we then did for outdoor gardening, we are now doing for indoor horticulture, making it

"An Art
Which does mend Nature: change it rather, but
The Art itself is Nature."

We referred in the beginning of this paper to the bough-pot or Bean-pot of our forefathers; there seems to be some doubt as to the origin of the term, some believing that by bough-pot was meant a receptacle for cut flowers or boughs, others deriving the word from the French Bean-pot, since corrupted into bow-pot, meaning an ornamental vase in which growing plants were placed; for ourselves, we incline to the latter idea, and so consider the modern window garden, with all the addenda of Fern-cases, miniature conservatories, jardinières, &c., as the outcome of the old-fashioned Bean-pot.

But it is not alone as window ornaments that floral decorations have become popular; reception rooms on all festive occasions have become veritable indoor gardens, glowing with the brilliant colours of exotic flowers, graced by the feathery Palms and varied foliage of tropical countries, and redolent of the perfumes of Persia and Araby.

From a domestic art practised by the ladies of the family, and limited to the arrangement of growing plants in windows and cut flowers for chimney-pieces, &c., floral decorations have grown to magnificent dimensions, and we have princes in the art of embellishment by living plants, as we have in many other departments of trade and commerce. Foreign potentates seek the aid of English artists to beautify their salons, and decorate their reception rooms now, as they sought the services of an Englishman for the out-door garden in the time of the Empress Josephine. If memory serves us truly, the present style of floral decoration, with its preponderance of graceful foliage, its pleasing abundance of cool and refreshing green, its trickling fountains and miniature cascades, had its origin in the prettily arranged Ferns and cooling *jets d'eau*, which were such an attractive novelty when the late Albert Smith gave his popular entertainment, "Mont Blanc." The suggestion of plants as ornaments at all entertainments doubtless came from France, whence, no doubt, we obtained our first ideas of window gardening, for the very word *jardinière* is suggestive of the nation pre-eminent for artistic creations, and while the hideous oblong boxes on rickety legs were still keeping a place in English mansions, the Parisian *jardinière* was daintily constructed of Tulip wood inlaid with pretty Watteau-like pictures of a round or oval form, strongly supported on a pedestal of ebony relieved with ormolu. Instead of a few plants in the centre of a desert of soil, choice sweet-scented flowers were tastefully grouped in a surrounding bed of damp moss, the latter serving a twofold use—beauty and ornament. Although probably suggested by our neighbours, our indoor gardening has far outgrown the French limit; it has become a fashion to beautify our homes with living plants, and those whose tastes are not checked by a want of means to indulge them now revel in drawing-rooms, which emulate eastern gardens in a display of fresh blossoms, and conservatories which display miniature pictures of tropical forests. *T.*

A GARDEN ON THE HEARTH.

There is, we imagine, scarcely an English man or woman who does not cling fondly to that distinctive British institution—an open fireplace. During winter, the open fire, with its glowing coals and dancing flames, is a thing of beauty, and the greatest enjoyment of the season; but when our fickle climate has passed through its alternate arctic and equatorial phases of spring and early summer, and we have arrived at the conclusion that really the days are beginning to be longer—at such a time we generally have a spell of heat for a few weeks, which compels us to leave off fires; then housewives begin to look anxiously round for some pretty or novel design to form a screen to the unsightliness of the empty fireplace, which, however ornate in character, always obtrudes itself upon the sight, and mars the surroundings of a prettily furnished apartment.

The days of paper aprons, formed of stripes of tissue of many ill-assorted colours, are past, but these have been replaced by designs but little less hideous, in poorer homes; while the drawn muslin and artificial flowers employed by persons of greater means, only become dirty and tawdry in a few days; or, to prolong their purity, the register of the stove is closed, and so the air of the apartment is rendered more close and unhealthy than it might otherwise be. In Lancashire, where intricate designs or gorgeous colouring in paper do not find favour, three or four handsome lumps of coal are found, and these being made to shine as brilliantly as possible with a thick coating of blackleaf, a fire is laid, and masked with the pieces prepared for the purpose. In a county where to be house-proud is to possess one of the greatest virtues, it is almost needless to say that the whole fire-place, with its attendant fender and irons, shines like silver; but no degree of polish can take off the cold, dreary look of a grate which contains an unlit fire, and the chimney corner so eagerly sought for during winter is shunned during summer. But even during summer a comfortless, cold grate need not disfigure any apartment in the house. The old notion that flowers were unhealthy and vitiated the atmosphere of the rooms in which they were growing has been quite exploded. We have found that plants purify the air, and, such being the case, we would advise all who can possibly accomplish it to replace the comfort-imparting fire of winter by a beauty-imparting garden on the hearth during the hot weeks of summer.

When the well-known cry, "Any ornaments for yer fire sto'!" is heard in the streets, we may be pretty well sure that the flowers are blooming out in the country, and of these far more elegant and less costly decorations may be made, than any formed by the most expert fingers of the most tasteful artist.

At the present time the most beautiful of our flowering shrubs and some of our forest trees are in blossom, and a screen formed of boughs of Lilac, Laburnum, Hawthorn, or Chestnut, with some large leaves of the common Fern, is a beautiful and perfume-diffusing ornament for the fireplace, as much in keeping with the surroundings of a cottage parlour, as with the more costly furnishings of a drawing-room or a boudoir. We have mentioned these flowers first, as they are now in season, and because a gigantic bunch of Lilac placed on the bare hearthstone of a Parisian fireplace, suggested to our mind, many years ago, the feasibility of replacing the dust-accumulating devices of paper-aprons, &c., by something more easily changed, more suitable to the season, and more beautifying to the room. We need not, however, limit our idea of "the garden on the hearth" to flowering shrubs: every garden, every field, almost every common or hedgerow bears something suitable in flower or foliage; all that is necessary is the energy to find plants, and the taste to arrange them when found. When branches of flowering shrubs cannot be had, monster bouquets may be made of some of the commonest wild flowers, such as wild Geraniums, Lady-smocks, Buttercups, wild Hyacinths, dead-Nettles, Gorse, Broom, and any of the handsome leaves which may be found from early spring until autumn in every lane and on every wayside bank. In employing wild flowers for the purpose it is absolutely necessary to bear a few primary rules in mind; the plants must be sufficiently long in the stem to bear placing in a deep receptacle, without any danger of their toppling over; they must be in sufficient quantities to make a mass of one colour, not frittered away in unmeaning dots of blue, yellow, and red; and the vase must contain sufficient foliage for green to predominate; it is Nature's own colour, cool and refreshing to the sight and always welcome.

On the banks of fields the delicate green, deeply serrated leaves of the Cow Parsley, and the fine foliage of the Hemlocks, Hogweed, and similar large-leaved weeds, are almost always to be had; failing these the forest trees will furnish a supply.

Those who reside near streams need scarcely lack a most charming bouquet throughout the summer, for the large free-growing Forget-me-Not, found so abundantly in moist places, will not only live, but unfold fresh flowers while in water. We have made an excellent effect with a large bunch of Myosotis in the centre and Creeping Jenny and leaves from the water-side arranged to fall over the vase, so as entirely to hide the common receptacle in which the flowers were placed. The Forget-me-Not will flower continuously for two or three weeks if kept supplied with sufficient water, but the flowers grow very pale by degrees, from being kept in a position where there is not sufficient light. The wild yellow Iris of our rivers and ponds is magnificent either alone with foliage, or introduced among Myosotis. In the centre of towns, where wild flowers cannot be obtained, and there is no garden to supply plants, a few common things, such as Wallflowers, Stocks, &c., can generally be had for two or three pence, and these, with care on renewing the water to keep them fresh as long as possible, will not, at the end of the season, have amounted to a larger sum than is generally expended on an ordinary fire-grate ornament.

We would not, however, limit ourselves to cut-flowers. The garden on the hearth may be made of growing plants in pots. The situation is a trying one, being far from the light, and draughty, but there are many subjects sufficiently hardy to brave these two drawbacks to plant-life during the few weeks of our summer, when fires are not required, and almost unlimited scope may be found for tasteful and artistic arrangement.

Some pretty climber, like the Japanese Honeysuckle or small-leaved variegated Ivy, might be kept in a pot for the purpose, and trained on sticks to form a background to a group of bright scarlet Geraniums, the pots of these being hidden by some creeping plants. Lycopodiums do excellently, never appearing to suffer from the ineligibility of the spot for plant growing.

The Virginia Creeper, Ivy, Geranium, and many other of our popular summer garden plants, are suitable; to give a long list were useless, for the arrangement of the garden on the hearth must depend upon the resources and taste of the designer. It may be formed of glowing exotics gathered from the glass palaces of the wealthy, or it may consist of a bunch of wild flowers culled from Nature's garden treasure, which may be obtained at the cost of a country ramble. *J.*

AMATEUR GARDENING.

The Use of Leaves.

If roots, as we said in a former article, are important as the plant mouths, leaves are no less so as the lungs and digestive organs. The vigour of the flower and seed, the success of the cutting, or of moving, all are connected with what the leaves have done or are doing.

Fluid gathered from the ground and gases from the air are changed inside the leaf into the living food of the plant, and the disasters from cutting kitchen garden crops till they are weakened past use, clearing away leaves in the flower garden whilst yet green, and the miserable condition of drawing-room plants, are often just so many examples of what comes of cutting off food, or the power of forming it.

Take a leaf and tear it. It is made of thin skin outside, green granular substance inside, with fibrous



Fig. 4.—the workshops of a leaf magnified.

veins usually in a network. Under the microscope these parts all show as made up of separate bladders or cells, as in the figure of a piece of the leaf of Sweet William magnified; those of the skin flat and colourless, with occasional small openings amongst them (A); those of the green granular mass roundish and loosely packed together (B); whilst the spindle-shaped and long cells or vessels forming the tough fibres of the veins (C) and leaf-stem give support to the leaf, and connection with the bark and inner part of the stem.

Here is the living machinery: fluid with the plant food in solution flows to it from the root; gas is imbibed through the thin outer coat from the air, and, under the influence of sunlight, colouring

matter is formed in the green cells, and starch and the various matters that build up the plant structures are formed or deposited, whilst the spare moisture from the fluid constantly bringing in the supplies from the root is given off by evaporation through the skin.

WHY PLANTS SHOULD NOT BE MOVED IN HOT WEATHER.

In this evaporation we have the reason why plants do not move well in dry sunny weather, and of the second item of the metrical maxim—

> "This rule in gardening never forget—
> To sow dry, and to plant wet."

The gardener puts out his plants on a damp day. If the sun comes out they droop—and why? Because all the moisture evaporates, and the newly disturbed roots cannot supply it as fast as it is needed; the leaf also is overheated for want of the evaporation that keeps it at a proper temperature, consequently it droops and dries, and very likely dies.

Therefore we move plants when there is moisture in the air, but not hot sunshine to dry up their small supplies; or we shelter them from the sun-rays, that in the cool dark shadow there may be little evaporation and they may suffer no check till the roots can resume work.

WHY PLANTS REQUIRE SHADING.

Whether we call it transpiration or perspiration, the plant or the labourer exhausted by loss of moisture through the skin in the sunshine are in much the same case, but the remedy is different. The labourer needs drink simply to restore it; with the plant we shade rather than give much water, because the leaf system works in the sunlight, and water and sunshine together would force on the growths, which are already beyond the supporting powers. Here we need only to keep what we have got in health till the roots are right again.

For the same reason small climbers suffering from over-exposure on a hot wall may sometimes be restored by simply placing a quantity of Ivy so as to form a mass up the wall close by their side. The thick mass of leaves gives a reservoir of cooler air, stops some of the glare of reflected heat, and gives shade occasionally, consequently diminishes the over-evaporation.

In the case of rooting cuttings, moderate light and damp surroundings carry on the same process; and even a hole in the earth deep enough for flower-pots to stand in, so that the cuttings in them may be beneath the ground level, with a hand-glass over that can be shaded, is a simple apparatus that is often very successful. Thorough draughts and hot, dry rooms are both bad for plants from similarly drying the leaves.

WARD'S CASES.

Ward's cases do not always meet the difficulty, for we wish to have beauty and scent to enjoy at our ease rather than a great affair of glass and metal with a vision in a mist inside. Something may be done by occasional airing, or damping in a shower outside the window, but perhaps nothing does as much good as a thick coat of fresh moss laid on the surface of the pot: its light spongy mass lets the water (with which it should be kept constantly moistened) evaporate in good quantity, to the great benefit of the leaves above, and in itself it is very pretty.

We must be content to sacrifice some plants to our own love of their beauty, but by choosing what may suffer least, keeping them as short a time as possible in the house, and on no account whatever letting them remain on their passage in the hot, dry air of the kitchen, something may be done.

ACTION OF LIGHT.

Another point to be borne in mind is, plants need light. Under the influence of sunlight the viscid fluid that fills the cells beneath the outer skins of the leaf changes, and is re-formed into the green granules that colour it, the cellulose that builds the walls of the multiplying cells, and the starch and other materials that, dissolved in the flowing sap, nourish the plant. Without daylight we have the white growth of the grass under a turned-down clod, or of Seakale in the bleaching-pot—a growth that goes on for a time but comes to nothing healthy, and shows in its pale tint the absence of the material that gives the colour, and changes into various kinds of plant food; a growth, in fact, that is often apparent rather than real, consisting in a stretching of the old rather than a formation of new fabric.

HOW TO GROW SEEDS AND BULBS.

Therefore seed-pans put in dark holes and corners should be brought to light as soon as the seeds begin to come up. The adage "Sow thick enough, thin soon enough," should be carried out in both parts with regard to clumps of seedlings, or there will only be a sprinkling (as in figure 5) of plants thriving from having gained light and life together in the race for existence, with the rest choked below. Bulbs put in so deeply that their leaves are blanched, shoots and leaves buried under manure carelessly thrown on the



FIG. 5.—THE BATTLE FOR LIFE.

borders, and shoots of herbaceous plants "drawn" from being so crowded that sunlight cannot get properly between them—all tell the same tale.

RESPECT THE LEAVES!

Some plants, such as Ferns, Periwinkle, or Ivy, do not require much light, but generally speaking, if the bush or plant is to prosper the leaves must have plenty of daylight, and some degree of direct sunshine. Whilst the leaves are green the plant is probably well. The pale hue of sickness shows something is amiss, and the hint should be followed out, and on no account should the leaves be stripped whilst the green colour continues. Rhubarb and Asparagus in the kitchen garden, wall fruit trees, and Hyacinths, Crocuses, and spring bulbs are especial sufferers: for house supplies—to strengthen the trees!—for "tidiness," off come the leaves, and the plants suffer accordingly. The leaves that make the plant food and spread it, being taken away, the plant is starved, new bulbs must be bought, over-cut crops are weakened, and the Peaches are bad, besides what happens to the bearing wood for want of its food.

As long as the leaves are green they should be carefully preserved, not in over-crowded masses, but according to their method of natural growth. If the plants are squeezed up close together, or trimmed back with shears, there will often be a mere crust of leaves outside with bare boughs inside, as in diagram A (fig. 6), whilst if allowed to grow, or trimmed into natural shape, letting sun and air into the centre, there will be a larger surface exposed, as at B, and a healthy growth. With the change of tint—the brown of decay, the gold and red of autumn—the leaves may be removed; the green granules have

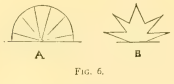


FIG. 6.

broken up, the food is stored elsewhere, the work of the leaf upon its stem is done.

Other circumstances, such as the nightly absence of light, have very important effects on leaf-action, consequently on plant growth: but as darkness returns regularly, whilst the light of day is not so certain of admission to the plant, practically it does not require the same notice.

What the amateur has to bear in mind is, that what the leaf imbibes as gas and fluid from air and earth, is changed in its cells under the action of sunlight to plant-food. This builds the cells and fills them, consequently nourishes the flower, the fruit, and the growing shoots, and lays up the store for future use; and, according to the healthiness of the leafage, so will be the prosperity of the plant. *O.*

THE GARDENING EXPERIENCES

OF MR. MULBERRY GILLYFLOWER.

I HAVE been making a study of gardening literature as it is found in catalogues. I have obtained lists from leading nurserymen and seedsmen, and I find half-a-dozen of them so full of matter as to suffice for a lifetime. I am astonished at their size, at the brilliancy of their gaudy illustrations, at the quantity and variety of their contents; at the unselfishness of human nature seen in the spontaneous offering of so many unsolicited testimonials on the part of so many disinterested individuals which are found in those catalogues, among other considerations of a scarcely less weighty character; and I have properly paused when induced to compute the cost of five thousand copies; contenting myself with estimating the value of the postage—for one copy cost in postage the sum of twopence-halfpenny when sent to me. I have no desire to underrate the value of the information given in these elaborate works; but in my own case I found it utterly bewildering.

And why? Because to a great extent I am ignorant of flowers. I wanted a few pretty things for my little garden, and I turned to one of these catalogues for information. It was there, no doubt, but I failed to find anything suited to my necessities. I was recommended to grow a few Asters and Stocks, and I turned to the former and found about a dozen kinds, all highly recommended, but which was I to choose? I turned to Stocks, and here again was a similar number, and all more or less praised by the vendors. I also found that Stocks and Asters alike (at least those that were most highly recommended), were sold in what seemed to me to be needlessly large "assortments," as they are termed. Then the details given for raising the seed might have been understood by a gardener acquainted with the technicalities of his profession, but they rather damped my floricultural ardour than otherwise. I felt that the anticipated pleasures of my garden existing in my imagination were rapidly receding to a distance, and I said, "Where shall such a perplexed one as myself turn for counsel in my gardening extremity?"

Then I bethought me of the adviser whose counsel had proved of so much benefit at the time of planting, and he recommended me to grow two of the many Asters offered, viz., the Victoria, for its large, full, and perfect flowers; and Boltze's Dwarf Bouquet, because dwarf and branching in growth, and so useful as decorative border flowers, and to cut from. Instead, therefore, of purchasing an assortment of each of these Asters, I obtained a mixed packet of each, and I was informed by the vendor that the quality of the seed in the mixed packet was equal to that contained in the assortment. Then of Stocks I was recommended to try the large-flowered German, which I was informed would give me all I required. In this way I obtained my seed.

The directions for raising Stock and Asters seed given in the catalogues were in all probability faultless, but they were written for those who may be supposed to be in possession of cold frames, &c., or a greenhouse or hotbed in which these things could be raised with but little trouble. To get seed-pans in which to sow the seed was an easy task, so it was to get some soil as recommended; a neighbouring jobbing florist supplied these, but when it came to the matter of a position for my pans after the seed was sown, I was somewhat at a loss.

HOW I MADE A FRAME.

I thought, however, I could not do better than endeavour to construct something like a frame. In one corner of my garden laid some brick rubbish, which was gathered together and piled up so as to form a foundation, and on this was placed a layer of rough cinder-ashes. Then some pieces of rough boarding were placed round the outside of the foundation, but reaching a foot and a-half above it, and sloping from back to front, as in the case of an ordinary frame. By this means I got my bed, but now arose the difficulty of a suitable covering. I bethought me of some light white covering stretched across a wooden frame, but it would scarcely answer, as I was informed it would exclude too much light when it was much needed, and also not be sufficiently impervious to wet. Then I determined to have a rough sash constructed and glazed with glass, which was done, and thus the framework of my homely bed was constructed. The bed now required completion, and some rough soil

was laid over the ashes, and on this some finer soil, till it was within 9 inches of the glass. I took care to provide proper fastenings for my light, to preserve it from being blown away by the wind.

This much done, I thought I was in a fair way to the accomplishment of my purpose.

I SOW THE SEED AND WATCH.

Next came the work of sowing the seed. Advised thereto, I took care to have my seed-pans with holes in them round the bottom, so that water might freely pass away. In the bottom of the pans I laid some crocks, then a layer of charcoal broken fine, then a little rough fibry loam pulled to pieces, and, lastly, my fine soil. It was then pressed gently down, the seeds sown thinly on the surface, and lightly covered with some of the finest of the soil, again gently pressed down till the surface was smooth. The whole was then very carefully moistened with water.

The pans were next placed in the frames, and a piece of glass large enough for the purpose placed over each, and the light covered over the top. As the weather was dull and cool at the time, no shade was necessary, but when a gleam of warm sunshine shone out, a piece of newspaper was laid on the pans in the frame, and some air was given at the top by means of lifting the light; but all the time the nights were cold it was carefully closed down.

I was much interested in my experiment, and gave my venture daily attention. Presently the seeds grew nicely, and as they made advance the glass was gradually tilted on one side and finally removed altogether, and the pans raised on bricks to bring them near the glass. And here I may observe that my success in raising a good crop of plants, in having them stocky and strong, and free from mildew, and undiminished by losses from any cause, was entirely owing to constant attention being given at the time the seeds were germinating. Of the thousands of failures with seeds that occur annually, the very great majority of them is traceable to neglect, not so much a wilful neglect as that of failing to give frequent attention, and thus it is blame is cast on seeds and on the vendors of seeds that should be borne by the cultivator.

As soon as the plants were large enough, they were pricked out singly in the bed in which the plants were raised, and, being kept close for a few days, have made good plants, and are now in these places out-of-doors. The recent rains have given the plants a good start, and, as they will receive every encouragement, they should be all that can well be desired when the time for flowering comes round.

I LAUNCH OUT MORE BOLDLY.

But my homely frame has been turned to other account. When I saw how well the Stocks and Asters were doing, I thought I might attempt something further, and a gardening friend made me a selection of half-hardy plants that, if raised, would come in useful for bedding. It necessitated the procuring of other pans, but my garden being small, and my requirements by no means large, I was enabled to sow two lots in each pan, laying a slight piece of stick across the middle as a dividing line. I have sown Ageratum Imperial Dwarf, Alonsoa Warscewiczii, which I am told is a beautiful plant, too much neglected in these days; Balsams, Petunias, Phlox Drummondi; French, African, and dwarf Golden Marigolds, dwarf and tall Nasturtiums, Thunbergias, Amaranthus melancholicus ruber, Perilla nankinensis, and Centaurea candidissima, for bedding; Verbena, and some Everlastings, viz., Acroclinium and Rhodanthe. Some of these grew plentifully, others more sparingly, but all sufficiently well to give me a crop of each. My hands have been full in getting the forwardest plants pricked out where it was possible to find room for them in my frame, potting off a few, and placing some in the open ground. In this way I have obtained quite a choice assortment of summer-flowering plants, and though I am acquainted with some of them, there are others of whom I have but little knowledge; and, according to the catalogues, they have many charms to commend them to my attention.

I have come to the conclusion that it is a very pleasant occupation in gardening to begin at the beginning; that is, to purchase seeds and raise them, trusting to attention and the chapter of accidents to bring forth a precious harvest. If I had to grope my way, as it were, amid the darkness of imperfect knowledge, I have been kindly and graciously led by my instincts without much blundering or many false steps. The experience so gained is an almost priceless possession to an amateur gardener endeavouring to master the alphabet of the occupation; and so long as there be in the human heart some germs of a kindling love for flowers, so surely will the pursuit of gardening fire this regard till it burn brightly.

MIGNONETTE.

THE origin of the common garden Mignonette is somewhat involved in obscurity, the subject so far as we know never having been satisfactorily cleared up. It is said to be a native of Barbary, but nothing is known about the plant in a wild state. I appears to have been introduced many years ago into the south of France, where it was welcomed by the name of Mignonette—Little Darling, and is said to have been brought to England in 1742 (by Paxton as having been introduced in 1752), which if the dates are correct, prove Sir Walter Scott to have been in error, when he introduced the plant into his novel, *The Fortunes of Nigel*, as decorating the London windows during the reign of James I. However that may be, it is certain that the fragrant weed soon became as popular in this country as in France, and may now be considered as a naturalised subject. Of its cultivation in the open air we need say nothing, but as its successful culture in pots is not of very common occurrence, except amongst the large growers for market, we may state in a few words that one of our most extensive growers, Mr. Reeves, of Acton, sows the seeds during the months of August or September. The size of pot employed is the favourite "48," and after covering the

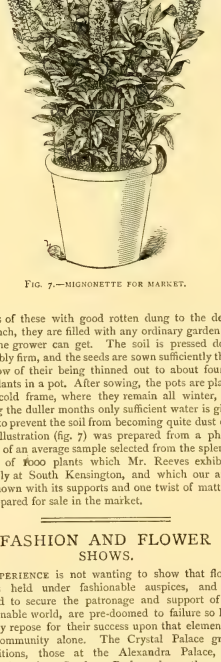


FIG. 7.—MIGNONETTE FOR MARKET.

crocks of these with good rotten dung to the depth of 1 inch, they are filled with any ordinary garden soil that the grower can get. The soil is pressed down tolerably firm, and the seeds are sown sufficiently thick to allow of their being thinned out to about four or five plants in a pot. After sowing, the pots are placed in a cold frame, where they remain all winter, and during the duller months only sufficient water is given them to prevent the soil from becoming quite dust dry. Our illustration (fig. 7) was prepared from a photograph of an average sample selected from the splendid batch of 1000 plants which Mr. Reeves exhibited recently at South Kensington, and which our artist has shown with its supports and one twist of matting, as prepared for sale in the market.

FASHION AND FLOWER SHOWS.

EXPERIENCE is not wanting to show that flower shows held under fashionable auspices, and intended to secure the patronage and support of the fashionable world, are pre-doomed to failure so long as they repose for their success upon that element of the community alone. The Crystal Palace grand exhibitions, those at the Alexandra Palace, the Royal Aquarium, Sandown Park, and now the recent Orleans Club Show at Twickenham, all testify that shows promoted merely to attract the fashionable and the wealthy inevitably fail of their purpose, and that the attendance is almost invariably short of anticipations. The rich of the community, always excepting the few who are genuine lovers of flowers, have either been satiated with floral exhibitions, or have lost the natural taste and love for flowers which so largely distinguishes the poor. How sadly this is evident may be seen if any one will take the trouble to observe the demeanour of the rich visitors. They dawdle through the tents with an air of languor, scarcely deigning a look here or there, and such rare events are characterised by an effort, just as though the whole thing was a bore, of which they would gladly be rid.

Without doubt, their indifference to floral exhibitions is more real than assumed; and realising this fact, managers of such in the future will do well to cater less for the "upper ten," and more for the lower million, who in spite of their many social and moral defects, are yet deeply imbued with a taste and love, natural and healthy, for all that relates to the garden. In all good provincial shows the shillings of the trading class, and the coppers of the poor, are found to be an assured support to the financial success of the exhibition. Here local interest has a potent influence for good, as the visitors have in most cases some personal knowledge of the exhibitors, and therefore special interest in their products; and, further, the flower show has grown to be almost a permanent institution, demanding support and receiving it with as much favour and assurance as any other local object. Perhaps in country districts there is more real love for horticulture permeating the breasts of all sections than is found in the metropolis; but in many of our large manufacturing towns the intense interest displayed by the poor in floral exhibitions is most marked, and the singular love and earnestness shown for flowers, or any garden products, is one of the most beautiful characteristics of our town-bred and confined working classes.

Any one fond of studying character will find a flower-show tent filled with the poorer classes a special opportunity for favourable observation. Under the benign influence of the beauties of nature around, the best human elements are brought into play, and the criticisms, surprises, and exclamations of delight are all evidences of the existence, even in the workers in the field, factory, shop, mill, or mine, of that one touch of nature which makes the whole world kin. Perhaps looked at in a hard, business light, the nurseryman cares little for such visitors as these, but, putting this aside, it is impossible to doubt that any flower show so attended must be a great educational as well as pecuniary success. It will probably be long before our metropolitan flower shows will be gazed upon by thousands of the toilers of life admitted at 6*d.* or 3*d.* per head, the whole thing would be so very *infra dig.*; but even these, if not clad in silks or broadcloth, would be better than a listless, uninterested few, who find a weariesome toil in sitting for an hour or two to listen to a military band.

POPULAR PELARGONIUMS.

THE production of Zonal Pelargoniums for the London markets is one of those specialities of horticultural work that is done on a very extensive scale, so extensive, indeed, that one cannot realise it till he is favoured with a look through such a nursery as that of Messrs. Hawkins & Bennett at Twickenham, and others in the neighbourhood of London. There these plants are grown by the thousand, both for vending in pots, and for cut blooms. One sees long broad houses completely filled either with pink, scarlet, or white Pelargoniums in a very healthy condition in the regulation 48-pots, and blooming profusely. The varieties are Dr. Lindley, scarlet; Vesuvius, scarlet; Leonidas, crimson; Christine, pink; and Madame Vaucher, white; with a few doubles, Madame Lemoine being the leading variety. There are several houses 200 feet in length, and of a good width, and some idea of the great quantities of each variety grown may be inferred from the fact that in the two houses of Madame Vaucher there were from 4500 to 5000 plants. The plants are mainly from spring struck cuttings of the previous year, of branching growth, clean and healthy, with fine heads of bloom. The plants are sent to market in round baskets, a dozen or so of plants in a basket. It is a remarkable fact that of the many new varieties produced since the advent of the above old sorts, they are yet the best for the particular purpose. The vast number of plants raised and distributed in a year by Messrs. Hawkins & Bennett is so large that were statistics given they would be thought incredible.

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Established 1841.

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With the Number for JULY 7 will be presented a Special Twelve-page ROSE SUPPLEMENT, and a beautifully COLOURED PLATE of a GROUP of ROSES.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

The GREAT SUMMER FLOWER SHOW under the Large Tent and ANNUAL SHOW by the Rosicrucian Society, and EXHIBITION of New Plants for Silver Cups offered by Mr. William Bull, F.L.S., &c., on TUESDAY, June 19. Schedules on application. Band of the Royal Horse Guards from 2 to 6 o'Clock P.M. Admission 3s. 6d.

N.B.—Their Royal Highnesses the Prince and Princess of Wales have signified their intention to honour this Show with their presence.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—SCIENTIFIC, FRUIT, and FLORAL COMMITTEES' MEETINGS, on TUESDAY next, June 19, at 12 o'Clock. GENERAL MEETING for ELECTION of FELLOWS, at 3 o'Clock. Band of the Royal Horse Guards from 2 to 6 o'Clock p.m.

N.B.—The FRUIT and FLORAL COMMITTEES on this occasion will meet in the Council Room.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—The Council of the Royal Horticultural Society have decided to hold a GREAT PROVINCIAL HORTICULTURAL EXHIBITION at PRESTON, in JUNE, 1878. The needful guarantees have been secured, and a good Local Special Prize Fund (in addition to the Prizes offered by the Royal Horticultural Society) will be provided.

T. M. SHUTTLEWORTH, Esq., Howick House, Preston, will act as Local Secretary.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

The EXHIBITION of AMERICAN PLANTS and RHODODENDRONS, &c., by Mr. Anthony Waterer, of Knap Hill, is now open. Admission as on ordinary days, or by the Spring Exhibition Tickets. Gates open from 9 o'Clock sunset, daily, Sundays excepted.

CRYSTAL PALACE.—GREAT ROSE SHOW, June 20. Play, "Pink Dominoes," by company of Criterion Theatre. Band of Scots Guards. Fete of German Gymnastic Society. Admission, 5s., by ticket purchased before 16th, 2s. 6d. Season Ticket.

ALEXANDRA PALACE.

The GREAT ROSE SHOW will be held on SATURDAY, June 30. LAST DAY of ENTRY, June 23. Schedules and all particulars may be obtained on application to JOHN A. MCKENZIE.

1 and 2, Great Winchester Street Buildings, London, E.C.

LEE and BLACKHEATH HORTICULTURAL SOCIETY.

The ANNUAL SUMMER EXHIBITION of the above Society will be held on WEDNESDAY and THURSDAY, June 20 and 21, in the Grounds of John Penn, Esq., The Cedars, Lee, S.E. Schedules and full particulars may be obtained of C. HELMER, Secretary.

5, Boone's Road, Lee, S.E.

LEICESTER GRAND ROSE SHOW, July 3, 1877.—FIFTY-TWO POUNDS offered for CUT ROSES. Open to all England. Further information on application to the Secretary.

Mr. W. C. MARRIS, 8, New Street, Leicester.

NATIONAL CARNATION and PICOTEE SOCIETY, and CUT ROSE SHOW, will be held at the Royal Aquarium, Westminster, WEDNESDAY and THURSDAY, July 18 and 19. Schedules and full particulars may be obtained on application to

Mr. E. S. DODWELL, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W.; or Mr. E. BENNETT, Ashley Nurseries, Barnet, Herts; or Mr. W. W. ROBERTSON, Royal Aquarium, Westminster, S.W.

Royal Botanic Society of London.

JAMES CARTER AND CO., announce their GREAT EXHIBITION of ORNAMENTAL-FOLIAGED and FLOWERING ANNUALS and other PLANTS Grown in Pots from Seed, to open WEDNESDAY, June 20, and continue daily.

CARTERS, The Queen's Seedsmen, High Holborn, London, W.C.

Notice.

WILL'S NEW HYBRID DRACÆNAS.—The whole of the Collection to be Sold by Messrs. J. C. Stevens, on the 26th, will be exhibited at the Royal Horticultural Gardens, on TUESDAY, the 19th inst.

DAHLIAS, DAHLIAS, DAHLIAS, of the finest varieties, in stout, well hardened plants, 12s. per 100; CARSON'S GERANIUMS, good stuff, in 60's, 25s. per 100; in 48's, 35s. per 100.

THOMAS HORSMAN, Rose Mount Nursery, Ilkley, near Leeds.

JEAN VERSCHAFFELT'S NURSERIES, 134, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium. CATALOGUES free on application.

Agents in London, Messrs. A. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

Verbenas for the Million.

S. BIDE can still supply a few thousand VERBENAS, strong, spring struck, healthy plants, in good variety, and true to name, at 6s. per 100. Also well hardened plants, fit for immediate bedding, at 8s. per 100. Package free for cash with order to

S. BIDE, Alma Nursery, Farnham, Surrey.

Verbenas. Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other mixed sorts, established in single pots, at 12s. per 100, rooted cuttings of the above at 6s. per 100. Cash to accompany all orders.—Islington Nursery, Park Street, Islington, N.

Verbenas, Lobelias, &c.

WILLIAM BADMAN can still offer VERBENAS, Purple, White, Scarlet, from single pots, 12s. 6d. per dozen, 10s. per 100; LOBELIAS of sorts, HELIOTROPIUM and AGERATUM, 2s. 6d. per dozen, 10s. per 100. Terms cash, packing included.

Bedding Plant Nursery, Gravesend.

CHEAP CARPET BEDDING PLANTS.—To be Sold a great bargain, a lot of all kinds, including SAXIFRAGES, ARABIS VARIEGATA, ECHEVERIAS, SEDUMS, &c. kinds of ALTERNANTHERAS, &c. Full particulars given. Apply by letter to

Box 80, Norwich.

Bedding Plants! Bedding Plants!

F. AND A. SMITH have an immense stock of strong, well-grown HARDY PLANTS, in great variety, which they offer at moderate prices. All Orders of 20s. and upwards delivered free of charge within a radius of 6 miles of St. Paul's. Priced Descriptive LIST is now ready.

The Nurseries, West Dulwich, S.E.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

WEBB'S NEW GIANT POLYANTHUS, Floral Flower, and GIANT COWSLIP SEEDS; also Plants of the finest varieties, viz. 100 PRIMROSES of different colours: AURICULAS, both Single and Double: with every sort of Early Spring Flowers. LIST on application.

WEBB, Colcley, Reading.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LIST for 1877.

Extra Strong SEAKALE, 2s. per dozen.

RICHARD SMITH, Nurseryman, Worcester.

To the Trade.—Turnip Seeds.

H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.

Seed Growing Establishment, Wisbech.

WANTED, THUJA WARREANA, 4 to 5 feet high; also EUONYMUS, 12 inches high, for Vases; all good, well-furnished plants. Send price to G. REEVES SMITH, Brighton Asylum.

NEW REGAL PELARGONIUM, "PRINCE OF WALES."

Much brighter in colour, larger in truss, and very superior in every way to Pelargonium "Captain Raikes."

Price One Guinea each.

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Mrs. Pollock.

WILLIAM BADMAN offers established Plants, in single pots, at 18s. per 100, 4s. per 1000, or 2s. 6d. per dozen. Terms cash, packing included.

Cemetery Nursery, Gravesend.

The Finest New Bedding Plant of the Season.

A GERATUM "LADY JANE."—For medium-sized beds or ribbon lines this is *par excellence*—compact habit of growth, dense green foliage, and good constitution, growing from 9 to 12 inches high. The flowers when fully expanded are a bright blue, produced in abundance throughout the season.

Price 30s. per dozen. Special price per 100 and 1000.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

Immediate Effect.

H. CANNELL has yet on hand great quantities of NOVELTIES in the usual BEDDING and OTHER PLANTS that will make a display at once. Prices very moderate. Send List, and special prices will be given.

Swanley, Kent.

A. RIEMSCHNEIDER, Brandenburg-on-Havel, Germany, has to offer the following:—Feathergrass, plain, 150s. per cwt.; Leucojum vernum, strong, 30s. per 100; Hepatica nobilis, double, 1000; Helleborus niger, strong, 80s. per 1000. German Grass Seeds, Dried Natural Grasses, and Flowers, on early order.

ALTERNANTHERA AMŒNA, for Immediate Effect, splendid stuff, in single pots, 10s. per 100. 54 not named PELARGONIUMS, in single pots, 8s. per 100. GERANIUM, Mrs. Pollock, in 60 pots, 24s. per 100.

J. R. SOUTH, Florist, Queen's Road, Buckhurst Hill, N.E.

ORCHIDS.—A GENTLEMAN, who is making room for Newer Plants, is Disposing of a small but choice Collection of Orchids. Can be seen at

Mr. JOHN PEAPELL'S, 21, Alleyn's Cottages, West Dulwich, S.E., between 12 and 2 o'Clock, any day till June 23.

Mimulus Moschatus Harrisonii.

HARRISON'S NEW MUSK, strong Plants 12. each; free by post, 12. 3d. in stamps.

FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

CHARLES TURNER'S New Spring CATALOGUE contains choice selections, with full descriptions, of Chrysanthemums, Dahlias of all classes, Pelargoniums, including Show, French, Fancy, Zonal, and Tricolor: New Roses, and all the new and popular Bedding Plants; which may be had, post-free, on application.

The Royal Nurseries, Slough.

New and Choice Orchids, &c.

THE NEW PLANT AND BULB COMPANY beg to call attention to their NEW LIST (No 74), just published, and to respectfully invite all intending Purchasers to send for a copy before giving their Orders. Post-free on application. Lion Walk, Colchester.

Special Offer to the Trade.

COCOS WEDDELLIANA, Seedling Plants, 4/6 per 100, in quantities of not less than fifty.

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Primulas, Primulas, Primulas.

WILLIAMS' superb strain, 1s. 6d. per dozen, 10s. per 100, package free for cash. CINERARIAS, choicest assortment, same size and price. The above are quite equal to those I have sent out in previous years. Cash with order.

JOHN STEVENS, The Nurseries, Coventry.

To the Trade.—Tea Roses on Seedling Briar.

EDWIN HILLIER has to offer very fine Plants of NIPHETOS, DEVONIENSIS, and SOUVENIR D'UN AMI at 24s. per 100. Extra fine plants, in twenty-five or fifty varieties, 15s. to 65s. per 100. Cash or reference in advance. The Royal Nurseries, (1877) CONTINENTAL ROSES, fine plants, 18s. per dozen.

The Nurseries, Winchester.

PROTHEROE AND MORRIS, HORTICULTURAL MARKET GARDENERS AND ESTATE AGENTS, 162 and 163, Aldersgate Street, and 2, Goswell Road, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

Gentlemen's Gardeners, Amateurs, and Others REQUIRING

GARDEN POTS of best quality, are requested to send their orders to

J. MATTHEWS, Royal Pottery, Weston-super-Mare.

Price List on application.

C. J. BLACKITH AND CO., Horticultural Auctioneers.

Every Garden Requisite, Training Sticks and Labels, Bamboo Canes, Mats, (Archangel and Petersburg), White Cape Evergreens, Rolls (for lawns), Virginia Cork, Peruvian Moss, Floral Manure.

C. J. BLACKITH AND CO., Cow's Quay, Lower Thames Street, London, E.C.

SALES BY AUCTION.

Garston Vineyard, Garston, near Liverpool.

MESSRS. PROTHEROE AND MORRIS having SOLD the ESTATE, are instructed by the Cowan's Patent Company (Limited), to SELL by AUCTION, on the Premises, as above, on FRIDAY, June 27, at 12 o'Clock precisely, the entire STOCK-IN-TRADE of the Horticultural, Building, and Engineering Department, comprising about sixty new Boilers, Hot-water Pipes, Valves, Throttle, and other Valves, several Mowing Machines, a nearly new Mortising Machine, and numerous other effects.

On view one week prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. The Business of the Company will be carried on as usual at their London Establishment.

Beverley, Yorkehire.

IMPORTANT SALE of carefully selected STOVE and GREENHOUSE PLANTS in the best possible health, no expense having been spared to make it worthy of the best collections in the country. Also a large quantity of other beautifully-grown stock.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Wm. E. Dixon, who is giving up showing, to SELL by AUCTION on the Premises, the Norwood Nursery, Beverley, Yorkshire, ten minutes' walk from the Station, on TUESDAY, June 26 and following days, at 12 for 12 o'Clock precisely each day, the whole of the magnificent collection of STOVE and GREENHOUSE PLANTS, which has taken numerous prizes at the leading shows, consisting of well-trained specimens of various size, comprising Bougainvillea, Allamanda, Dipladenia, Adiantums, and other Ferns; also Stephanotis, Azaleas, Crotons, Dracænas, Tree Ferns, Palms, Anthuriums, Draytonias, Caladiums, Orchids, and other choice plants. Also a large quantity of thriving Succulent Stock, including Stove and Greenhouse Palms, Ferns, Anthuriums, Orchids, Tuberoses, &c.

The Stock may be viewed any time prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Kew Nursery, Kew Road, Richmond, Surrey.

SPECIAL AND HIGHLY IMPORTANT SALE to the TRADE of 20,000 choice, RARE and NEW PALMS, consisting of 6000 Cocos Weddelliana, 2000 Areca purpurea, quite new and rare Areca crinita, 1000 Areca Baueri (not yet sent out, and being the entire stock of this great novelty); also the following well-known and approved varieties, viz.—1000 Areca alba, 1000 Areca Verschaffelti, 2000 Areca rubra, 2000 Corypha australis, 1000 Geonoma speciei, 1000 Latania borbonica and others; also some SPECIALE PALMS, admirably adapted for the Stove and Indoor Decoration, together with 2000 AMARYLLIS (an imported choice collection), 1000 FRIDOLINIA SIEBI, 500 ARALIA SIEBOLDII, 2000 PTERIS, of sorts; 300 ANTHURIUM SCHERZERIANUM, 500 MYRTUS, 300 SAXIFRAGA SARMENTOSA, and other beautifully-grown YUCCA ALOIFOLIA VARIEGATA, &c., &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. H. Herbst to SELL the above by AUCTION, without reserve, on the Premises, on TUESDAY, July 3, at 12 for 12 o'Clock precisely, in consequence of the number of Lots.

May be viewed one week prior to the Sale. Catalogues had on the Premises, and of the Auctioneers, Estate Agents, and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from J. G. Hepburn, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, THURSDAY and FRIDAY, June 20, 21 and 22, at half-past 1 o'Clock precisely each day, the entire Collection of ESTABLISHED ORCHIDS formed by him at Sidcup Park, Kent, in consequence of change of residence, comprising, amongst many others, fine plants of the following well-known sorts, and many of which have been most successfully exhibited:—Aerides odoratum sesquipedale, Cælogyne cristata, Dendrobium Wardianum, fine variety, 150 flowers this year, Vanda suavis Veitchii, large, three and four spikes each; Cypripedium barbatum, fine variety, spikes, twelve flowers: Vanda cœrulea, Dendrobium Falconeri, large, ninety-three flowers this year, 3½ inches to 3¾ inches; Cattleya Mendelii, Odontoglossum Pescatorei, Oncidium Lanceanum; O. Rœzlii, twenty-five flowers, thirteen spikes; O. vexillarium, O. nevium nigh, eight spikes; O. crispum, Masdevallia macranthum, three spikes, and is showing over fifty buds already —it is a very good variety; Dendrobium Devonianum, fine variety; D. Parishii, Odontoglossum Andersonianum, O. Pescatorei, O. pulchellum majus, O. cirrhosum, O. Madrense, good variety; O. Rossi Dawsonianum, O. Hallii, Masdevallia Veitchii, M. Harryana, M. Harryana, Lindeni, Fuinrer, and Phalænopses, seventy to eighty plants, comprising grandiflora aurea, grandiflora Luddemanniana, amabilis, Schilleriana rosea leucorrhoa—all have flowered, and they are grand plants.

On view the mornings of Sale, and Catalogues had.

The Collection of Established Orchids

of W. H. Michael, Esq., of Cholmeley Park, Highgate.

MR. J. C. STEVENS begs to announce that he has received instructions from W. H. Michael, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, THURSDAY and FRIDAY, July 4, 5 and 6, at half-past 1 o'Clock precisely each day, without the least reserve, the valuable COLLECTION of ORCHIDS, made and exhibited by that gentleman, who is now removing from Highgate, consisting of some of the finest varieties. Amongst other good things will be found the following:—Aerides Fieldingii, Lobbii, &c.; Angræcum, Chysis bractescens, Cymbidium Mastersii and eburneum; Cattleyas in great variety, including Mendelii, gigas, and Dowiana; Lælia elegans, Turneri, Schilleriana, purpurata, and a grand specimen of superbiens; Odontoglossums of all the principal kinds, including Alexandræ, Pescatorei, cirrhosum, Andersonianum, a magnificent variety; Oncidium ornithorhynchum, purpureum, Hallii, hystrix, citrosmum, Rœzlii, and vexillarium; Dendrobium Falconeri, Wardianum, Devonianum, nobo-sanguinem, lituiflorum, M'Carthiæ, &c.; Oncidiums sp'endidum, varicosum, Lanceanum, Weltoni, macranthum, &c.; Phalænopsis grandiflora, Schilleriana, amabilis, Luddemanniana, and rosea; Saccolabium retusum, giganteum, Holfordii, &c.: Vandas Bensoniæ, Denisoni, cœrulea, cœrulescens, Batemanni, suavis Veitchii; Cypripedium Veitchii, Dayanum, Argus, Stonei, Sedeni, caudatum, &c.; Angræcum eburneum, superbum, and sesquipedale; Burlingtonias, Brassias, Peristeresa, &c.

On view the morning of Sale, and Catalogues had.

West Leigh, Narborough Road, Leicester.

To ORCHID GROWERS, NURSERYMEN, GENTLEMEN, and OTHERS.

H. AND F. TARRATT are honoured with instructions from the Executors of Archibald Turner, Esq., deceased, to SELL by AUCTION, on MONDAY and TUESDAY, June 18 and 19, at West Leigh aforesaid, commencing each day at 11 o'Clock punctually, a very extensive and valuable Collection of rare ORCHIDS, consisting of Aerides, Vandas, Cypripediums, Lælias, Cattleyas, Oncidiums, Odontoglossums, Dendrobiums, Saccolabiums, Phalænopsis, Angulous, Odontoglossums, &c. The Vandas include some fine healthy specimen plants; the Cattleyas include most of the sorts, amongst which may be named Mossiæ, Skinneri, Trianæ, speciosissima, &c.; the Dendrobiums include nobile, Wardianum, and fimbratum; the Odontoglossums will be found in great variety, and include many of the best sorts, such as Alexandræ, Pescatorei, naevium majus, crispum, Andersonianum, and grande; also a choice STOVE and GREENHOUSE PLANTS. The late Mr. Turner was for many years a most successful cultivator of Orchids, and the collection formed by him enjoyed a reputation probably unequalled in the United Kingdom. The Gold Medal of the Royal Botanical Society was, on four occasions, awarded for Orchids exhibited at the Society's shows by Mr. Turner. The Stove and Greenhouse Plants have also obtained seven Silver Cups at local exhibitions.

Catalogues may be had fourteen days prior to the Sale, of the Auctioneers, Market Street, Leicester, who will forward same on application; or of Mr. WILLIAM ARCHER, The Gardens, West Leigh.

Garden Ornaments in Artificial Stone, comprising

FOUNTAINS, FIGURES, VASES, &c.

MESSRS. J. AND R. KEMP are instructed to SELL by AUCTION, on THURSDAY, June 21, and following day, a considerable portion of the STOCK of Austin & Seeley, at the well-known and long established works, 369 to 375, Euston Road. A large number of Articles which have stood on the showyard as patterns from thirty to fifty years will be Sold without reserve.

May be viewed any day previously, Sundays excepted. Catalogues of Messrs. J. AND R. KEMP, 27, Albany Street, N.W., two days previously.

To Fruiterers and Greengrocers.

TO BE DISPOSED OF, a First-class FAMILY GREENGROCERY and FRUIT Business in both towns in the Midland Counties. Established 30 years. Apply to H. BERRELL, 33, Bull Street, Birmingham.

FOR DISPOSAL, in the neighbourhood of Clapham, Brixton and Stockwell, an OLD ESTABLISHED NURSERY, doing a first-class and greatly improving trade. Good DWELLING HOUSE, GLASS HOUSES, &c. First-rate opportunity for a business Man, and a *bona fide* reason given by present Proprietor for selling. For particulars apply, by letter only, to

ROBERT SINCLAIR, 46, Ludgate Hill, E.C.

To London Seedsmen, Florists, Amateur Horticulturists, and others.

TO BE LET or SOLD, a handsome Detached VILLA RESIDENCE, Garden and Grounds beautifully laid out and planted; suitable for a Tradesman's Country Residence, with the benefit of producing Stock &c., for his Trade, situated in the fork of the South-Eastern Railway main line and North Kent Railway entering Lewisham—an excellent position for a Trade Advertisement. Lease seventy years; rental, £60 per annum, and £300 for the Lease. Apply,

Horticultural Depôt, Vauxhall Station, London, S.

Ipswich, Suffolk.

TO LET, for a Term of Years, within a short distance of the Borough of Ipswich, about 50 ACRES of good ARABLE LAND, suitable for Market Garden and Nurserymen. The Advertiser is desirous to meet with persons wishing to commence business in the above line near the central county town of East Suffolk. For particulars apply to

T. N. F., Christ Church, Ipswich.

North Street Nurseries, Bridgwater.

To NURSERYMEN, FLORISTS, MARKET GARDENERS, FRUITERERS, and OTHERS.

TO BE LET, with Immediate Possession, the all desirable well-known and extremely productive NURSERIES, situate in North Street, in the Borough of Bridgwater, in the County of Somerset, in the occupation of Mr. Samuel Dyer, Nurseryman, Florist, Fruiterer, and Florist, and for many years prior thereto of Mr. Ambrose Dyer. The Nurseries are about to acres in extent, and contain a splendid Greenhouse, 50 feet by 20, with all the necessary Heating Apparatus, Staging, Supports, and Appliances; double Forcing House, 36 feet by 12 feet, with suitable Tanks, Propagating Cases, Staging, Fixings, and Supports. Cucumber and Melon Frames and Lights, Potting Houses, Coach-house, Stables, Sheds, &c., and other appropriate Buildings. The Lands are stocked with the choicest of Nursery Plants, and are in the highest state of cultivation. A Residence, with an Office and Shop, forms a portion of and adjoins the property, the whole lying compactly together in a ring fence.

Other Lands, now used as Nurseries, may be had if desired. Valuation in the usual way. Immediate Possession. The above is a most desirable Business Premises many advantages very rarely to be met with. To view, and for further particulars, apply to

Mr. Ambrose Dyer, Nurseryman, Bridgwater, Auction Offices, High Street, Bridgwater.

THE ROYAL PAVILION, BRIGHTON.

The GRAND SUMMER EXHIBITION of the Brighton and Sussex Horticultural Society will be held at the above splendid Palace and Grounds, on WEDNESDAY and THURSDAY, June 27 and 28. Prizes are offered on the usual liberal scale as on former years, for Plants, Ferns, Cut Flowers and Fruits. The "Ashbury" Cup is offered for the best 12 varieties of Stove and Greenhouse Plants.

Schedules of Prizes can be had on application to the SECRETARY, 56, St. James's Street; or, E. SPARY, Superintendent, Queen's Gardens, Park Street, Brighton.

EDWD. CARPENTER, Sec.

BURTON-ON-TRENT FLORAL and HORTICULTURAL SOCIETY.—The FIRST EXHIBITION of the Season of PLANTS, FLOWERS, FRUITS and VEGETABLES, will be held in the Hay, Burton-on-Trent, on WEDNESDAY, June 27, 1877. £60, £30, and £15 for the best TWELVE STOVE or GREENHOUSE PLANTS. &c.

SCHEDULE OF PRIZES and any information may be obtained from the Secretary, to whom Nurserymen and others wishing to become Subscribers should apply.

F. S. DUNWELL, Secretary.

10, Market Place, Burton-on-Trent.

TORBAY HORTICULTURAL SOCIETY, Torquay, JUNE 28.

SUMMER SHOW of PLANTS, FRUIT, VEGETABLES, &c., Prizes ONE HUNDRED POUNDS; and a Grand ROSE SHOW, Money Prizes upwards of SIXTY POUNDS, and Five Silver Cups. Open Prize variedies, one truss each, 1st Prize Cup, value £8; 2d prize, £5; 3d prize, £2. For 12 Tea and Noisette Roses, one truss each (Amateurs), 1st prize, presented by Messrs. Curtis, Sandford & Co., Cup, value five guineas. Entries close Thursday, June 21. Schedules, &c. ready.

W. PANE TUCKER, Capt., Hon. Sec. T. H. S.

Braddon Tor, Torquay.

WORCESTERSHIRE AGRICULTURAL SOCIETY.

MEETING at KIDDERMINSTER, July 24, 25, and 26.

President: The Right Hon. Lord Hampton.

A GRAND HORTICULTURAL EXHIBITION in connection with the above Meeting will be held on the Ground, Kidderminster, when PRIZES amounting to upwards of TWO HUNDRED POUNDS will be offered.

ENTRIES CLOSE July 17, 1877.

For Schedules of Prizes and Rules, &c., apply to EDW. T. GOLDSMITH, Secretary, 6, Foregate-street, Worcester; or to J. S. HAYWOOD, Assistant Secretary, 26, Mercia Terrace, 26, Broad Street, Worcester, Hon. Secretary to Horticultural Show.

Re John Harrison, deceased.

Pursuant to the Act of Parliament of the 22nd and 23d Vic., cap. 35, intituled "An Act to Further Amend the Law of Real Property and to Relieve Trustees."

NOTICE IS HEREBY GIVEN, that all Creditors and other Persons having any CLAIM or DEMAND against the Estate of JOHN HARRISON, late of Catterick Bridge, in the County of York, Nurseryman, who died on the 4th day of February, 1877, and whose Will was proved in the District Registry attached to the Probate Division of Her Majesty's High Court of Justice at York, on the 25th day of May, 1877, by William Harrison of Northallerton, in the County of York, Railway Waggon and Wheel and Axle Manufacturer (one of the Executors therein named), are hereby required to send in the particulars thereof to Messrs. LUMLEY AND LUMLEY, and WILLIAM HARRISON, or to me, the undersigned ALFRED E. HARRISON, on or before the 1st day of AUGUST next; and Notice is Hereby also Given that after that day the said Executor will proceed to distribute the assets of the deceased among the parties entitled thereto, having regard only to the claims of which the said Executor shall then have notice, and that he will not be liable for the assets or any part thereof so distributed to any person of whose debt or claim he shall not then have had notice.—Dated this 31st day of May, 1877.

ALFRED E. HARRISON,
16, Churchyard, Rotherham. Solicitor to the said Executor.

MIMULUS MOSCHATUS HARRISONII —Well rooted Plants of the above splendid new Musk, post-free, 12 each.

DAHLIAS, VERBENAS, and GERANIUMS.—Dahlias, 2s. 6d. per dozen, 24s. per 100, all best exhibition sorts to name. Verbenas, in single pots, good plants, 15s. per 100; turned out of pots, 20s. per 100. Geraniums in great variety, extra strong, 6s. per 100. Bedding Geraniums in great variety, extra strong, 12s. and 15s. per 100.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

DOUBLE ZONAL PELARGONIUMS, New 1876.—Madame Amelia Baltet, Dame Blanche, both good double white trusses, 1s. each; Madame Lemoine, Le Nobli Est, Madame Plaisançon, Michel Buckler, La Candeur, Meteor Flag, and Wonderful. The above set of ten splendid varieties for 10s. 6d. Carriage paid. Invaluable for Decorative Plants, or for Cut Flowers. Post-office Orders payable to

FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

REGAL PELARGONIUMS.—BEAUTY of OXTON | MARIE LEMOINE. CAPT. RAIKES | QUEEN VICTORIA.

The above splendid varieties 1s. each, per doz. 9s.

KONIG ALBERT, double ivy-leaf, 6s. per dozen.

Trade price on application.

FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

Clearance Sale.

CHOICE AMERICAN and OTHER POTATOS.—Price 12. per peck, or 8s. per cwt., free on rail, Rector, Early Rose, Lapstone Kidney, Regents, Reading Fluorball, Bresse's Peerless, Brownell's Beauty, Yorkshire Hero, Scotch Blue Regents, Wood's Scarlet Prolific, Alpha, &c. Orders will be sent out successively as the ground is cleared.

DANIELS BROS., Seedsmen to the Queen, Norwich.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bush. Begins to flower in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only necessities are a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.

RICHARD SMITH, Nurseryman, Worcester.

RODGER, MCCLELLAND AND CO. have still a few extra strong plants of

HYDRANGEA PANICULATA GRANDIFLORA, 1½ to 3 feet high, 12s. to 18s. per dozen.

CLEMATIS JACKMANII, 10s. per dozen.

PRINCE OF WALES, 9s. per dozen.

TROPÆOLUM SPECIOSUM, beautiful hardy climber, 6s. per dozen.

MUHLENBECKIA COMPLEXA, one of the most elegant of hardy climbing plants (like Maidenhair Fern), 6s. to 9s. per dozen.

64, Hill Street, Newry.

ROYAL BOTANIC SOCIETY,

REGENT'S PARK, LONDON, N.W.

SECOND SUMMER EXHIBITION, JUNE 13, 1877.

AWARDS of PRIZES.

12 STOVE and GREENHOUSE PLANTS. (Open)
1st, Messrs. Jackson & Son, Kingston.
2d, Mr. D. Donald, Gr. to J. G. Barclay, Esq., Leyton.
3d, { Mr. G. Wheeler, Gr. to Sir F. H. Goldsmid, Bart.
{ Mr. Jas. Child, Gr. to Mrs. Torr, Garbrand Hall, Ewell.

6 STOVE and GREENHOUSE PLANTS. (Amateurs.)
1st, Mr. James Child.
2d, Mr. J. H. Himmell, Gardener to F. A. Davis, Esq., Surbiton.
3d, Mr. G. Legg, Gr. to S. Ralli, Esq., Cleveland House, Clapham, S.W.

STOVE and GREENHOUSE PLANTS. (Nurserymen.)
1st, Mr. B. S. Williams, Holloway, N.
2d, Messrs. Jackson & Son, Kingston.
3d, Mr. J. Peed, Roupell Park, Norwood, S.W.

12 STOVE and GREENHOUSE PLANTS in 12-inch Pots. (Open.)
1st, Messrs. Jackson & Son. | 3d, Mr. G. Wheeler.
2d, Mr. James Child.

12 EXOTIC ORCHIDS. (Amateurs.)
1st, Mr. W. Denning, Gr. to Lord Londesborough, Kingston.
2d, Mr. J. C. Spyers, Orchid-grower to Sir Trevor Lawrance, Bart., Burford Lodge, Dorking.
3d, Mr. F. Rutland, Gr. to the Duke of Richmond, Goodwood.
Extra, Mr. H. Heims, Gr. to F. A. Philbrick, Esq., Q.C., Regent's Park, N.W.

12 EXOTIC ORCHIDS. (Nurserymen.)
1st, Mr. B. S. Williams, Holloway, N.
2d, Messrs. Jackson & Son, Kingston.

6 EXOTIC ORCHIDS. (Amateurs.)
1st, Mr. J. Douglas, Gr. to F. Whitburne, Esq., Loxford Hall, Essex.
2d, Mr. W. P. Roberts, Gr. to W. J. Terry, Esq., Peterborough House, Fulham, S.W.
3d, Mr. Isaac Hill, Gr., Poles, Ware, Herts.

6 EXOTIC ORCHIDS. (Nurserymen.)
1st, Mr. B. S. Williams. | 3d, Messrs. Jackson & Son.
2d, Mr. E. Morse, Epsom.

6 PELARGONIUMS in 8-inch Pots. (Open.)
1st, Mr. J. James, Gr. to W. F. Watson, Esq., Isleworth.
2d, Mr. Charles Turner, Slough.
3d, Messrs. Dobson & Son, Isleworth.

6 PELARGONIUMS. (Amateurs.)
1st, Mr. J. James.
2d, Mr. Geo. King, Gr. to R. Fen, Esq., Wolsey Grange, Esher.
3d, Mr. James Weir, Gr. to Mrs. Hodgson, The Elms, Hampstead, N.

6 PELARGONIUMS. (Nurserymen.)
1st, Mr. Charles Turner. | 2d, Messrs. Dobson & Sons.

6 FANCY PELARGONIUMS. (Amateurs.)
1st, Mr. George King. | 3d, Mr. James Weir.
2d, Mr. J. James.

6 FANCY PELARGONIUMS. (Nurserymen.)
1st, Mr. Charles Turner. | 2d, Messrs. Dobson & Son.

6 SCARLET or ZONAL PELARGONIUMS. (Amateurs)
1st, Mr. J. Catlin, Gr. to Mrs. Lermitte, East End, Finchley.
2d, Mr. George King.

6 SCARLET or ZONAL PELARGONIUMS. (Nurserymen.)
3d, Mr. C. Turley, Brentwood.

6 CAPE HEATHS. (Nurserymen.)
1st, Messrs. Jackson & Son.

6 CAPE HEATHS. (Amateurs.)
1st, Mr. G. Legg. | 3d, Mr. G. Wheeler.

6 OLD-FASHIONED PLANTS. (Open.)
1st, Mr. W. P. Roberts, Fulham, S.W.
2d, Mr. William Bull, Chelsea, S.W.
3d, Mr. G. Legg. | 3d, Mr. J. H. Ley, Croydon.

6 PALMS. (Open.)
1st, Mr. J. H. Ley. | 3d, Mr. G. Wheeler.
2d, Mr. G. Legg.

6 EXOTIC FERNS. (Amateurs.)
1st, Mr. C. Rann, Gr. to J. Warren, Esq., Crawley, Sussex.
2d, Mr. D. Donald. | 3d, Mr. James Child.

6 EXOTIC FERNS. (Nurserymen.)
1st, Mr. B. S. Williams. | 2d, Mr. J. H. Ley.

6 FINE-FOLIAGE PLANTS. (Amateurs.)
1st, { Mr. C. Rann. | 2d, Mr. D. Donald.
{ Mr. G. Legg. | 3d, Mr. James Child.

6 FINE-FOLIAGE PLANTS. (Nurserymen.)
1st, Mr. B. S. Williams. | 2d, Mr. J. H. Ley.

6 ROSES in Pots. (Nurserymen.)
1st, Messrs. Paul & Son, Cheshunt, N.

6 ROSES in Pots. (Nurserymen.)
1st, Messrs. Paul & Son, Cheshunt, N.

CUT ROSES, 24 varieties. (Amateurs.)
3d, Mr. James Charrd, Gr. to Sir F. Bathurst, Clarendon Park.

CUT ROSES, 24 varieties. (Open.)
2d, Mr. James Chard.

CUT ROSES, 12 trusses, yellow. (Open.)
1st, Mr. James Chard.
2d, Mr. James Boltond, Gr. to W. Spottiswoode, Esq., Combe Bank, Sevenoaks.
3d, Mr. William Seder, Gr. to O. Hanbury, Esq., Brentwood.

CUT ROSES, 12 trusses, white.
1st, Mr. James Chard. | 2d, Mr. James Bolton.

CUT ROSES, 1 basket, 1 variety.
1st, Mr. James Chard.

CUT ROSES, 1 basket, mixed colours.
1st, Mr. James Chard. | 2d, Mr. William Soder.

PYRETHRUM, 24 trusses. (Open.)
1st, Mr. W. P. Roberts, Gr., Peterborough House, Fulham, W.

HARDY HERBACEOUS FLOWERS, 24 trusses, 12 varieties.
1st, Mr. J. Douglas. | 3d, { Mr. G. Wheeler.
2d, Mr. E. Morse, Epsom. | { Mr. W. P. Roberts.

STOVE and GREENHOUSE FLOWERS, 24 trusses, 12 varieties.
1st, Mr. J. Douglas.
2d, Mr. James Bolton.
3d, Mr. W. Bones, Gr. to D. McIntosh, Esq., Havering Park.
4th, Mr. E. Morse, Epsom.

BASKET of WILD FLOWERS
1st, Mr. J. Green, Poles, Ware, Herts.
2d, Mr. James Chard.
3d, { Mr. W. Roberts, Holly Cottage, Hendon.
{ Mr. Thomas Pyne, Holly Cottage, Hendon.
Extra, Mrs. Soder, Weald Hall Cottage, Brentwood.

FRUIT.

COLLECTION of FRUIT, 9 dishes.
1st, Mr. G. T. Miles, Gr. to Lord Carrington.
2d, Mr. W. Bones, Gr. to D. McIntosh, Esq.

2 PINE-APPLES, Queen.
1st, Mr. J. Akehurst, Gr. to S. Copestake, Esq., The Grove, Kentish Town, N.W.
2d, Mr. F. Rutland, Gr. to the Duke of Richmond.

1 PINE-APPLE, Queen.
1st, Mr. J. Douglas. | 3d, Mr. J. Akehurst.
2d, Mr. F. Rutland.

1 PINE-APPLE, any other variety.
1st, Mr. G. T. Miles.

2 MELONS, 1 Green, 1 Scarlet.
1st, Mr. Gilbert, Gr. to the Marquis of Exeter, Burleigh.
2d, Mr. G. T. Miles.
3d, Mr. George Holliday, Gr. to J. Norris, Esq., Bletchingly.

1 SCARLET-FLESHED MELON.
1st, Mr. S. Mortimer, Gr., Purley Park, Reading.
2d, Mr. Gilbert. | 3d, Mr. G. T. Miles.

GRAPES, Basket of 12 lb., Black.
1st, Mr. J. Douglas.
2d, Mr. F. S. Kay, Finchley, N.
3d, Mr. P. Edwards, Gr. to Mrs. Tristram, Liphook, Hants.

GRAPES, Basket of 12 lb., White.
1st, Mr. G. Grimmett, Gr. to J. Wilmot, Esq., Isleworth.
3d, Mr. W. Robins, Gr. to T. D. Lee, Esq., Aylesbury.
3d, { Mr. P. Feist, Gr. to R. J. Arkwright, Esq., Staines.

GRAPES, Black Hamburgh, 3 bunches.
1st, Mr. W. Bones.
2d, Mr. R. Sowerby, Gr. to the Earl of Macclesfield.
3d, Mr. James Bolton.

GRAPES, Black, any other variety, 3 bunches.
1st, Mr. J. Bolton. | 3d, Mr. George Holliday.
2d, Mr. G. Grimmett.

GRAPES, Muscat of Alexandria, 3 bunches.
1st, Mr. G. Grimmett. | 3d, Mr. W. Robins.
2d, Mr. P. Edwards.

GRAPES, any other variety, White, 3 bunches.
1st, Mr. J. Douglas.
2d, Mr. Robert Sowerby.
3d, Mr. C. W. Alderson, South Lambeth, S.W.

PEACHES, 2 dishes.
1st, Mr. Robert Sowerby.
2d, Mr. G. Cornhill, Gr. to J. S. Virtue, Esq., Oatlands Park.
3d, Mr. W. Robins.

NECTARINES, 2 dishes.
1st, Mr. George Holliday. | 3d, { Mr. G. T. Miles.
2d, Mr. Robert Sowerby. | { Mr. G. Cornhill.

CHERRIES, Black, 2 dishes.
1st, Mr. G. T. Miles.

CHERRIES, White, 2 dishes.
1st, Mr. G. T. Miles.

STRAWBERRIES, 2 dishes.
1st, Mr. J. Worthing, Gr. to A. Ross, Esq., Chadwell, Essex.

ANY OTHER FRUIT NOT MENTIONED IN SCHEDULE.
1st, Mr. Woodbridge, Gr., Sion House.
2d, Mr. J. Douglas.
3d, Mr. W. P. Roberts.

MISCELLANEOUS.

Extra Prizes were awarded as under :—
Messrs. Jas. Veitch & Sons, for Group of New and Rare Plants.
Mr. William Bull, for Group of New and Rare Plants.
Mr. B. S. Williams, for Group of New and Rare Plants.
Messrs. Rollisson & Son, for Group of New and Rare Plants.
Mr. J. Gaines, Everett Hill, for Group of New and Rare Plants.
Mr. J. Wills, South Kensington, S.W., for Group of Dracænas.
Mr. Ollerhead, Gr. to Sir F. Peek, for Group of Orchids.
Mr. James, Isleworth, for Collection of Calceolarias.
Mr. Burley, Brentwood, for Collection of Bronze Pelargoniums.

BOTANICAL CERTIFICATES of MERIT.

Messrs. James Veitch & Son, Chelsea, S.W., for Acalypha Macafeeana, Croton Regina, C. hybridus, Gymnogramma Mueller, Pteris, ensiformis variegata, Anthurium Warscewicrianum, A. Veitchii, Dicksonia Berteriana, and Liparis elegantissima.

Mr. William Bull, Chelsea, S.W., for Coleus pictus, Araucaria excelsa albo-variegata, Zamia Kesali, Cycas media, Dieffenbachia Chelsoni, Croton Bismarckii, C. splendidus, Aralia ornata, Cyathea Dregei, Lomaria Dalgairnsii, Cycas media latissima, and Odontoglossum vexillarium roseum.

FLORICULTURAL CERTIFICATES OF MERIT.

Messrs. James Veitch & Son, for Rhododendron Maiden's Blush, and Azalea indica imbricata.
Mr. J. Gaines, Everett Hill, S.E., for Begonia Gloire de Nancy.
Mr. J. Douglas, Loxford Hall, Ilford, for Aquilegia hybrida carulea, and Aquilegia hybrida californica.
Rev. A. Matthews, Market Harborough, for Pelargonium Bertie.
Mr. Charles Turner, for Pelargoniums Venus, Silvio, Mrs. Pope, Henry King.
E. B. Foster, Esq., Clewer Manor, for Pelargonium Toby.
Messrs. E. G. Henderson & Son, for Seedling Mimulus, Henderson's strain.
Mr. T. S. Ware, Tottenham, for Viola Freedom.

SUTTON'S

SUPERB STRAINS OF

FLORISTS' FLOWERS,

POST FREE.

The Finest Strain of Cineraria.



SUTTON'S SUPERB CINERARIA.

This will be found unequalled by any in cultivation, the seed having been saved from the finest named varieties only.

Price 2*s.* 6*d.* per packet, post-free.

From Mrs. A. Alleston, *Prittlewell, May* 8.

"Our Cinerarias this year (from your seed) are splendid; they far surpass any I saw at the Botanical Gardens yesterday."

The Finest Strain of Primula.



SUTTON'S SUPERB PRIMULA.

This choice stock has been carefully selected from the largest fringed flowers of good colour. Habit robust, with bloom thrown well above the foliage.

Red, white, or mixed, 2*s.* 6*d.* per packet, post-free.

From W. Edwards, Esq., *Wellington, January* 21.

"I cannot help saying that the Primulas from your seed have always given great satisfaction, but this year more than ever."

The Finest Strain of Calceolaria.



SUTTON'S SUPERB CALCEOLARIA.

This splendid strain has been most carefully selected from the very finest collections in cultivation. The plants are compact in habit, with beautiful green foliage, and a profusion of bloom. The flowers are perfect in form and substance, and of every shade of colour.

Per packet, 2*s.* 6*d.*

From A. E. Russell, Esq., *Dalmabrock, July* 10.

"My Calceolaria plants, from seed purchased of you last year, are particularly fine, of very compact habit, and beautiful in colour."

See also page 695 *of the "Gardeners' Chronicle," June* 2, 1877.

SUTTON & SONS,

THE QUEEN'S SEEDSMEN, READING.

NOTICE.

The Valuable PRIZES offered by

MR. WILLIAM BULL

Will be competed for at the Great Summer Show of the Royal Horticultural Society on June 19.

For Particulars *vide* Schedule of the Royal Horticultural Society, or Mr. William Bull's Catalogue for 1877.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.



CHOICE FLOWER SEEDS

For Present Sowing.

Our own superb strains, guaranteed of unsurpassable quality, Post-free on receipt of P.O.O. or Stamps.

	Per packet—s. d.
AURICULA, choicest mixed, alpine .. .. .. 6d. and	1 0
CALCEOLARIA HYBRIDA, very choice, mixed 1s. ,,	2 6
CINERARIA HYBRIDA, from named flowers.. 1s. ,,	2 6
CARNATION and PICOTEE, from stage flowers 1s. ,,	2 6
HOLLYHOCK, Prize English .. .. .. 6d. ,,	1 0
INDIAN PINK, splendid double, mixed	0 4
MIMULUS, Daphne's superb, very fine..	1 0
MYOSOTIS DISSITIFLORA—Forget-me-not	0 6
PANSY, choicest mixed English .. .. 6d. and	1 0
PRIMULA SINENSIS, choicest mixed .. .. 1s. ,,	2 6
POLYANTHUS, finest gold-laced, choice	1 0
STOCK, Brompton, scarlet Giant	0 6
,, East Lothian, splendid	0 6
SWEET WILLIAM, very choice, mixed..	0 6
WALLFLOWERS, splendid double, mixed .. 6d. and	1 0
GREENHOUSE PERENNIALS, 12 fine varieties	6 0
HARDY PERENNIALS, 12 choice sorts, Pansy, Hollyhock, &c.	4 6

DANIELS BROS.,

ROYAL NORFOLK SEED ESTABLISHMENT, Norwich.



Pine-Apple Nursery, Maida Vale, London, W.

E. G. HENDERSON AND SON are now sending out the following plants—several of which are being offered for the first time. See the May Bedding and Soft-wooded Greenhouse Plant Catalogue for descriptions, which will be forwarded on application :—

PELARGONIUM Queen of Stripes, large flowered section, with Carnation-like striped flowers.
,, Ivy-leaved Nemesis, the finest coloured in the group.
,, ,, Dame Blanche, very delicate colour.
POUVARDIA ROSEVILLE, very showy species.
LOBELIA Pine-apple Gem and Princess of Wales.
MIKANIA SCANDENS VARIEGATA, a useful plant.
CUPHEA MINIATA IGNEA, brilliant.
DACTYLLIS ELEGANTISSIMA AUREA, fine.
MIMULUS, a collection of new colours, and double-flowered.
VERBENAS and PETUNIAS, new colours and varieties.
SALVIA SPLENDENS BRUANTI, the finest.
ABUTILON DARWINII TESSELATA, useful.
SEED—the best quality that can be grown—of Calceolaria, Cineraria, Primula, single and double ; Cyclamen, Pansy, &c.
See Advertisement May 5, or our SEED CATALOGUE, for prices, &c.

CRANSTON'S NURSERIES.

ESTABLISHED 1785.

SPECIALITIES.

ROSES, FRUIT TREES, CONIFERS.

Address — CRANSTON & CO., KING'S ACRE, near HEREFORD.

QUANTITY and QUALITY.

NEW ROSES, IN POTS.

TEA and NOISETTE ROSES, IN POTS.

CLEMATISES, IN POTS, of best New and Old Sorts.

ORCHARD-HOUSE TREES, IN POTS.

VINES, IN POTS.

Also, by far the largest and most carefully grown Outdoor NURSERY STOCK in this part of England.

LISTS FREE.

EWING & COMPANY,

THE ROYAL NORFOLK NURSERIES, FATON, NEAR NORWICH.

THE NEW SEEDLING ROSE, "QUEEN of BEDDERS" (NOBLE).

See Coloured Plate (after Mrs. Duffield), "Gardeners Chronicle," May 5, 1877.

Perhaps the finest of all the English Seedling Roses of recent introduction. It is *par excellence* a really Bedding Rose in every sense of the word—requires no pegging down, support, or training of any kind, and is a continuous early and late bloomer.

First-class Certificate Royal Horticultural Society, August 1, 1876.

Its inflorescence may be imagined when it is stated that a plant 18 inches high had eighty-four buds and expanded flowers upon it on September 6, 1876.

A constant supply of buds was obtained from early June to November of that year—over five months.

Good Plants are now being sent out in strict rotation at

10s. 6d. each.

Coloured Plates 1s. each.

CHARLES NOBLE, BAGSHOT.

TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15s. to 18s. per dozen.
,, extra size, in 6-inch pots, for Greenhouse, set with buds, 24s. per dozen.
,, extra size, in 8-inch pots, for Greenhouse, set with buds, 30s. to 36s. per dozen.
,, Half Specimens, 5s. to 7s. 6d. each.
NEW FRENCH ROSES of 1877, 30s. per dozen.
HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36s. to 42s. per dozen.

CRANSTON'S NURSERIES, KING'S ACRE, near HEREFORD.

Address—**CRANSTON & CO.**



TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.



WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above : also of his

MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS. KING'S ROAD, CHELSEA, LONDON, S.W.

STRAWBERRY, THE DUKE OF EDINBURGH

(MOFFAT).

THE LAWSON SEED AND NURSERY COMPANY (LIMITED),

EDINBURGH and LONDON,

Have made arrangements with Mr. Moffat, Coldwells, to send out, for the first time, the above-named splendid Strawberry. Fruit very large, firm, and of excellent flavour, bright scarlet colour. A most prolific bearer, and as a main crop for market purposes it is unsurpassed.

Strong Plants, 42s. per 100 ; 25s. per 50 ; 15s. per 25 ; 9s. per dozen.

Trade Price on application.

1, GEORGE IV. BRIDGE, EDINBURGH ; 54, BISHOPSGATE ST. WITHIN, LONDON.
April, 1877.

NEW ENGLISH-RAISED SEEDLING ROSES.

MESSRS. PAUL & SON,

THE OLD NURSERIES, CHESHUNT, N.

(THESE NURSERIES ESTABLISHED IN 1806),

Have great pleasure in announcing as a continuation of the series of English Roses raised or sent out by them since 1860, inclusive of LORD CLYDE (Paul & Son), DUKE OF EDINBURGH (Paul & Son), CHESHUNT HYBRID (Paul & Son), ANNIE LAXTON (Laxton), DUKE OF CONNAUGHT (Paul & Son), &c., &c., and containing never a bad one in the lot,

TWO NEW ENGLISH SEEDLING ROSES.

H.P. EMILY LAXTON (Laxton), a large full flower with globular, pointed bud, opening into large globular flower. In the way of Monsieur Noman, but of a rich cherry-rose, deeper and fuller than that kind, and with strong vigorous habit, making a grand pillar Rose.

First-class Certificate Royal Horticultural Society ; First-class Certificate at the Leeds and Crystal Palace Rose Shows, and 1st Prize at Exeter for twenty-four of any one kind.

H.P. MARCHIONESS OF EXETER (Laxton), clear, rose-flushed, light cherry-rose, large, finely built-up flower, very sweet, and of strong vigorous growth ; a larger more double Annie Laxton, yet perfectly distinct from that kind.

Plants in pots of the above, ready early in June, 7s. 6d. each, 14s. the two varieties ; Blooming Plants, in 24-pots, 10s. 6d. each, 20s. the two varieties.

The two kinds described above have been proved two seasons at Cheshunt, and can be recommended as continuing the race begun by this raiser with H.P. Annie Laxton.

PAUL & SON,

THE OLD NURSERIES, CHESHUNT, N.

(These Nurseries Established 1806)

THE THAMES BANK IRON COMPANY,



Old Barge Wharf, Upper Ground Street, London,
SURREY SIDE, BLACKFRIARS BRIDGE.



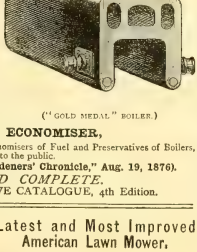
HOT-WATER BOILERS,
PIPES, CONNECTIONS.

NEW PATENT "CLIMAX" BOILER (1874). See p. 666, 1874, *Gardeners' Chronicle.*
"GOLD MEDAL" BOILER (Birmingham, 1872).
PATENT "EXCELSIOR" BOILER (1871).
☞ *The largest and most complete Stock in the Trade; upwards of Twenty Thousand Pounds' worth to choose from.*

"WITLEY COURT" BOILER (Silver Medal 1872).
"TRENTHAM IMPROVED" BOILER, with Water-way End and Smoke Consumer.
"TUBULAR," and every other Boiler of known merit or excellence.
☞ *Prize Medal Awarded at the National Contest, Birmingham, 1874.*



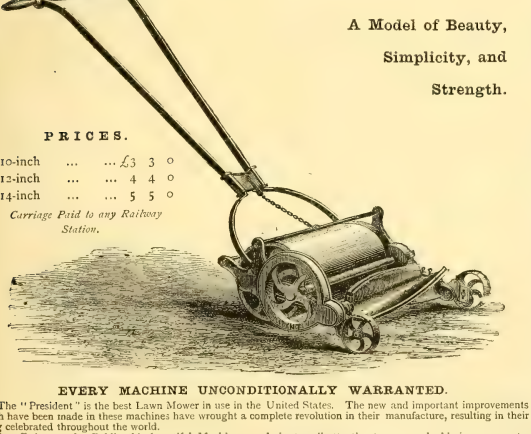
("TRENTHAM IMPROVED" BOILER.)



("GOLD MEDAL" BOILER.)

MILL'S PATENT AUXILIARY FUEL ECONOMISER,
Which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boilers, Fire-Bars, and Furnace Fronts ever yet introduced to the public.
STAINTON'S NEW PATENT FROST DEFYING LIQUID (see "Gardeners' Chronicle," Aug. 19, 1876).
HOT-WATER APPARATUS ERECTED COMPLETE.
PRICE LIST on application; or, Six Stamps for DESCRIPTIVE CATALOGUE, 4th Edition.

"THE PRESIDENT," Latest and Most Improved American Lawn Mower.



A Model of Beauty,
Simplicity, and
Strength.

PRICES.

10-inch	...	... £3 3 0
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Carriage Paid to any Railway Station.

EVERY MACHINE UNCONDITIONALLY WARRANTED.

The "President" is the best Lawn Mower in use in the United States. The new and important improvements which have been made in these machines have wrought a complete revolution in their manufacture, resulting in their being celebrated throughout the world.

In offering to the Public this beautiful Machine, we desire to call attention to many valuable improvements. It has a noiseless positive ratchet, a full roller, and an adjustable iron handle, allowing the machine to follow an uneven surface on slopes, terraces, and borders, without any inconvenience to the operator.

This Mower is of lighter draught, and we feel warranted in saying, will *outwear any in the market.* The workmanship and material far surpass anything of this character now manufactured, and we invite inspection and comparison with any Lawn Mower yet produced.

The machine is simple, easy to adjust and keep in order, and *the knives can be sharpened without removing them from the machine.* The gearing is *all perfectly enclosed*, rendering it entirely free from clogging.

In brief, if you want a Lawn Mower that will *run easy*, do *good work*, *last you longer* than any you can buy, and give you *less trouble*, we recommend the "President" with perfect confidence to your favourable consideration.

THOMAS McKENZIE & SONS (LIMITED),
79, MARK LANE, LONDON, E.C.;
DAWSON STREET, DUBLIN; and VICTORIA STREET, BELFAST.

New Plants for 1877.

B. S. WILLIAMS' ILLUSTRATED NEW PLANT CATALOGUE for 1877 is now ready, and will be sent, post-free, to all applicants.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

W. F. BOFF offers the following, all fine stuff, in small 60's :—GERANIUMS, Vesuvius, 14s. ; Madame Vaucher, 16s. ; Master Christine, 16s. per 100 ; VERBENAS, 12s. per 100 ; DAHLIAS, 16s. per 100 ; HELIOTROPE, 12s. per 100 ; CALCEOLARIAS, Gem or aurea, 12s. per 100 ; COLEUS, 12s. per 100 ; PYRETHRUM AUREUM LACINIATUM, 20s. per 100.—303, Upper Street, Islington, N.

To the Trade.

BEDDING PLANTS.—Fine, well grown, in separate pots :—
VERBENAS, Eclipse (scarlet), Purple King, and Boule de Niege (pure white), in splendid stuff, 12s. per 100.
GERANIUMS, Zonal, to name, 14s. per 100.
CALCEOLARIA, aurea floribunda, 14s. per 100.
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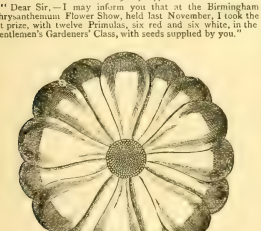


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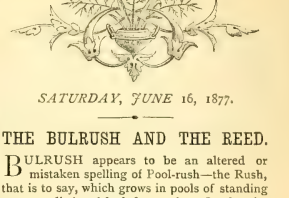
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SATURDAY, JUNE 16, 1877.

THE BULRUSH AND THE REED.

BULRUSH appears to be an altered or mistaken spelling of Pool-rush—the Rush, that is to say, which grows in pools of standing water as distinguished from mire. In the sixteenth century this name was also written Polerush. The original application was plainly to the Scirpus lacustris. Gerard calls this plant "the great Water-rush or Bulrush." The name occurs also in other old writers, whose allusions point unmistakably to the same thing. In the *Golden Boke* we have a "girdel of Bulrushes," and in Spenser—

> "To make fine cages for the nightingale
> And baskets of Bulrushes was my wont."

For more than two centuries after the time of Gerard the name seems to have held its place. At last the spelling begins to change to Bullrush, as in the *English Flora* of Sir J. E. Smith, 1828. In 1829 Loudon applies it to the Penicillaria spicata, an Indian grass, calling the Scirpus "Tall Club-rush," though allowing Bullrush to stand as a synonym. Lindley, in 1836, says Bullrush is the English equivalent of Typha, though the name, he continues, is "sometimes applied to the Scirpus lacustris." Mr. Bentham, who restores the sixteenth century spelling, also makes Bulrush the equivalent of Typha, and translates Typhaceæ as the Bulrush family (*Handbook British Flora*, 1858). Lastly, in *Chambers' Cyclopædia*, 1861, it is stated that "Bulrush is a popular name for large Rush-like or Reed-like plants growing in marshes, not very strictly limited to any particular kind." Some persons, the writer goes on to say, "restrict it to the Typha. Perhaps it is more commonly restricted to the larger species of Scirpus." The expansion, not to say the change of meaning, in the days we call our own, may well be a source of confusion and perplexity. The older botanists certainly never gave the name to the Typha, which was always "Cat's-tagle or Reed-mace," though with the synonym, so it is said, of Bul-segg, literally Pool-sedge. Spelling the name differently, and thus obscuring the etymology, modern authors have also come to regard the "bull" as a metaphor for "large," which in Bullrush it certainly is not.

The name of Bulrush being familiar in the sixteenth century as that of a plant suitable for ligatures, and for weaving into a coarse counterpart of basket-work, it was very natural that it should come to be employed in the Old Testament as a representative of the Hebrew *gôme*, which latter is so translated in the Authorised Version. The first occurrence is in the narrative of some famous events that once happened on the banks of the Nile. When the mother of the infant Moses, after three months' hiding of her babe, for his life's sake, could no longer conceal him indoors, driven to a new and forlorn expedient, she "took for him," it is said, "an ark of *gôme* . . . and put the child therein, and she laid it in the flags by the river's brink. . . . And the daughter of Pharaoh came down to wash herself in the river, and her maidens walked along by the river-side, and when she saw the ark among the flags she sent her maid to fetch it." The remainder of the story, so simple and natural in all its incidents, needs no recounting; we have

here only to consider what the *gôme* was—it was certainly neither the Typha nor the Scirpus palustris. To pause, however, for a moment on the word "ark" is well worth while, since the Hebrew word thus translated in the story before us, *tebah*, is the same as the one employed in the history of the Noachian Deluge, wherras the "Ark of the Covenant," which was constructed of Acacia-wood, is in the original called *aron*. The latter was a kind of chest or coffer, for use on land; *tebah*, on the contrary, denoted a vessel intended to float. The sense of the word "ark" is most correctly preserved in the second of the two Authorised Version uses, as illustrated very clearly in the old poets. Surrey has—

"In the rich arke Dan Homer's rimes he placed,"

and Herrick, in one of his pretty little pictures—

"You have beheld how they
With wicker-arks did come,
To kiss and beare away
The richer Cowslips home."

The "meal-ark," constructed of oaken boards, is still to be found in old-fashioned farmhouses in the North of England. In bygone days the making of such chests was a matter of importance, so considerable as to have originated the surname of Arkwright.

THE PAPYRUS.

Gôme, the above-mentioned Hebrew word, essentially denotes the far-famed and immemorial Papyrus, the plant, above all others, which takes the mind back to ancient Egypt and its mighty river. The Papyrus is at once the most beautiful of its diversified race, and the most useful. The ancient Egyptians plaited the stems not only into little boats, but into sails, mats, and sandals. The fabrication in particular of little boats appears to have been practised by them to an immense extent, and to have commenced in the very earliest days of their time-worn history. They were constructed, in all likelihood, much in the same way as the reed-canoes still in use among the Peruvians who live on the borders of Lake Titicaca. There the reeds are tied together in bundles, which are then united longitudinally; the sail is woven of similar but smaller parallel bundles, and in these little skiffs all voyages are undertaken. M. de Castelnau says that the Peruvian reed-boats exactly resemble the pictured representations of the Egyptian ones, as preserved on the walls of the tomb of Rameses III. at Thebes. The little wherries thus manufactured were exceedingly light, and in movement very swift. Like the coracles of the ancient Britons, they held only two or three persons, and often sufficed for no more than a single occupant. When the navigator came to a rapid or to a part of the stream where he thought himself in peril, he quitted the water, and, taking the frail little craft upon his shoulders, walked till he found a suitable place for launching again. A covering of bitumen, as described in the account of the ark in which the infant Moses was laid, is of course to be understood as having always been added. Beautiful must have been the scene on that once gay and glorious old river, as these tiny skiffs, gliding hither and thither, and dancing on the ripples, pursued their innumerable ways of business or pleasure. Doubtless it would be in boats of this description that the pleasure-seekers made their visits to the groves of Nelumbo, on the occasion of the joyous "Lily feasts." Their swiftness would recommend them also for the transmission of news to distant places. In relation to their use for this, the Old Testament again alludes to the *gôme*, and again the translators give "Bulrush" as the most suitable rendering. "Woe to the land shadowing with wings, which is beyond the rivers of Ethiopia, that sendeth ambassadors by the sea, even in vessels of *gôme* upon the waters" (Isaiah xviii. 2, 3). Probably it is to these self-same boats that reference is made in Job ix., 26, in the phrase *ebeh oniyoth*. The connection is in favour of so regarding the passage, but linguistic difficulties stand in the way of positive proof. Plutarch says that Isis traversed the waters in one of these Papyrus boats when seeking the remains of Osiris. Theophrastus refers to them, so does Lucan, in the *Pharsalia* (iv. 136); Pliny, also, in several places. They continued to be used for many ages. Bruce found them in Abyssinia, and probably they are not yet obsolete upon African streams, where either the Papyrus or some congenerous plant exists in adequate plenty. The Papyrus was employed in ancient Egypt in several other ways. Bundles of the stems furnished models for the shafts of some of the pillars of the temples, and the bases of these were ornamented with representations of the sheaths that encircle the foot of the flower-stalk. That this famous plant supplied the material of which paper, both rough and fine, was manufactured in ancient times hardly needs mentioning. Papyrus paper made 2000 years B.C., or anterior to the time of Abraham, is still in existence. It was an article of commerce long before the time of Herodotus, and it remained in use till the seventh century. When Pliny says that it was not in use before the time of Alexander the Great he probably means not in Europe. Upon two occasions Papyrus paper is mentioned in Scripture—namely, in 3 Macc. iv. 20, and in 2 John 12.

The early Hebrews, as a rule, appear to have preferred to write upon dressed skins of animals. Another Egyptian name of the plant, according to Herodotus, was *byblos*. Perhaps more strictly this word denoted the inner portion of the stem. It passed from the Egyptian language into the Greek; in the latter it came in time to signify a book, especially one in which sacred verses were written, not to be seen by the profane, as in the *Suppliants* of Æschylus, 947; and again, in course of time, it acquires the shape of Bible, literally "Papyrus pith." Papyrus stems were likewise twisted into cordage, as mentioned by Homer, *Odyssey*, xxi.

In the original of the Old Testament *gôme* appears upon two other occasions. Here, however, it may perhaps be questionable whether it denotes the Papyrus definitely, or reedy plants in general. In Job viii. 2, it is said, "Can the *gôme* grow up without mire; can the *achu* grow without water?" And in Isaiah xxxv. 7, we have, "The parched ground shall become a pool, and the thirsty land springs of water. In the habitation of dragons, where each lay, shall be grass, with reeds and *gôme*." The Authorised Version reading in both these verses is simply "Rush." The spiritual sense remains the same. The Isaiah passage makes it plain that grass and reeds and *gôme* stand in Nature as representatives of something which spiritually is very beautiful and desirable. The explanation of what these things stand for in the rejoicing of the desert and the blossoming of the Rose. It is identified with the flourishing of the kingdom of Christ, and for all practical purposes that is enough.

Of late years it has been thought by some that the Papyrus is a plant of two distinct species, the plant familiar in our conservatories representing, not the ancient Egyptian Papyrus, but an independent Asiatic and European one. Instead of letting Papyrus antiquorum stand for the whole idea of the plant, it has been proposed to call the African one P. nilotica or ægyptiaca, and the Asiatic and European one P. syriaca or siciliana. The well-known globular umbel of the so-called syriaca, with its short and comparatively short bracteas and a reflexed involucrum, is exchanged in the so-called nilotica for a besom-shaped umbel; the bracts are very numerous and much longer, and the involucrum is erect. There is also a considerable difference in the stature of the two plants, the syriaca attaining the height of 12 to 14 feet, whereas the nilotica rarely exceeds 6 or 7. But, as in many other cases, these characters break down on comparison of a long series of specimens from various localities. Syrian examples correspond with African ones, and *vice versâ*, and Professor Oliver is no doubt right in asserting that the alleged differences are trifling and inconstant. The unlikeness which no doubt exists between individual extremes he considers to be largely due to the age and maturity of the particular specimens.* The form called syriaca is certainly the most beautiful of the two varieties, the innumerable long green filaments which constitute the great globular umbel depending from the apex of the stem in the lightest and most graceful way imaginable. When the stem leans sideways, as it is prone to, nothing in Nature presents a picture of more rich and elegant languor. An eastern princess, faint with sunshine, could not hang her arms more delicately. This Syrian plant, though not met with in the wild state very generally, still abounds in some of what would seem to have been its original localities. It occurs on the borders of the Sea of Galilee, and in great plenty in the marshes of Hûleh (the "waters of Merom" of the Old Testament), which are situated, it will be remembered, in the immediate neighbourhood of the Upper Jordan. The condition in which it appears in the Hûleh marshes is most extraordinary. The plant, as well known, has a very large, massive, and horizontal rhizome. This rests, half-submerged, upon the water, into which the roots descend, 3 to 5 feet in length, while a vast jungle of aërial growth is elevated above.† When the water is not deep enough to allow of the floating, the rhizome burrows in the soft mud of the pools and stream-sides which the plant inhabits. As regards Sicily, whether truly indigenous in that island, or introduced at some early period, is not known.

In Africa, at all events within the tropics, the Papyrus is probably a characteristic member of the flora. All the ancient writers who have occasion to mention the plant connect it with the Nile. Dried stems are found in the ancient Egyptian tombs. Ovid calls the Nile *amnis papyrifer*. Though identified with this famous stream from the earliest times which literature talks of in the important part of the river, or along the strip of country where the Egyptians as a nation chiefly dwelt, like the Nelumbo it would appear to have existed only as an importation. Bruce came very decidedly to this conclusion, and the fact of the plant being now no longer found in Lower Egypt certainly gives weight to the belief. The disappearance can scarcely have come of any natural cause. That it is now lost from the Lower Nile is probably referable to causes identical with those which have shorn the river of the beauty anciently conferred by the Nelumbo, and which involve the idea of human intervention for its maintenance. By readers of the Authorised Version the disappearance in question is very naturally thought to be in fulfilment of one of the prophecies in Isaiah—"The paper-reeds . . . by the brooks, and everything sown by the brooks, shall wither, be driven away, and be no more" (xviii. 7). The prophecy of course has reference to the Nile and the little canals or sluices connected with it. But the Hebrew word here rendered "paper-reeds," *arôth*, whatever it may hold of latent or figurative meaning, conveys no literal or direct reference to the *gôme*, or to any reedy plant whatever. It simply signifies open and exposed grass-land, such as usually borders rivers in level countries. The Papyrus (in the Sicilian or Syrian form) is stated by Loudon to

* See, for all particulars, the *Gardeners' Chronicle*, January 16, 1875, p. 78, a very interesting article, accompanied by an illustration, by Professor Thiselton Dyer. Also the *Garden*, July 13, 1874, p. 504.

† See the very interesting account in the *Rob Roy on the Jordan*, by J. Macgregor, chap. xvii., 1869.



FIG. 119.—THE EAGLE'S CLAW ECHINOCACTUS.

have been introduced into English conservatories in 1803. The form called nilotica appears not to be known in them.

(To be continued.)

THE EAGLE'S CLAW ECHINOCACTUS.

THE handsome Echinocactus of which we give an illustration (fig. 119) from a plant in Mr. Peacock's collection is probably, as we learn from Dr. Engelmann, to whom we submitted the drawing, closely allied to E. Wislizeni, a species characterised by the central spine of each tuft being stout, flattened, ribbed, and hooked at the point; others of the spines are weaker and straight, the outermost setaceous, often twisted. Mr. Croucher, who has the two plants side by side, tells us that the present species differs from E. Wislizeni in the larger number of spines, the central hooked one being channelled, and much longer than in the species just named, reaching to 3½ inches. The ribs of the stem are, also, less prominent. The flower is of a pale yellow colour. In any case it is a very striking plant, sure to be appreciated by Cactus lovers. Its botanical position must rest for the time undetermined, though the probability is that it is an undescribed species. Meanwhile, to distinguish it temporarily, we may call it the Eagle's Claw Echinocatus.

New Garden Plants.

VANDA CŒRULESCENS, *Griff.*, var. BOXALLII, *n. v.*

This may be the plant represented by gallant Dr. Griffith for its short conical spur, yet the authentic specimens preserved in the herbaria belong to the now well-known plant, acknowledged to be a most gracious distichous Orchid, a sweet Vanda passing herself off as an Aerides or a Saccolabium Blumei in inflorescence. The old one we have already had for a while has a slender bent spur, and the blade of the lip more dilatate at its top. It may, however, be that those variations in the spurs and lip's shape have just nothing to do with colours, on which our new variety is chiefly founded; and I much suspect this from several reasons, the most decisive of which is that I find among my wild specimens one which is nearly blue, and yet it has the spur and the lip's blade of our new variety.

Our plant has leaves and growth of the old plant, yet the sepals and petals are white. The lips are of a lavender tint, with "porcelain-blue bars." There is an earnest belief with some strong Orchidists, as I see from recent letters at hand, that this beats the old Vanda cœrulescens; ah, yes, it is your youngest *enfant chéri!* My private opinion in the matter is that one may grow both and feel much pleased if the two flower side by side, and bear the event with resignation if they do not. I need not say, it is a high pleasure to name it in the memory of the intrepid, persevering and successful discoverer, whose name tells us at once it comes from Mr. Low, whose rich importations are proverbial. *H. G. Rchb. f.*—P.S. I add that I have at hand a newly imported plant, with two inflorescences, and another inflorescence kindly sent by Mr. Low. The colours are just as described, only the darker blue stripes of the lip are just longitudinal, as I had expected. *H. G. Rchb. f.*

DENDROBIUM (STACHYOBIUM) STRICKLANDIANUM, *n. sp.**

This is a very surprising novelty, and one that may form a peculiar section in the Stachyobium standing next D. ramosissimum, Wight, and herbaceum, Lindl. One might also compare it to D. aduncum, Wall., yet it has a three-lobed, not trifid lip. The thin stem is dark green, shining. Leaves oblong, apiculate, nearly 2 inches long, and ½ to ¾ inch broad, partly on the stem at the time of flowering. The flowers are larger than those of Dendrobium aduncum, Wall. They are yellowish-white, and there were three purplish blotches on the lips in 1876, which were not seen in 1875. The lateral teeth of the column are violet, and there are many reddish spots on its anterior side under the stigmatic hollow. If the plant had come from the East Indies, Polynesia, or Northern Australia, we should not have been much

* *Dendrobium* (*Stachyobium*) *Stricklandianum*, n. sp.—Caule calamum cygneum crasso; foliis oblongo-apiculatis; racemis 3-4-floris; bracteis triangulis minutis, margine obtuse retuso-dilyno; sepalo lingulato triangulo acuminato, lepalis linearilingulatis acuminatis, labelli oblongo-angulato obtuso acuto utrinque medio obtusangulo disco antico punctulato furfuraceo; columna apice tridentata; antherâ conica acute extensa. Ex Japonia spassima; introd. Sir C. W. Strickland.

surprised; but it has the great merit of being Japanese. It was introduced with Cymbidium virescens and Luisia teres, by Sir C. W. Strickland, Hildenley, Malton, who twice most kindly sent me materials. I feel very pleased to dedicate this curious novelty to a gentleman who has a heart for Orchids, even though the diameter of their flowers do not exceed a line, and the colour be green. *H. G. Rchb. f.*

DENDROBIUM PRÆCINCTUM, *n. sp.**

This is a botanical novelty. The narrow, erect stems are dark and furrowed, and the leaves lanceolate, nearly bidentate. The flowers scarcely exceed half an inch in length, and are of a pallid ochre colour with a dark purplish limb. The lip is trifid, and of a sulphur-yellow colour, orange-coloured in front, central lobe of lip velvety and three-keeled. I have to thank Messrs. Veitch for it, and they kindly inform me that it was introduced with D. Devonianum. It is strange this nice little thing has been overlooked so long a time. *H. G. Rchb. f.*

THRIXSPERMUM FREEMANII, *n. sp.*†

This is a dwarf small species, yet an elegant thing. The roots may be compared to those of Phalænopsis Schilleriana. They are roundish flat, conspicuously covered with small warts. The leaves are ligulate, here and there undulate, bidentate, usually unequally so at their apex, 6—7 inches long by 1½ inch wide. The raceme bears numerous flowers. The bracts are semiovate and larger than the small ovary. The sepals very long, narrow, linear, the petals a little shorter. Altogether they give the raceme the appearance of a yellow brownish spotted broom. The small lip is saccate tridentate, the centre white, the lateral parts yellow with brown streaks. There stand four-stalked globular bodies before the base, which are covered with small warts.

The plant comes near T. divitiflorum (Sarcochilus divitiflorus, F. Muell.), an Australian species, represented on the cover of Mr. Fitzgerald's Australian Orchid-book. A scientific investigation of this proves it to be widely different, though very much alike outside. There are no stipitate globules in this which bears a retuse tridentate lamina over the very small middle lobe of the lip. It is very interesting that this species was found on the hunting grounds of several exceedingly experienced botanists. It was gathered in Assam by Mr. Freeman, whose name it bears. It flowered last winter at Mr. Bull's establishment. I obtained a fresh spike, a second spike very carefully dried by Mr. Bull, and I saw the living plant lately. *H. G. Rchb. f.*

THE BOTANIC GARDENS, BIRMINGHAM.

AN extraordinary group of twelve large plants of Cypripedium spectabile, the Mocassin plant from North America, is now to be seen in bloom here, and in luxuriant health. One plant has thirty flowers, each very large compared with the blooms usually seen, and borne in pairs, and in many instances three blooms on each shoot. There is considerable variation in the group, some being much darker than the others, whilst others are striped, and one is very pale in colour. Then there is also a difference in the formation of the pouch, some being circular and others oval. There is also a marked difference in the foliage, some of the varieties having broad lanceolate foliage, whilst others are much more cordate, and the botanist would soon establish varieties in this highly interesting and lovely group. Mr. Latham, the Curator here, has succeeded in showing us what can be so easily done with this beautiful plant when we know how to do it. The plants in question were received from Canada last autumn through J. B. Goode, Esq., in a dormant state in the usual way. They were potted into good fibrous peat and kept in a cold frame, and very little water given to them until they began growing, when water was applied copiously; and were kept in this frame until in flower, when they were removed to the conservatory. Some of the foliage is 5 inches long and 4 inches in breadth, and all the plants are in most vigorous health. Adjoining this group are a couple of fine plants of Cypripedium parviflorum, a small-growing species with yellow flowers and in the most perfect health, having received the same treatment as C. spectabile. Close by were plants of Dodecatheon elegans, Primula farinosa, Lychnis alpina major, a very charming Saxifrage, allied to S. Aizoon, received from Mr. George Maw, of Broseley; and a fine plant of Orchis foliosa. In the conservatory are fine examples of the old Erodium anemonæfolium, and Lilium giganteum in flower. How Lapagerias luxuriate here, and what grand objects they are at the blooming time. Mr. Latham has a strong plant of the white variety, with young vigorous growth now 6 feet long; and this is planted to intermingle with the rose-coloured variety.

When did China Rose White Pet originate? There is a plant of it now in flower in the conservatory, which is indeed lovely, Mr. Latham having obtained a plant in a Cheltenham nursery, where he met with it, but has never seen it elsewhere. It is a small-growing kind, and has the appearance of being the result of a cross between the Fairy Rose and a Noisette. The flowers are white, erect, small, and well-formed, and just what we should value for bouquet purposes, and it is a very free bloomer. Can any of your readers give further information respecting it? Several large plants of Eutaxia myrtifolia are blooming in the conservatory, which also contains two very rare Ferns —one, a superb specimen of Dicksonia arborescens, probably unequalled in the kingdom, and a fine plant of Cyathea Cunninghami. Orchids are extensively grown here, and a block of Dendrobium Falconeri has just had twenty-five fine blooms upon it, and Chysis Limminghi and several other Orchids are now in bloom.

The Anthuriums under Mr. Latham's treatment are examples of first-class culture. There is one plant of Anthurium Scherzerianum, large variety, with sixty expanded blossoms, with spathes of the largest size I have seen. Disa grandiflora is on the point of blooming, and this glorious plant is too seldom seen in really good condition. The best lot I ever saw was at Mr. Edward Sale's, Fernlehurst, near Leeds, when they were grown in the shadiest part of an Odontoglossum-house, and were as much at home as at the top of the Table Mountain at the Cape.

There is a very good collection of hardy Ferns here, and amongst them the truly beautiful Polypodium vulgare elegantissimum is a gem, but prone to revert to its normal state—that of P. vulgare, from which it is a sport. Mr. Latham has a crested form of Lastrea marginalis, sent from Canada by Mr. Goode. Is this variety to be found in other collections? The pretty Lastrea fragrans (Aspidium fragrans) does well here, and has a just claim for its specific appellation. Ceterach aureum is also to be seen here in fine character. Excellent specimens of Gleichenia dichotoma and G. Speluncæ, in good health, may also be seen, and a fine plant of Asplenium septentrionale, a most distinct and charming Fern, is a prominent object of interest. One of the most interesting plants in the garden is Utricularia montana, natural order Lentibularæ, of which the Pinguiculas are members. These are all bog plants; and on referring to Curtis's *Botanical Magazine*, vol. xxvii., I find an admirable representation of the plant, and that it is a native of the West Indies. The plant in these gardens is almost in flower, and is in excellent health. An outdoor frame full of Trichomanes and Hymenophyllum in admirable condition richly deserves a passing notice; and the garden altogether, with its rich collection of alpines and herbaceous plants, its charming position and well-laid-out and well-kept grounds, calls forth well merited praise. *D. C. V.*

WANTON DESTRUCTION.

EVERY season when the Whitsun holidays come round there comes with them an annual saturnalia, so to speak, of wanton destruction. It is a sad but incontrovertible fact that in regard to parks and gardens kindly and gratuitously opened for the recreation of the people on public holidays that abuse not use is so often the case. A recent instance may be cited in Lord Stamford's park, where the mischief done by the holiday seekers was so great as to necessitate the closing of the grounds on similar occasions; but such wanton destruction is not limited to large domains, rarely accessible—it desolates every neighbourhood in the vicinity of large towns, and sad evidences of it may be seen in every suburb around the metropolis.

With the exclusiveness natural to the Englishman, when mansions and large villas are erected the gardens of such residences are, as a rule, screened from public observation by high walls or impenetrable park palings, and the flowering trees and evergreen shrubs are thus guarded from the sight as well as from the destructive fingers of thoughtless youths; but between these carefully protected grounds and the town itself there often lies an intermediate district which, marked by the ominous boards bearing the well-known words, "Land to let for building purposes," becomes the prey of all the idlers of the vicinity.

Such neighbourhoods have, at first, more or less of an air of rusticity about them; a few fine trees may still be standing, the fields about to be immolated on the altar of the builder are still partially free from bricks and mortar, and handsome hedges in many places enclose the land or mark the boundaries of cottage gardens. Such spots are refreshing to look upon, but no sooner are they laid open to the public, or their future destination pointed out by the boards above mentioned, than the work of wanton destruction begins, the trees—not one of which can be well spared—are needlessly cut down, or ruthlessly destroyed by being dragged away a branch or a bough at a time in mere wantonness, for no sooner are they obtained than they are torn leaf by leaf and scattered to the four winds of heaven.

In spring, when the tender green of the opening foliage imparts an air of refinement and a touch of beauty to the surrounding neighbourhood, then is the moment of attack; the beautiful flowering trees and shrubs, the Laburnums, the Lilacs, and the Hawthorns are torn away for a momentary gratification, and then left to fade and be trampled under foot in the very place where they so lately shed beauty and fragrance.

In the suburbs of London on Whit Monday last an old and very handsome Hawthorn hedge, the fence to a row of private gardens, was torn almost away—young men of twenty pulling off boughs as large as they could carry, running frantically about waving the beautiful blossom-laden boughs above their heads, and then throwing them down. So generally, indeed, was this the case that the field was soon literally covered with fragments of Hawthorn. Nor did the mischief end with the hedges; wherever there was a gap large enough to admit a hand and arm, the Wallflowers and other spring plants within reach were torn off, and scattered about in a similar manner.

In the present day, when the town is so fast absorbing the country that every space of open green field and every sheltering tree is a boon to the neighbourhood in which it flourishes, and the destruction of vegetation may well be watched with a jealous eye—for barrenness and sterility follow the footsteps of the builder with as little reason, and more surely than they do those of the holiday folk and the children, for when houses are built in the suburbs the first thing done towards the formation of what is in the future to be called a garden is to eradicate every trace of vegetable life, trees are cut down, shrubs rooted up, grass trodden, and the surroundings made as desolate as possible. Under such circumstances, it is not surprising that the suburbs of our cities become less verdurous than the town itself, and that it requires years to pass before we can restore, by painstaking cultivation, any of that rural aspect which the place once possessed, and which a little forethought and care might have so easily retained. *P. J.*

ORCHID RARITIES.

I QUITE concur with the writer of the succinct report of the recent Manchester show that possibly never has there been such an assemblage of really well cultivated Roses and Orchids. About the latter particularly would I have a word to say, and that with reference to a few distinguished varieties which are of more than ordinary importance to every Orchid amateur and grower.

Possibly the gem of the exhibition was × Dendrobium Ainsworthii roseum. This is a most remarkable seedling, partaking of the character of both its parents (nobile and heterocarpum), and in some respects superior to either. In point of floriferousness none of its parents can lay claim to such a quantity of nodes in the deciduous stem, each bearing, or rather emitting, its quota of flowers. I counted on one stem

* *Dendrobium præcinctum.*—Eudendrobium Cauibus teretiusculis sulcatis; foliis cuneato ligulatis angustis apice bidentatis; pedunculo apice bifloro, parce vaginato, mento obtusangulato gibbo, bene evoluto; sepalis ligulato-obtuse acutis; sepalis rhombeis, obtusis; labello cuneato dilatato trifido; lacinis lateralibus linear-ligulatis obtusis; lacinia media ligulata producta, omnibus ciliatis, carnis ternis amculatis per discum, lacinia antica fila circuilique velutina; columna bisi triangula excavata. Caulis obscure viridiviolaceus. Vaginæ emaculatæ albo cinereæ. Bracteæ pedunculique rufo maculatis. Flores albido vitellini, sepalis tepalisque atropurpureo-marginatis. Labellum flavum antica aurantiacum. Columna sulphurea fere aurantiaca. Cum Dendrobio Devoniano imprimis affinitatem habet. Veitch. *H. G. Rchb. f.*

† *Thrixspermum Freemanii.*—Humilis radicibus ancipitibus densissime minutique verrucosis; foliis ligulatis apice inæqualiter bidentatis; racemis pluriflorus scapatris; bracteis semiovatis ratione ovariorum magnis; sepalis lanceolineari caudatis; tepalis brevioribus, labello unguiculatos, ventricoso, calcari solido hemisphærico, lacinis lateralibus semifalcatis, lacinia mediana triangula transversa minuta, callis saccharatis subglobosis pedicellatis ante basin. Flores sulphurei, huunco maculati. Labellum medio album, lacuiæ lateralibus sulphureis, brunneo fasciatæ.—Sarcochilus Freemani. Assam, Freeman, Ex coll. dom Bull. *H. G. Rchb. f.*

sixteen short racemes, each two and three flowered. The flower itself has the sepals and petals of moniliformе rather than nobile, white, shaded with an almost imperceptible tint of rose, and tipped distinctly with that soft pleasing colour. The labellum is flat, like an expanded heterocarpum, reflexed a little towards the centre, with a blotch covering three-quarters of its surface with deep veined purplish, or rather mulberry, crimson, edged very distinctly with white, and the extremity slightly tipped with crimson. This I look upon as one of the greatest gains in hybridisation, whether we regard the colour of the flower or the general floriferousness of the plant, or its free although not awkward habit. As an Orchid enthusiast of the last five-and-twenty years, I would pronounce it one of the greatest gains that may be counted up in the whole known Orchid family; and I have to congratulate Mr. Mitchell, Dr. Ainsworth's enthusiastic gardener, for the successful growth of this extraordinary beautiful rarity.

DENDROBIUM AINSWORTHII is also a most beautiful subject, of precisely the same habit, with the same form of flower, the same floriferousness as its rarer compeer, figured, when first flowered, by the *Gardeners' Chronicle*. The plant shown was a comparatively good-sized specimen, and full of flower, even fuller by comparison than was Mr. Shuttleworth's splendid D. nobile. I counted some twenty pseudobulbs, all more or less crowded with flowers, and that for fully three-fourths of their whole length. The principal colour-difference in the original variety is in that of the labellum, which is only partially blotched with crimson, or rather purplish crimson, and broadly margined with white. It is very elegant and very chaste, but will never be so telling a variety as its companion, roseum.

MASDEVALLIA HARRYANA SANGUINEA, in Mr. O. Wrigley's collection (the whole of whose plants were cultivated in a masterly way), is a variety of rare beauty, having great size in the segments, and a wonderful intensity of colour to recommend it. It is nearest in point of merit to the famous Dawsonian "bull's blood" variety, which was dispersed into several hands during the various sales, and which has not yet been equalled. The variety to which I at present refer is of a shining sanguineous colour, rather enhanced by having a pale orange eye at the point from which the monopetalous sepals spring. Unlike some of the varieties, this one, in its inferior lobes—which, by the way, are in all cases very ornamental—are nearly entire, does not split into lobes wide apart, but is compact and well formed. It is a remarkably fine variety, and it was brought to a high state of cultivation, having quite sixty flowers on the plant exhibited. The violacea variety was good, too, but scarcely fit to be placed among the rarities I am at present dealing with.

DENDROBIUM CREPIDATUM, in the same exhibitor's collection, is no doubt one of the best forms of the species in cultivation. There are several different varieties of this beautiful species, but the one shown at Manchester is a gem. The sepals and petals are white, heavily tipped with rosy pink. The labellum is all but circular, with a large orange central blotch shading out to a greenish yellow tint, which is rather attractive than otherwise, and then again surrounded with white and edged with pink—quite after the ribbon fashion of decoration. The pseudobulbs are best grown in pendulous style, and are very prominent with white streaks up the internodes. These plants are evidently quite at home in Mr. Hubberstey's hands.

ONCIDIUM LEUCOCHILUM NANUM.—There are so many varieties of this Oncid in cultivation that have a lanky, lean appearance in respect of long, loose spike, or rather branching raceme of flowers, that it is a pleasure to see it standing, quite pyramid-like, without support, and bearing several hundred flowers. In the whole exhibition there was no such distinguished variety of a common Orchid as this one exhibited by Mr. Williams. I counted some twenty-one branches on a raceme, 2½ feet long, and each individual flower distinct and beautiful, the colouring being more popular than in many of its seminal fellows. The labellum was white, and the sepaline and petaline segments of the usual colour, although the Indian-red spotting was more distinct. It was a beautiful piece, not very large, and was found growing alongside of Cyrtochilum maculatum, and could have been sold in dozens instead of units.

ODONTOGLOSSUM VEXILLARIUM ROSEUM.—This remarkable variety is one of the most deservedly popular among new Orchids. Its great size of flowers and remarkable free inflorescence bespeak for it, even under the most disadvantageous circumstances, ready buyers. Beautiful as were the half-dozen, or nearly a dozen, shown by various exhibitors, none could vie with the variety which I have ventured to call roseum in the Messrs. Rollisson's winning stand. The sepaline and petaline segments of this flower, together with the great labellum, were on a plane surface, stout to appearance, on a piece of the finest finished cardboard. The colour was a deep fleshy pink over all the surface, with the exception of the base of the labellum, which was a white ground, with Indian-red venation radiating from the centre in focus-like sun-rays. The flowers smothered the leafage of the plant quite over, and captivated every one who had the pleasure of seeing them. There were many other fine things, but the above were the chief. *James Anderson, Meadowbank Nurseries, Uddingston.*

THAMNOCALAMUS FALCONERI.

As yet these plants, better known as Arundinaria falcata, show no signs of life, and as the tops of the canes are dry and sere there is but little hope of the plants starting into growth again, unless they do so from the bottom, of which I am now very doubtful. It is remarkable that the flowering and seeding should have had such an exhausting effect, and more so that the thing should have been so general, as your reports of last year showed to be the case, and it would be interesting to know how they are now behaving in other places. The plants with us were so large and such strikingly beautiful objects in the positions they occupied as to render their death quite a loss, as it will take many years to get up others to anything like the dimensions some of these had attained. On measuring one of the rods just cut, I find it is a trifle over 28 feet, so that some idea may be formed by those who have seen plants of this elegant Bamboo growing and arching over in the graceful manner they do, what a fine effect such specimens produced when clothed with their slender pale-green foliage, of which unfortunately they have now for the past year been entirely bereft.

It is surprising that such a highly ornamental shrub as the above forms in favourable situations should not be more extensively used to plant near the margins of lakes or in damp shady retreats in connection with dress grounds, in either of which positions it is quite at home and shows off to great advantage. Although fond of moisture at the root, it will grow and do well almost anywhere, except in bleak exposed situations, where, from the fragile habit of the slender stems and the amount of foliage each usually has, they get sadly knocked about. With us they are about as hardy as the Pampas-grass, and just as accommodating in the way they adapt themselves to any position to which they may be assigned, with the exception alluded to, and as they are worth any trouble we always make a practice of putting some dry leaves or brakes around them before winter sets in, so as to protect the crowns from whence the young soft canes emerge at different intervals during the year.

The Arundinaria falcata strikes readily from cuttings made from the hard mature rods, and put in any time during the autumn in some sheltered place among shrubs where drying winds cannot get at them. They do best cut in lengths of from a foot to 18 inches, with a joint left close at the top, in order that no water may lodge in hollow, tubular stems and cause them to rot or become split by the action of frost. By inserting them sufficiently deep in the ground to leave only just the top of the cuttings exposed, each will remain fresh and plump, and scarcely a failure occur. *J. Sheppard.*

THE USEFUL PLANTS OF MEXICO.

IN the Great Exhibition at Philadelphia last year Mexican products came in for a very fair share of representation, the useful plants of the country being not only abundantly shown, but fully described in the catalogue of Mexican exhibits. This catalogue, useful as it is, would have been much more so had more care been taken in the scientific nomenclature; not only is the spelling faulty, but the specific names of many of the plants are absolutely unidentifiable.

The occasional descriptions of Mexican scenery give a tolerable idea of the natural features of the country. Thus:—"Besides the beautiful landscapes presented to the traveller by deep ravines, the elevated mountain-tops, and the splendid vegetation found all along the road, there are other objects which increase the attractiveness of the picturesque views. On leaving the city of Mexico, the beautiful lakes of the valley and the elegant tops of the Popocatepetl and two Yxtatleihuatl, ever crowned with whitest snow, are presented to the eye of the observer. In San Juan Teotihuacan again, are seen the pyramids raised by the Toltecs, and dedicated to the sun and moon. Farther on are seen the extensive Maguey fields, that precious Agave (A. americana), of which intoxicating liquors and the famous *pulque* are extracted." This *pulque* is as much a national beverage in Mexico as beer is in England. In small or moderate quantities medicinal or hygienic properties are attributed to it, but in large quantities it is intoxicating. The fibre is valuable, not only for making ropes and cordage, but also for paper, which is said to be remarkable for its whiteness, elasticity, and strength. It is made in large quantities in Mexico, and so abundant are the plants that the supply is inexhaustible, and the cost of the material very trifling.

Between the high summits of the Mexican volcanoes which tower at about 18,000 feet above the level of the sea, down to both shores on the Pacific and the Gulf, there are a great many intermediate degrees proper for the most varied types of vegetation. The "Guayabas" (Psidium), the Anonaceæ, Acacias, and other plants live and grow abundantly in the lowlands, where Coffee and Sugar can be cultivated under the most favourable conditions; Leguminosæ and Ericaceæ notably occupy the medium heights, and the Coniferous and Cupuliferous plants climb up to the limits of perpetual snow. Several families seem to be adapted to a variety of climates, and their genera are found at different levels, living even in dry and rocky grounds. Among these may be mentioned Bromeliaceæ and Amaryllideæ, which occupy the greater part of the Mexican mountains. In the list of medicinal products eighty-six plants are enumerated, showing that this application of the vegetation of the country received a large share of attention. Gums, resins, and vegetable waxes were also numerously exhibited. The resin obtained from Hymenæa courbaril seems to be known by the name of "Coapinole." It is used extensively in the manufacture of varnishes, in the same way as true copal. Large quantities are collected in the State of Oaxaca, and sold in the city of Mexico at one dollar a pound. A resin called "Peuca Copal" is exceedingly abundant, and is said to be produced by Elaphrium copalliferum. Under the name of "Brea" is described a resin which is said to be "the result of the distillation of the turpentine from the Pinus teocote, which grows in the cold districts of Mexico." This "Brea," when dissolved in warm alcohol, precipitates after cooling, becomes pure, and takes a white colour. It is used for the preparation of illuminating gas and in the manufacture of soap.

From a description of the "Chayote" (Sechium edule) we learn that the plant grows luxuriantly, yielding abundant fruit in the first year. Under favourable circumstances a single plant produces annually from eighty to one hundred fruits. It is very easy of cultivation, and is grown largely for the sake of the fruits, as well as for the large tuberous roots, which contain a quantity of starch or arrowroot, both of which are eaten. The fruits are occasionally to be seen in Covent Garden Market.

PLANT PORTRAITS.

ALLIUM STRAMINEUM, *Gartenflora*, t. 886, and BECKHEA PARVULA, t. 886, seem as represented of no special horticultural interest.

ALSOPHILA GLAUCA, J. Sm., *Flore des Serres*, t. 2264.—A noble Tree Fern, frequently called A. contaminans. The glaucous tint of the lower surface is a distinguishing characteristic. The stem is downy above, and the leaflstalks of a rich purplish colour. Native of the Indian Archipelago.

ANCHUSA SEMPERVIRENS, *Bulletin Horticole*, t. 1, 1877.—A very old favourite, but one, as it appears, heretofore unfigured in a horticultural publication.

AZALEA INDICA IMBRICATA, *Flore des Serres*, t. 2284-5.—A double white Azalea, figured in our columns, 1876, p. 817, vol. v.

BAUHINIA PETIOLATA, *Botanical Magazine*, t. 6277.

—A stove shrub with stalked ovate acuminate 5-nerved glabrous leaves, and white flowers 3 inches long in terminal clusters. The plant flowered at Kew, where it was sent by M. Linden under the name of Casparia speciosa. It is a native of New Grenada.

Bilbergia Liboniana, Morr., *Belgique Horticole*, 1877, t. 3.—A handsome Brazilian Bromeliad, with grey banded leaves, and loose inflorescence, consisting of numerous long, slender flowers, with orange-coloured calyces and purple corolla.

Bolbophyllum Pahudi, Rchb. f., *Flore des Serres*, t. 2268 9.—A curious species, with creeping, scaly rootstock, compressed pseudobulbs, and oblong acuminate petiolate leaves. Flowers racemose, borne on scapes issuing from the rootstock. Perianth about 6 inches long, segments yellowish pink, lanceolate, prolonged at the apex into long tails; lip much shorter, cordate, acuminate, of a pale claret or plum colour.

Boronia elatior, Bartl., *Botanical Magazine*, t. 6285.—A charming greenhouse plant, with pinnate leaves; the pinnæ linear, the flowers crowded on short, axillary, pendulous stalks and of an ovoid form, resembling that of some Heaths, and of a reddish purple colour. The plant was introduced from Western Australia by Messrs. Veitch. It is a very desirable plant for cultivation.

Calathea leopardina (*Gartenflora*, t. 893) has elliptic lanceolate leaves, with lateral bands of dark green on a lighter ground.

Camassia esculenta *var.* Leichtlinii, *Botanical Magazine*, t. 6287.—This is said to differ from the ordinary form in its more robust habit, broader leaves, longer sometimes compound raceme, and larger flowers with more numerous nerves in the keel of the segments of the perianth, which are moreover white, not blue.

Cattleya Schilleriana, *Flore des Serres*, t. 2286.—A handsome Cattleya with rosy brown sepals, dotted with darker coloured spots, and a deep rose-pink-coloured lip streaked with yellow.

Coleus Duchess of Edinburgh, *Flore des Serres*, t. 2287.—A well known variety with rich claret-coloured leaves edged with a narrow margin of greenish white.

Cordia decandra, *Botanical Magazine*, t. 6279.—A very beautiful Chilian shrub, suited for a warm greenhouse. The leaves are somewhat like those of the Gum Cistus, but rough and not viscid, the flowers borne in loose panicles like those of the Catalpa. Each has a bell-shaped calyx covered with rusty hairs, and a pure white funnel-shaped corolla, with a ten-lobed limb rather more than an inch across. The wood is greatly sought after in Chili for firewood, for which it is specially well adapted, and also for turnery purposes. The plant was introduced by Messrs. Veitch, and is one of much beauty and interest.

Cyananthus lobatus, *Gartenflora*, t. 888.—A beautiful hardy perennial of the Campanula family, with procumbent stems, deeply pinnately cut hairy leaves, and solitary, terminal, bell-shaped, 5-lobed blue flowers, nearly 1½ inch in diameter. It is a native of the Sikkim Himalaya, and has been figured in Royle's *Illustrations*. This is a plant to be inquired for.

Cypripedium Druryi, Beddome, *Illustration Horticole*, t. 265.—A species found in Mysore by Colonel Drury, and described in our columns by Professor Reichenbach, 1876, i., p. 68. In habit the plant resembles C. insigne, but the flowers are smaller and of a yellow colour, with a dark central band traversing the upper sepal and lateral petals.

× Cypripedium eurvandrum, *Flore des Serres*, t. 2278-9.—A cross between C. Stonei and C. barbatum, raised at Chelsea by M. Seden, and intermediate between the two parents. It was originally described by Professor Reichenbach in our columns for 1875, p. 772.

Cypripedium Haynaldianum, *Botanical Magazine*, t. 6296.—A handsome species, described in our columns this year, p. 272, by Professor Reichenbach. It is evidently closely allied to C. Lowei. The plate is from a plant which flowered with Messrs. Veitch in February last.

Dracocephalum speciosum, *Botanical Magazine*, t. 6281.—This is a grand hardy perennial Labiate plant with bold rugose cordiform leaves, and dense terminal spikes of labiate flowers of a pinkish blue colour, the lip being spotted with darker spots. Introduced from Sikkim by Mr. Elwes.

Dyckia frigida, Hook. f., *Botanical Magazine*, t. 6294.—A tufted Bromeliad with linear lanceolate spine-toothed recurved leaves 1—2 feet long, and a branched flower-spike covered with pale down. Flowers very numerous, ¾ inch long, orange-yellow. Native of Brazil probably. It is the Pourretia frigida of Hort. Linden.

Ficus Parcelli, Hort. Veitch, *Flore des Serres*, t. 2273-4.—A well-known plant at English flower shows, where its elegantly spotted and marbled leaves always attract attention.

Globba Schomburgkii, *Botanical Magazine*, t. 6298.—A stove perennial with lanceolate glabrous leaves, and panicles of yellow flowers, of the same shape as those of the well-known Dancing Girl plant, but yellow.

Gongora portentosa, Rchb. f., *Botanical Magazine*, t. 6284; *Gardeners' Chronicle*, 1869, p. 892.—Of this curious Orchid the flowers are 1½—2 inches long, pale flesh-coloured and more or less speckled with small violet-purple spots. The plant was introduced from Bogota by Mr. Wallis. The specimen figured flowered with Mr. Bull, of Chelsea, in April, 1874.

GLEN EYRE, SOUTHAMPTON.

With singular aptness this charming place, the residence of an enthusiastic horticulturist, Mrs. Eyre Crabbe, has been thus designated. Less than a quarter of a century since it was a wild spot, half moor, half common, with a deep dell on its lower margin looking to the east, and offering a somewhat deterring aspect to any one in search of a place whereon to build a habitation. Difficulties would seem, however, to have presented to Mrs. Crabbe and her excellent gardener, Mr. Stewart, only so many inducements to endeavour to convert a desert into a garden, a desolation into a paradise; that their efforts have met with complete success the charming place as it now is can eloquently testify. The approach to Glen Eyre from the fine old town of Southampton, a distance of 3 miles, is one of great beauty, as for a considerable distance the broad highway runs through the magnificent common, or more properly speaking wild park, of more than 300 acres, which lies to the north of the town, the road being bordered by noble avenues and clumps of trees, whilst vistas of the surrounding common continually break upon the eye. A continuous rise to the well-known Red Lodge Nurseries, from whence Mr. Rogers enjoys one of the most delightful looks-out in the southern counties, brings us to the higher ground of Basset, and but a short distance further to the estate of Glen Eyre.

It is one of the peculiarities of the formation of the ground here that whilst the carriage-drive enters from the higher land, the house though lying below is scarcely seen until a turn in a belt of trees finds it close at hand. Thus the approach reveals little or nothing of the many garden beauties to be seen beyond, and it is not until the stranger has been led to the windows, or upon the higher terrace here illustrated (fig. 120, p. 753), that the whole of the charms of Glen Eyre become visible. The house (fig. 121, p. 757), which is of goodly dimensions and built in strict keeping with the surroundings, is placed exactly at the head of the dell, looking eastward, the gardens immediately in front and on the south side being composed of a series of terraces connected with each other by steps and winding paths, whilst on the long expanse of slope on either side are planted Conifers of all kinds, Rhododendrons, Azaleas, Kalmias, and other flowering plants in glorious profusion, deciduous trees, evergreen shrubs, including a great variety of Camellias, intermingling with woods and heather, all making up a very delightful and beautiful combination. Having said this much—but very imperfectly—by way of general description, we proceed to point out certain features for which Glen Eyre is specially famous; and these are its outdoor Camellias, its Conifers, and, not least, its charming spring flower gardening. If we deal with the latter first it is rather because, unlike the other features, it is not permanent, but varies from year to year, and, therefore, perhaps is not calculated to leave on the mind of the visitor so profound an impression. Glen Eyre is most favourably situated for the development of the beauties of early hardy flowers, not only because naturally and artificially well sheltered, but also because the soil is light and warm, and admits of early growth and bloom. To this end all the beds on the several terraces are not large, but of such convenient size and arrangement as to permit of pleasing designs being planted, as also of duplicates in sections, thus securing at once variety and a well-balanced effect.

In the larger beds Hyacinths in colours and Tulips in masses are productive of beautiful effects, standing up out of carpets of Daisies, Aubrietias, Sedums, or other neutral-coloured flowers, whilst in the smaller ones single and double Primroses, Violas, Pansies, Polyanthuses, Daisies in colours, Forget-me-Nots, Aubrietias, Arabis, and many other useful plants are utilised to form pretty combinations and gay masses. Of Tulips in flower at the time of our visit (in April) specially beautiful were the lovely rosy white Grisdelin, the brilliant scarlet Pottebakker, and the rich Golden Prince; these were particularly effective, and scarcely less worthy of mention were the grand Keiser Kroon and the pure white Pottebakker. The earliest and most favoured yellows in hardy plants are obtained at Glen Eyre from Pansies Yellow Boy and Bedfont Yellow, Myosotis dissitiflora and Cliveden Blue Pansy, the earliest blues; Aubrietias in variety, and Primroses altaica and double lilac for shades of lilac and purple; deeper tints being furnished with double purple and single purple Primroses, &c. The superb double quilled Daisies White Globe and its variegated form, double and single Primroses, Polyanthus White Bedder, Viola White Swan, and other things, present the most reliable whites; whilst pink, red, and crimson tints are found in double Daisies, double and single Primroses, and other early plants. In one small bed Primrose Rosy Morn was in rich bloom, in another Queen of Violets, in another the fine old double crimson, in another the deep-coloured Aubrietias Hendersoni and Eyrei, everything being selected not so much for its costliness as for its intrinsic value to give pretty little masses of flowers in a neat way, and at the earliest possible period of the year. The stereotyped spring bedding, which is at its best just as the season calls for the ordinary bedding-out, has no place at Glen Eyre; if plants, however beautiful, will not bloom at their best through the month of April, they must give place to others that will, because Mrs. Crabbe aims to secure as great a unity of colour and beauty as possible with the flowering of the bulbs, that the garden might thus become entirety at the proper season. This is real spring flower gardening. How it first came about that Camellias should be now found growing in the grounds of Glen Eyre with as much impunity as the common Laurel, is one of those things for which it is difficult to give a reason. Probably an excess of plants rendered it necessary to find room for some of them elsewhere, and therefore it was determined to let them try their best in the open ground. Certainly it was a most happy thought, and has been attended with splendid results.

On the west side of the conservatory, standing between it and a wing of the house, growing upon a gravel surface, is one of the earliest planted of all these outdoor plants, and it is now probably one of the very finest bush trees to be found out-of-doors in the kingdom. It is the old double-striped kind, stands now about 9 feet in height and nearly 40 feet in circumference. It has a luxuriant growth and leafage, blooms every year most profusely, stands second to no plant under glass for health and foliage, and yet it gets but little sunshine, and is at times swept by fierce cold winds; further, it is never protected in any way—indeed, Mrs. Crabbe laughs at the notion of protection for outdoor Camellias.

Over on a sloping lawn facing due north are a couple of beds of Camellias growing luxuriantly and blooming abundantly. These have formed literally masses of shrubs, just as though they were Rhododendrons or Laurels, and consist of such kinds as Lady Hume's Blush, Storeyi, Tricolor, Florida, Double-striped, Mathotiana, Eclipse, &c.—all old sorts of course, but differing in little in the question of hardiness from more modern varieties. Now it has been asserted that an abundance of sunlight is essential to the healthy growth of the Camellia, and especially to the perfect setting of its flower-buds, but here were plants as healthy and robust as could be, upon which, for the greater part of the year, the sun scarcely shone, for near by was a plantation of tall Firs, and, as we stood close to these Camellias at mid-day in the middle of April, we found that the sun then only just peeped over the tall trees on to the plants lower down the slope—a very practical illustration of the truth of what we have stated. Camellias are now so largely planted that they meet the eye everywhere, and in the course of time these will form a very distinct feature, but for older and notable specimens we have now to traverse the valley and climb to the top of the southern slope—and there find, on the wall that encloses the stableyard, some grand fellows that are in luxuriant

bloom; one of these, a noble plant of the double white, would prove worth a small fortune if owned by any London florist. This covers a space of wall 11 feet in height and 12 feet in width, and is not trained to the surface like a fruit tree, but projects so that the lower part of the plant is quite 6 feet through. It presents literally a mass of buds and flowers, of fine form and pure in colour, scarcely inferior to any blooms cut from under glass. Luxuriant as this plant is, it is an undoubted fact that both it, and others only less in size, growing close by, seldom, if ever, see the face of the sun; within a few feet in front rises a dense plantation of trees and shrubs that shut out the sun's rays all the day long, and these Camellias are the perfection of health and vigour. On the eastern aspect of this wall are other large plants rapidly covering the surface, one of these exceeding 12 feet in width from the top to the bottom.

9 feet at 6 inches from the ground. It now cones freely, one small branch having fourteen fruits, and it is believed that this particular plant was one of the first to cone in Europe. Near by is a superb specimen of Ficea Nordmanniana, of that deep dense green hue so peculiar to this fine Fine. This is 34 feet in height, and has a breadth at the base of 24 feet. When planted it was but 10 inches in height, and has now developed into a grand tree. A very fine Cupressus Lawsoniana, 29 feet in height and about 10 feet through, is a fine companion tree. Cupressus macrocarpa, a noble specimen 50 feet high and 48 feet in circumference, a very handsome Pinus Pinsapo, a fine Thujopsis borealis, and a particularly good specimen of Libocedrus chilensis, present a few of the fine trees of this group. At the bottom of this slope is a fine example of the flowering Paulownia imperialis that came from the Pine-apple Nursery nineteen years since

range of glass-houses facing the south are devoted exclusively to the growth of plants for conservatory and house decoration, and to supply the great demands for cut flowers. Here are grown one of the largest private collections of the double Primula in the kingdom, as many of the best-named varieties now in commerce were raised here. The value of the flowers of these Chinese Primroses is well understood, and hence their extensive cultivation. Tea Roses enjoy the protected aspect this range of glass affords, and the plants trained on the front walls are seldom without flowers. Double Violets are grown in beds in the kitchen-garden, and we record with pleasure Mrs. Crabbe's declaration that the fine new double Marie Louise was the finest and most abundant bloomer.

These are the records of but a few of the features of this charming garden, which, beautiful at any time, is specially so during the spring months. To Mr.

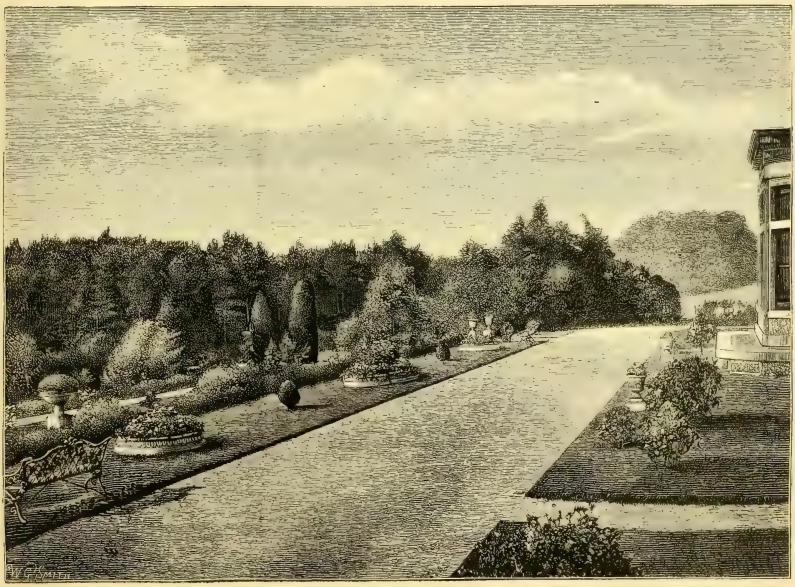


FIG. 120.—VIEW IN THE GARDENS AT GLEN EYRE, SOUTHAMPTON.

Of course Glen Eyre has what in modern parlance is termed a Pinetum, but how unlike the flat formal groups of specimens with which we are too familiar. Although several noble specimens are growing on the northern aspect, yet the finest group is found on the steep slope looking south, and it is a matter for special regret that no photograph of this fine collection has been taken from the other side that will do it justice. So sharp is the sloping bank of grass that it is much easier to roll down its surface than to climb up it, and yet in natural soil, with but little artificial aid, the Pinuses planted here some eighteen years since are scarcely exceeded in size and vigour by any growing under the most favourable conditions. A noble Wellingtonia forms a central figure; planted nineteen years ago a diminutive plant 9 inches in height, it forms now a perfect cone of branches 31 feet in height, with a diameter of 17 feet 6 inches. The bole of the stem is exceedingly massive, and measures in circumference in a 48-sized pot. It now has a bole that measures near the ground 6 feet 6 inches round. On the opposite slope are very fine examples of Cupressus macrocarpa, Cryptomeria japonica, Abies Douglasii, and a specially fine specimen of Cupressus funebris, 22 feet in height and of relative proportions.

The extensive Rhododendron shrubberies include all the best kinds, and these grow so luxuriantly that it is necessary every few years to remodel the whole by thinning, and thus by extending the planted ground the shrubbery has grown to one of considerable dimensions. At the time of our visit only a few were in bloom, specially noticeable amongst them being a fine plant of Cliveanum, bearing a mass of rosy pink flowers; ciliatum, a particularly beautiful variety, and a mass of bloom; and Brodartianum, a delicate pale pink. Towering up above all others were some grand heads of scarlet hybrids, giving an unusual glow of colour for such an early period of the year. The long

Stewart let the praise be given that, under Mrs. Crabbe's directions, he has made Glen Eyre what it is. *A. D.*

Apiary.

NEW SWARMS.—We all know the old bee proverb—

> "A swarm of bees in May
> Is worth a load of hay;"

but we have noticed a few swarms during the past month which, although they are called for convenience sake "May swarms," are really not worthy of this title. A genuine May swarm is, without doubt, valuable, and will realise about 20*s.* if placed in a new skep. The swarms we are now about to bring before the notice of our readers are worthless. About the 20th of the past month we were delighted during a fine, calm evening to hear the well-known swarming

hum, and to see a large quantity of bees buzzing in the air. For a few minutes we could not detect with any degree of certainty the hive from which they had made their exit. After flying about in a very unsettled state for 20 minutes, they made an attempt to enter a Woodbury hive, but were fiercely repulsed. The occupants evidently thought, like all Englishmen, that their house was their castle, and they would not welcome such intruders. The reason we will presently explain. Then they wisely re-entered their own tenement, and for the time settled again to hard work.

We need scarcely remind our village readers that the last two weeks in May was anything but genial weather; in fact, old people began whispering, "Oh, this is not like May; it is more like February," for cold easterly winds prevailed to an alarming extent, so that vegetation looked as if a blight had passed over the face of Nature. During this weather our bees could gather very little honey, and also but little pollen. One hive we observed throwing out several immature bees. This convinced us that starvation was showing itself.

We never once thought, however, that any of our stocks lacked needful food, and as little did we expect hungry swarms. Again, the same swarm made its appearance on the 23d, and, after trying to enter several hives, was repulsed, leaving many of their dead members behind. They a second time went back to their own hive. Now our curiosity was aroused, though we did not meddle with them, because the day following they were carrying pollen, and seemed again to work peacefully. All went well until the 30th instant, when the stock swarmed twice during the day, on each occasion settling in a convenient spot. It was hived in the usual way, but would not stay in the skep. At length during the evening it re-entered the original hive. After four days' quiet, on June 3 the stock again swarmed twice, and the swarm succeeded in entering a neighbouring hive after the loss of the queen and about two-thirds of the workers. These were carried forth dead, being killed in the attempt.

Now we overhauled the hive thoroughly, and imagine our grief when we discovered every cell empty of stores, though it contained a large quantity of brood, in all stages of growth. We now learned, when too late, that the swarm was actually starved out, and was justly named a hunger swarm.

But why did the other hives so persistently refuse to entertain the strangers? In case of any ordinary swarm they are gladly welcomed. It can easily be explained: when a swarm leaves the old home to seek out a fresh pasture or home they are filled with honey, because it may from wet weather and other causes be reluctantly detained for several days within-doors—during this they would all perish if devoid of food. This is providentially prevented, but in the case of hunger swarms, not having any honey in the hive, they of course are unable to take any with them on their flight; therefore bringing no grist to the mill, but entering only as beggars, they are refused admittance or taken in only with reluctance. We have kept bees for many years, but we never knew so many lost stocks as during the past spring. Our stocks—we speak generally, and including the entire parish in which we reside, which is very extensive—appeared to do well and to promise a good bee year until March, when all at once the hives in scores of instances dwindled away and died. We have gone over many rich apiaries, and in some few cases half the hives on the stands are empty.

We believe this may be explained partly on the ground that we robbed the stocks too much last autumn, instead of the old-fashioned plan of taking the old stocks for honey and leaving first swarms, especially if heavy on the stand, to work the following year. We now take the old stock, and, after smoking the new swarms, rob them of the best combs, viz., those at the side of the hive.

If they could be fed up after this cruel robbery they might not suffer so severely after all, but in nearly every farm apiary they are left to care for themselves as best they can. We trust, after the bitter experience of the present season, apiarians will learn wisdom, and either leave the stocks intended for the future labourers with the stores they have collected, or, if they think it the cheapest method to take a part of the honey, let them be liberally fed with syrup from the top of the skep. Not only should this be attended to in the autumn, but they should be carefully examined the first fine day in March, and if devoid of stores, as a "stitch in time saves nine," feed them then. We feed our stocks each spring, whether they require it or not; we have always found it an excellent method, for it seems to put new life and vigour into the entire colony, and makes them work more heartily. *R.*

WORK FOR JUNE.—Each stock should be watched or noted every day; if any sign of swarming is perceived they ought to have supers placed on them without loss of time. It is a very unwise plan to put any kind of supers, either glass or wood, over the stock if they do not appear overcrowded; but if they are noticed hanging about the entrance like a bunch of Grapes, then put on the super. If this be done too early it often happens that they refuse to enter the super, and our object of procuring a nice lot of honey free from the dark-coloured breeding cells is frustrated, and the hive will probably swarm. If your wish is to increase the number of your stock, then do not super them; but, on the contrary, if you desire a little pure honey, and think you have as many hives as you can profitably attend to, super them on the top directly they appear to be full of bees.

It is also a good plan to place a small bit of empty comb at the top of the super, to induce the bees to take to it. It may easily be fastened by melting a little wax on the glass, then, before it cools, let the comb adhere to it. Many beekeepers prefer a moderate-sized bell-glass for supers, more for the appearance, perhaps, than anything else. It matters very little which is used—glass, or small, square wooden boxes. The latter are the cheapest, and our bees seem to take to them, and to work better in them than in the glass receptacles. Whichever is most convenient for our friends they should not forget to make them both dark and warm. We wrap old flannel and odd bits of cloth around them.

Most lovers of the apiary will now be very busy preparing new hives, or fitting up new stands or beesheds for the early swarms. If you purpose using the Woodbury bar-frame hives, before transferring the swarm to them see that every bar has a small guide-comb affixed to the upper part; or, what we much prefer, pour melted wax the entire length of each bar-frame. This is much more easy to accomplish than fixing the guide-combs, and answers quite as well; notwithstanding every precaution be exercised to make your stocks build straight combs, it is often in vain. However, it is a very simple and easy matter, after smoking your newly-hived stock, to appease their anger, or to render it quite safe to open the hive every third or fourth day, and if you then find any combs being built crooked, carefully straighten them; afterwards, or later in the season, when you have occasion to take the bars out to secure honey, or for any other object, you will feel glad you took a little extra trouble to have straight and even combs.

Always hive the swarms first in a common skep, as used by our cottage bee-keepers; then, when they are settled, transfer them immediately to the bar-hive. We invariably knock them out on the top of the bars, as being the most ready method. *R.*

The Villa Garden.

BLISTER ON PEACH TREES.—We have already alluded to the general failure of the outdoor crop of Peaches, and so universally has this been experienced that all trees, whether old and decaying or young and vigorous, appear to be devoid of fruit. Our own trees, which are getting near the end of their work, are decidedly bare, and a neighbour's trees, that are young and vigorous and just getting into bearing, have lost every trace of the rich promise of fruit the fine bloom encouraged. If there is any comfort to be got out of bewailing misfortunes in concert, neighbours can forget all differences and condole with each other upon the scarcity of their crop; and to make matters worse, the horrid blister is putting in appearance, and to such an extent in some cases as to threaten the loss of the leaves almost entirely. Villa gardeners having trees so affected may rejoice to find themselves in excellent company, for a noted fruit cultivator states his trees are as bad as they can well be; and he is gardener to my Lord Marquis of Carabas close by, and has a kitchen garden famous for the admirable management it receives and the fine crops of fruit generally taken from it; but the blister is no respecter of persons or trees, and his lordship and his gardener and we have a common cause for sorrow.

We asked the gardener at Carabas Castle what he thought was the cause of the blister on the leaves a Peach trees; reminding him that some writers who assumed to write with authority (as indeed most scribes do, whatever may be the nature of their message) had stated that the blister on the Peach leaves was caused by insects, and who also state that if a leaf or two be picked off insects would be found on them. We have frequently examined these examples of vegetable disorganisation, but failed to observe any general testimony confirmatory of the fact that these leafy eruptions are the results of the action of insects, and my lord's gardener settled the question off-hand by stating that he did not believe a word of the insect theory, but held the opinion that the blister on Peach leaves was the result of cold and chill either in the roots or the branches. Well, there has been no lack of chills, and a good deal of the weather of the past month has been anything but jolly times for insects to sport and play among the leaves. And my lord's gardener went a step further, and stated that the blister was never present in the case of the trees under glass. This fact appears to militate against the insect theory.

Then we enquired what is the best thing to be done in the case of these blistered leaves; and he suggested picking them off, even to the partial stripping of the trees. We asked if any remedy could be applied to stay the plague, and he said he knew of none; and again advised, to pick off the leaves, assuring us that as soon as warm growing summer weather sets in (and we are still looking for it in the second week in June) the trees would start into growth, and soon become clothed with fresh shoots and leaves. Meanwhile, the Villa gardener can do all that was recommended last week, and assist as far as possible the effort Nature must put forth ere long to replace the damage caused by this blister.

ASPARAGUS BEDS.—The Asparagus-bed is one of the glories of the Villa Garden. The first bunch of Asparagus, or the first Cucumber, or the earliest dish of Strawberries, are all gardening achievements of the highest order, and their realisation affords immense satisfaction. But there is the danger that Villa gardeners, in their desire to get all the Asparagus they can of their own growing, may make too large demands on their beds. There is a time to cut, and a time to refrain from cutting.

As a general rule, gardeners cease to cut Asparagus about the middle of June. The theory held is, that if Asparagus be cut late, and especially when growing on a damp, cold soil, there is danger of losing the plants should a wet, sunless, and cheerless autumn follow. The fact is, there is scarcely time for them to make a good vigorous summer growth, which is a great advantage in the case of Asparagus. In some districts, where there is a drier, later soil, it may be safer to cut Asparagus later in the season, but a wise gardener will husband his resources, and not waste them by undue lavishment. It is therefore best to spare the knife at cutting time, or impoverishment and failure may follow.

PANSIES AND VIOLAS.—While learned gardeners are discussing the difference between a Pansy and a Viola, and pointing them out where they exist (though it is difficult to say that it is being done with much clearness and satisfaction), it is our desire to point out the advantage of having a bed of these, if only for the sake of cutting from to make up little posies, and for placing in vases, &c. The Pansy (or perhaps we should say Heartsease, as that is the dear old common name) is so attractive in its way, so free of bloom, and so pleasantly scented, that a bed of them is invaluable.

We have now in bloom a little plot of what is termed hybrid Violas, and while some of them are like Pansies in the shape and size of their flowers, there are others so much smaller, and so free of bloom, that they may be taken as representatives of the Viola. They are of very bright and varied colour, and all charmingly fragrant. A bunch of these picked twice or thrice a week fills a room with an agreeable perfume, while the little patch of them, when in full bloom, is a particularly attractive sight in the open air.

One cannot have a little group of these Violas without having some inferior forms among them. It was so in our case, for there were not only ragged, loose, inexpressive flowers, but also the long, lanky habit of growth peculiar to some of them. These have all been pulled out, and there is a positive advantage gained in that more space is allowed for

the others to grow. A top-dressing of good rich soil has been provided, and with an occasional sprinkling overhead the plants are growing famously, and flowering profusely. These Violas will remain in bloom as long as, or even longer than any other hardy flower.

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—Many fine flowering plants fail to have the attention they require given them, through the simple fact that they are easily grown, or, rather, it might be said, difficult to kill. Conspicuous amongst these is the Amaryllis, the deciduous as well as the evergreen species and varieties. After they have flowered it is no uncommon occurrence to see them closely packed amongst other plants in any out-of-the-way corner, where they are often overlooked for water, and where it is impossible for them to get the light they require. It should ever be remembered that they are essentially light loving plants, needing all that we can possibly give them—not requiring any shade even in the hottest weather, provided they have sufficient air, which latter is essential to give strength and solidity to the leaves, upon which depends the increasing strength and size of the bulbs, which enables them to flower freely and to produce offsets. Those that bloomed earliest will by this time have made their leaves, but need attention with plenty of water, light, and air to mature them; the syringe should be freely applied, getting the water to the underside of the leaves two or three times a week to keep down red-spider, to which they are liable. The black-flowered plants will want similarly attending to. Pancratium fragrans deserves a place wherever sweet flowers are held in estimation. By growing a number of plants it may be had in succession over a considerable time, keeping a portion of the stock warmer early in the spring, and treating others by submitting them to less heat. Like the Amaryllis, it does not bear too much pot-room, yet, on the other hand, it must not be confined too long in poor, exhausted soil, or the flowering will be proportionately weak. Plants that have bloomed, if they need more room, should at once be potted, being careful to drain well, as, like all other subjects that are only moved at considerable intervals, it is necessary to make provision so that there is no danger of the soil getting water-logged through inefficient egress. Use good loam, to which add a little decayed leaf-soil or very old manure matter, as sometimes recommended, as although this material may produce luxuriant growth, yet from its light, spongy character it shrinks, so as to be totally unsuited to bulbous plants of this description, that require a good holding soil rammed solid with the potting lath. Give the plants plenty of light and air—a front shelf in an intermediate house or cool stove will suit them best. The nearly allied Crinums succeed well under like treatment, but I have always found these do better with more root-room, and appreciate to the full size in the plants; the great thing with them also is plenty of light and sufficient air, which keeps their leaves stout and strong; when they are the reverse of this they have a straggling, unsightly appearance.

The second lot of cuttings of winter-flowering plants, advised to be put in some time back—amongst them Aphelandra cristata and the pretty small-growing A. Roezlii, Eranthemum pulchellum, Euphorbia jacquiniæflora, Thyrsacanthus rutilans, Plumbago rosea, Sericographis Ghiesbreghtii, Poinsettias both double and single, or any other although the latter is a grand plant the single one should not be lost sight of, as there are purposes for which it is better adapted than the double one, notably for using the bracts singly in bouquets—and winter-flowering Begonias must not suffer for want of attention, as the time in which all these later-struck plants have to grow is limited. Give more pot-room to such as require it, as from their quick growth they speedily fill the soil, and if too much confined at the root thus early in the season it induces a stunted condition, which seriously interferes with their blooming capabilities. At the same time it is well not to over-pot all plants of this description, for if kept on growing too freely until late in the season, which is a result of too much root-room, the wood does not get fully hardened up, and the bloom is rarely proportionate in quantity to the size of the plant; and as most of such stock is much more useful in a medium size, propagated every year, and discarded after blooming, it is better to aim at moderate-sized, fully matured plants. The earliest propagated stock of all winter-flowering plants should be stood thinly in a pit by themselves close to the glass, with a slight shade during the middle of the day, yet giving them abundance of light, stopping all those that need it, though in the case of these autumn and winter flowering plants the stopping process must never be carried too far, as it is much better to secure a moderate number of strong, fully-developed shoots, than a quantity of weak ones, neither is anything gained by growing them into compact specimen shape, as a dwarf sturdy habit can be induced by sufficient room whilst they are growing. Where such plants as the above have to be grown on the shelves of late vineries, they are so much shaded that the growth is thin and weakly, never flowering like those that are grown under more favourable conditions. *T. Baines.*

FLOWER GARDEN, ETC.

Now that the bedding-out is nearly brought to a close in most places, and favourable weather having succeeded days that were dull, cold, and sunless, the regular work that may have fallen in arrears must be brought forward as early as possible. Take the first opportunity of looking over the Pelargonium bed and other things that have been turned out. Pick off all dead leaves that have made their appearance, and which all plants more or less show after being first planted out. Stir the ground well with a small hoe among the plants. This greatly assists in starting them off with a free growth, and leaves the ground open and fresh. The timely rain we have had will soon work an immense improvement on all vegetation, and leave less work for the water-pot; the soil being warm after several hot days turned-out plants will soon make rapid progress, which should be encouraged by every available means, such as mulching the ground covered early. Pinks and Carnations should have neat supports, and borders where herbaceous plants are growing must also have attention. Let all plants that require them have sticks before they get too far advanced. They look best when neatly tied up in natural form, without being too much crowded or bundled together. Roses must not be neglected; the extra attention given them now will be amply repaid when the buds begin to delight us with their ever-welcome fragrance. The grass lawns will require constant attention as to mowing and sweeping. Gravel walks must also be gone over, and all weeds removed, either by hand-picking or hoeing, after which they can be swept or raked, and carefully rolled, and all left in perfect order. *T. Blair, Shrubland Park, June* 12.

FRUIT HOUSES.

GRAPES.—The agreeable change in the weather having crowded an unusual amount of work into a limited period, the final tying out and thinning of late Grapes will require close attention and great perseverance on the part of the operator, otherwise purple bunches and rapidly swelling berries will rob the fruit which it is intended to leave for ripening. Early morning, when the body is cool, is the best time for thinning Grapes, and even then care should be taken that the flesh does not come in contact with the berries, as the slightest touch with the hands is liable to damage the bloom. Young gardeners who wish to become first-rate Grape growers will do well to bear in mind that neither size of berry nor weight of bunch, without colour and finish, can lead to victory. Colour often, but not always, depends upon a decision of removal. Well-finished bunches, and finish depends in a great measure upon judicious and careful thinning of the berries. No rule can be laid down for thinning, as some Vines finish much finer berries than others. The aim should be a selection of perfectly fertilised berries, sufficiently numerous to form a compact cluster that will not fall to pieces when cut and laid on the dish. Vines growing in light, shallow, or exposed borders will now require attention. If well drained and protected from heavy rain through the winter a good soaking of tepid liquid manure or guano-water at a temperature of 85° will be beneficial, particularly if a heavy crop of fruit is swelling off. Mulch immediately after watering, to prevent evaporation and to keep the roots near the surface. The Vine, being a gross feeder when in active growth, the roots must and will have moisture, and it is much better to keep them within the influence of sun and air than to lay the foundation of deep root action, which means shanking, by driving them down into the drainage for food. Nights being cold, fire-heat will still be necessary to keep up a minimum temperature of 65° to Hamburgh, and 70° to Muscats, with a circulation of air to prevent condensation of moisture on the leaves and berries. When young Vines in pots or borders intended for next year's fruiting show signs of ripening ventilation may be increased, with a gradual reduction of moisture, but the foliage must be preserved in a clean healthy state as long as possible by the free use of the syringe and moderate supplies of water to the roots. *W Coleman.*

MELONS.—The present moderately bright weather seems to suit Melons well, for they ripen steadily without much fire-heat, and the flavour is excellent. Assuming that a good stock of vigorous young plants is now ready for placing in pits and frames lately occupied by bedding plants and forced vegetables, no time should be lost in getting them turned out. If leaves, old Seakale dung, or fresh litter can be used for renovating the beds and linings, quick growth and superior quality of the fruit will well repay the extra trouble. Cox's Golden Gem is good and hand-some, and well adapted for this work, as it comes in quickly, and never fails to set and swell well. Plants in pits and frames may now receive more water at the root and overhead on fine afternoons from the time the fruit begins to swell until it has attained full growth. Canker at the base of the stem in some places is very troublesome, and must be treated with quicklime and sulphur. At this place is unknown. Young plants recently put out may require a little shade on bright days, but sturdy plants, with plenty of heat, air, and moisture will succeed best under full exposure to sunshine. When tender-skinned kinds show signs of ripening condensation of moisture must be prevented by giving night air, and the fruit may be shaded with sheets of tissue-paper. *W. Coleman, Eastnor Castle.*

HARDY FRUIT GARDEN.

The present season has been one of the most disastrous as regards the fruit crop and condition of the trees that I ever remember to have experienced, and now as I write we are approaching the middle of June, and yet without sun or summer, excepting an occasional gleam for a few hours, and one or two warm days that appeared like it, but looked-for advent of seasonable weather. This climate of ours is proverbial for its fickleness, and the present year certainly has not been an exception, or belied its character in that respect in any way, but, on the contrary, has shown more forcibly than ever that the lot of the hardy fruit gardener is of necessity a battle with difficulties in which the odds are overwhelmingly against him, and more particularly has this been the case during the present season.

The blister on both the Peach and Nectarine trees still continues in a most aggravated form, and all the sap and strength appears to flow into the leaves so affected, as they continue to enlarge, while little or no growth takes place elsewhere. In order therefore to divert the current into its proper channels these robbers should be removed, as also any malformed shoots which are suffering in like manner. These curled or malformed leaves have afforded hiding-places for greenfly, and with their removal many of these pests will be got rid of; but to make a clean sweep at once it is a good plan, now that the shoots are getting long enough to bear, to dip any that are badly affected in tobacco-water, and if this is followed up by a free use of the garden engine or syringe every warm favourable afternoon or evening these pests will cease to be any further trouble during the present season. Once rid of them, the next thing is to tack or tie the shoots into their proper position, to prevent any injury from strong winds and from forming those unsightly elbows so objectionable to a well-trained eye. By getting at them thus early, while the growth is young and tender, there will be no difficulty in inducing them to bend as desired, which will not be the case later on, after they become more woody and stiff, when they are apt to break at the base. Unfortunately, on Apricot walls there are many bare places to fill in, owing to the young wood having died away since the severe frosts occurred. The trees are also suffering the effects of the injury sustained by exuding a good deal of gum round about the spurs and up the main branches, and it is to be feared that many of these will go off in the manner they sometimes do; this is generally attributed to other causes, but, as is evidenced by the present season, results from extravasation of sap and the rupture of the vessels through which that fluid circulates. Nothing can now be done to mitigate the injury, but in going over the trees for the purpose of stopping the breast wood the best situated of the young shoots on the upper sides of the branches should be laid in and left to grow to refurnish the wall after the manner Peaches are managed, and this growth will afford blooms that will nestle close to the bricks, where it will be far more secure than that on spurs so much exposed to the weather. The present season shows more than ever the necessity of making this sort of compromise between the spur system in managing Apricots and that of laying in annually some young fresh wood as above, as what few fruits there are can only be found on the latter, and that has always been the case here after late spring frosts, such as have occurred this year.

Strawberries, like all other fruits, are not in a satisfactory state this season, as they show weakness and paucity of flowers resulting from the excessively dry summer and autumn, and the check they received at the time. Where these did not get a top-dressing of loose littery stable manure, as recommended, no time should be lost in strawing them down or the fruit will become gritty and spoiled, and to aid the latter in swelling a good soaking of liquid manure given after or just before a shower of rain will be found of the greatest assistance, as then it will have time to soak down to the roots and not be absorbed in the atmosphere through evaporation, as generally occurs if given while the weather is clear and dry. *J. Sheppard.*

THE
Gardeners' Chronicle.

SATURDAY, JUNE 16, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, June 19 { Royal Horticultural Society: Great Summer Show: Meeting of the Fruit and Floral Committees at 11 A.M., and Scientific Committee at 1 P.M.

WEDNESDAY, June 20 { Lee and Blackheath Horticultural Society's Exhibition (two days). Sale of Mr. Hepburn's Collection of Orchids at Stevens' Rooms (three days).

SATURDAY, June 23—Crystal Palace Great Rose Show.

WITH a view of again drawing attention to SILK CULTURE in Great Britain we here print some remarks on its practicability in our English climate, based on a communication forwarded to us by Dr. WALLACE, of Colchester. In cereal produce the British farmer, having to compete with all the world, is very seriously handicapped; and even in meat production the seemingly illimitable supplies of dead meat coming over from Canada and the United States threaten a reduction of price, to say nothing of the serious losses from pleuro-pneumonia, rinderpest, foot-and-mouth disease, &c.

It is, therefore, high time that a lucrative and highly important industry, as is silk culture, should be seriously and attentively regarded by the agriculturist, not merely at home but also in our colonies, many of which are by Nature most admirably adapted to the production of silk as a raw product. Silk culture, occupying about three months only in the year (in England the months of June, July, and August), and of these only one month, that of July, is at all a busy time—the necessary labour being chiefly provided by women and children—can only be regarded as a supplementary, not as a principal industry. The food plants also, Morus alba and its many varieties, are also planted here and there, wherever convenient, not as a main but as a supplementary crop; yet, as will be seen, it is most lucrative, and commends itself the more inasmuch as it can be carried on without interfering with other agricultural operations. It is also an employment peculiarly adapted to women and children, and therefore meeting one of the requirements of the age.

When it was discovered ten years ago that about £1,000,000 of our money was annually sent from Europe to Japan by those interested in sericiculture to purchase fresh, healthy "grain,' or silkworms' eggs, their own stock having been either worked out or enfeebled by disease, it occurred to Dr. WALLACE that some of this money might be diverted to this country to enrich our own people. Several scientific Frenchmen of eminence—notably M. GUÉRIN-MÉNENVILLE, Government Inspector in France—were very favourably disposed towards "silk," or rather "grain," in England. On the borders of Hampshire and Surrey Capt. MASON had for years grown the White Mulberry tree, and produced silk which had been exhibited with first-class honours. Dr. WALLACE'S trials at Colchester, being dependent on bought or borrowed Mulberry leaves (an uncertain supply), were not very successful; but having now a good supply of White Mulberry trees in thriving condition (about 2 acres are planted out), his experiments during the last three years have been very successful. Dr. WALLACE tells us he has had shoots on three trees which in one year grew 5 feet to 6 feet long, and has reared and fed the worms, derived from one of the healthiest and best sources in Europe, in a room, without disease, and almost without fire, in June, July, and August, and he has produced in successive years a small lot of fine "grain," the parent cocoons of which have been pronounced excellent by good judges and perfectly free from disease.

Moreover, the introduction of Dr. CARRET'S stoves, which create a high temperature in the silkworm-room without giving off any deleterious gases, have this great advantage, that they hasten most rapidly the rearing of the worms, reducing the period of the caterpillar stage from six to three weeks; they render the cultivation of the worm independent of any weather; no carbonic oxide or other noxious gas is given off to injure their health—in the words of the inventor, "Healthy silkworms can by means of these stoves be reared in any country where the Mulberry tree grows, independently of the weather;" therefore the rearing of Mulberry silkworms in England ought to be an assured fact.

Now, as to the commercial results. Japan as a grain-producing country is now worked out, all her best grain has been exported to Europe, and in 1876 the purchases of grain did not amount to one-eighth of former sales. The south of Europe alone can take from us 500,000 oz. of eggs, if we can only produce them at a price of 15*s.* to 21*s.* per ounce of 30 grammes, and will be very glad to get eggs, provided they are healthy, from us. If properly managed 1 oz. of eggs will produce in grain 100 oz., or £1 will produce £100, leaving a large margin for profit after all expenses have been paid.

The rearing may be effected by women and children. The southern, midland, and eastern districts are admirably adapted to the growth of the White Mulberry tree. It has not been prominently stated that in our equable and cool temperature we have a great advantage, in one respect, over Southern Europe in the matter of silk culture. The southern growers lie between Scylla and Charybdis; witness the spring of 1876, in which late frosts and cold inclement weather in April and May destroyed the entire crop. On the other hand, a sudden accession of sultry weather, with thunderstorms (*les chaleurs étouffantes*), may set in earlier in the summer than usual, just before and instead of just after the worms have spun their cocoons; and then good-bye to a crop—the whole perish. After cocooning the insects are protected from the heat by their silken covering, and then remain unaffected by sultry weather. Both early and late a risk of a total loss is thus incurred.

But in England, having nothing to fear from too sultry weather, we may delay our hatching-out even till the first week in July, by simply keeping the grain in a cool cellar, thus selecting too a moment for incubation when the Mulberry trees have advanced to such a point as to give us the greatest possible amount of suitable food.

In conclusion, attention may be drawn to Capt. MASON'S figures, as published in the *Times* of January 26, 1877, simply premising that this gentleman has been occupied in silk culture for the last ten years, and is probably better informed on the subject than any other person in England.

He states that last season from 13 poles of his land, which is of a light and poor description, planted with Mulberry trees, he gathered 1094 lb. of leaf. Of the 3600 cocoons obtained from feeding on this leaf 1635 were selected for the production of grain. The result was 10 oz. of grain, valued at 20*s.* per ounce, or £10 the whole; leaving 1965 cocoons for reeling, which with the pierced cocoons would pay for the labour. Reducing this to an estimate per acre we have—1 acre producing leaf enough for, say, 20,000 selected cocoons, estimated to produce 120 oz. of grain, valued at £120 clear profit per acre, expenses being paid by the soft and pierced cocoons, as before. This sum must be reduced to one-half, as every other year the trees ought to get a rest, and not be stripped of their leaf in order to maintain them in full vigour. But, even so, where is the farmer who would not be glad to obtain a return of £60 per acre, which his wife and children could mostly procure for him.

To illustrate what is done at Colchester we append a few thermometric and other observations, and refer those in possession of a White Mulberry tree (not the common fruiting Mulberry) to commence a little experiment on their own account. They will find in Messrs. CASSELL'S *Technical Educator* (vol. iii., Nos. 53, 57, 60, and 64) sufficient to guide their first essays, and they will be able to procure grain or young silkworms from Mr. S. H. GASKELL, 147, Brinnington, Stockport, for a trial.

Temperature of Silkworm Room.

June	Night. Min.	7 A.M.	9 A.M.	12 Noon	3 P.M.	6 P.M.	9 P.M.	Hygrometer.	Wind.	Rain.
1	44	—	54	—	—	—	—	—		—
2	55	—	62	—	—	—	—	—		—
3	58	—	65	—	—	—	—	—		—
4	63	—	67	—	—	—	—	—		—
5	61	—	66	—	—	—	—	—		—
6	58	—	63	—	—	—	—	—		—
7	58	—	65	—	65	65	—	—	S.W., breezy	Slight in night
8	59	60	62	64	67	64	63	—4	S.W., slight	—
9	61	62	63	67	74	70	68	—03	Ditto	—
10	64	63	64	68	71	70	69	—03	Ditto	—
11	64	64	65	70	72	70	69	—04	Ditto	—
¶12	61	65	66	—	—	—	—	—03	E.	Heavy in night, with thunder and lightning

—— WE learn with much pleasure from the Philadelphia *Public Ledger*, that upon the unanimous nomination of the members of the Pennsylvania State Board of Agriculture, Governor HARTRANFT has appointed as botanist of the Board Mr. THOMAS MEEHAN, the well-known naturalist. This is putting the right man in the right place, for Mr. MEEHAN is one of the industrious experts who are working hard in the cause of natural history in Philadelphia. About thirty years ago he, then a young man, made the State of Pennsylvania his adopted home, and since then he has won for himself a name that entitles him to the rank of representative man of both the State and the branch of natural science to which he devotes his study, his labour and his industry. He arrived in Philadelphia without friends and without acquaintances, except two to whom he brought letters; he now, after thirty well spent years, makes a brief trip to the "old country" to revisit his native land, an honourably distinguished man, known throughout the United States, and a member of thirty learned societies, agricultural, horticultural, literary and scientific, commencing with the Wernerian Society of Edinburgh, to which he has been elected in recognition of his contributions to natural science. Mr. MEEHAN sailed for Europe on June 7.

—— With reference to the GREAT PROVINCIAL HORTICULTURAL SHOW decided to be held by the Royal Horticultural Society in June, 1878, at Preston, in Lancashire, we are informed that the needful guarantees have been secured, and that a good Local Special Prize Fund (in addition to the prizes offered by the Royal Horticultural Society) will also be provided. T. M. SHUTTLEWORTH, Esq., of Howick House, Preston, has undertaken the office of Local Secretary, and under his indefatigable management the show will no doubt prove a great success. The exhibition at South Kensington on Tuesday next promises to be an unusually good one, and a good company is expected to meet the Prince and Princess of WALES, who have announced their intention to be present.

—— If we do not have an abundantly BERRIED HOLLY crop next Christmas to decorate and cheer that festive season, it will not be because of the present deficiency of flower. The bloom everywhere on the Holly is simply marvellous, and as frosts must be

* 1 Silkworm hatched out—an *avant courrier*. † 33 hatched out. ‡ 1 hatched out. § 200 hatched out. ‖ 66 hatched out. ¶ 30 hatched out: making for these five days a total "hatch-out" of 436 out of 502 eggs of an especially valuable race from Southern Europe. Of my own grain—about three-quarters of an ounce in all, brought up into the silkworm-room on June 1—about 100 hatched out, June 10; a great number hatching, June 11; and on June 12 a great number hatched out.—Fire-heat not applied during the twelve days.

Note.—The Mulberry leaf began to bud about June 1, and the sprays are now from 2 inches to 6 inches long, planted on a cold brick-earth soil. The great bulk of eggs remain in a cool cellar at a temperature of 65°, but already some begin to hatch out.

now out of the question, failure to berry can scarcely be looked for. Weather-wise folks will presently assert that this abundance of Holly berries bodes a severe winter, but the ripening effects of the past summer doubtless had much more to do with it. Like all vegetation, the Holly is late in blooming this spring, and this will doubtless prove the saviour of the crop. Should the expectant severe winter, however, follow, horticulturists may perchance find it rather a cause for rejoicing than otherwise; as soft winters, when followed by late cold protracted springs, generally prove the most disastrous seasons.

—— It sounds somewhat paradoxical to assert that Early Peas will be late this season, but such will be that gentleman was recently presented by the *employés*, past and present, with a handsome timepiece in black marble.

—— The *Maidstone and Kentish Journal* regrets that it is unable to give a good account of the Fruit Prospects in Kent. It appears that Gooseberries, of which a large crop was expected, will in many parts fall short. Red Currants are plentiful, and the black promise an average. The early Cherries are a failure, and the later ones have in "swelling out" fallen off in large numbers. The Plum crop will be even smaller than last year; some few kinds will grow about a quarter of a crop, but on the majority of trees there is not a Plum to be seen. Pears, will the "good tenor" be forthcoming, but that also, amid the many vicissitudes of weather and climate to which the garden labourer is subject, the owner may be long enabled to retain it.

—— The committee meeting of the National Rose Society was held on Tuesday, the 5th, at the Horticultural Club-room, and all details connected with the forthcoming exhibition were arranged. Judges were selected, and we are told that very favourable anticipations of a successful show are entertained.

—— A French Rose cultivator is offering for sale, under the name of Mathilde, what he states to be the best of all the white Tea Roses "known for a long

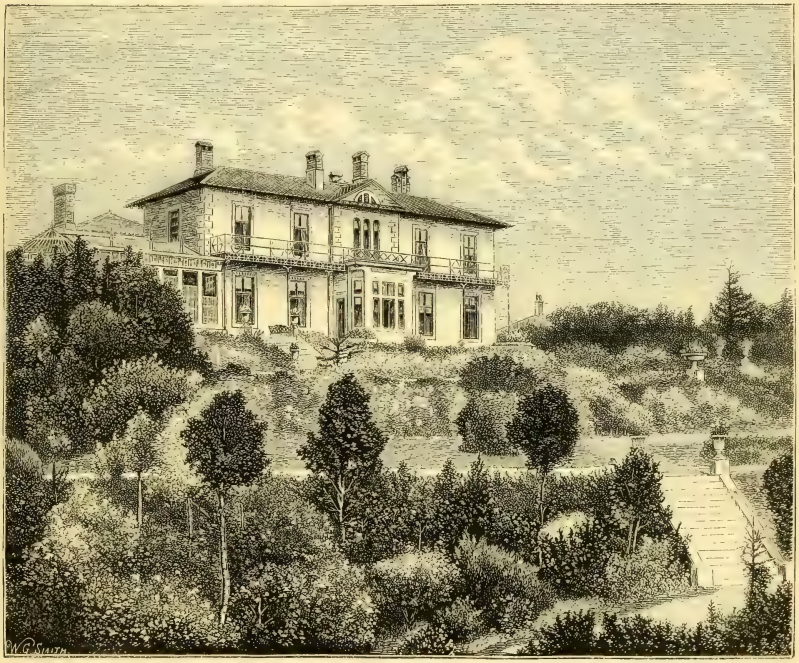


Fig. 121.—Glen Eyre, Southampton, the residence of Mrs. Eyre Crabbe (see p. 752).

the case nevertheless as far as the crops all through West Middlesex are concerned, and picking will hardly be in force until Midsummer at least. In spite of this backwardness, however, the crop promises to be an abundant one, as all Peas look remarkably well, and the earlier sowings are blooming most luxuriantly. So many persons get a "picking" out of the green Pea crop in addition to those who do the picking, that a general failure is a much greater misfortune than is perhaps usually esteemed, whilst not least amongst the benefits resulting in a plentiful season is the physical good produced to the indifferently fed town poor of the metropolis, who are thus enabled to obtain many hearty meals of this nutritious vegetable.

—— In view of the approaching marriage of Mr. William Thomson, jun., of the Tweed Vineyard, which never appeared better in bloom, have almost entirely disappeared in fruiting. Apples promise a large crop, but many kinds have suffered from the attacks of vermin. Cob-nuts appear plentiful, although the maggot has made its appearance in large quantities.

—— An advertisement inserted in our columns last week is worthy of comment, inasmuch as it seems to indicate that the few remarks recently offered by us in favour of the introduction of Music and other suitable modes of recreation into our garden establishments, have not been made in vain. A garden labourer is required who possesses a "good tenor voice." Now as we know of no use in gardening for "tenor voices" we can but conclude that a part choir is being formed amongst the *employés*, and that the indispensable tenor is found wanting. We cordially hope that not only time under several names (Mousseline, Niphetos, &c.)." As it is so much grown and so well-known in this country under the name of Niphetos, there does seem to be danger of leading to confusion by reverting to the original name Mathilde, supposing that priority can justly be claimed for it.

—— We mentioned last autumn that the setting of the blossom-buds on the American Plants at the Knap Hill Nursery, and the consequent promise for the present season's bloom, was more abundant than it had been for many years past, and that consequently—winter permitting—the present year's show of Rhododendrons must be more than usually gorgeous. The bloom is now about at its best; and, as giving some indication of the display, the term "gorgeous" is by no means an exaggeration. Notwithstanding,

however, the bloom has not altogether escaped injury from the bitter cold of May 4, the effect of which, though not noticeable to the general observer, is seen by those who are more familiar with the plants in the occasional want of the terminal flowers, or their stunted and crumpled appearance. Fortunately, the hardy Azaleas, which have for several years been so unlucky as to be severely punished by the late spring frosts, have this season escaped injury, and the consequent glorious masses of their brilliant colours more than compensate for any little damage sustained by the Rhododendrons, which in reality is unobservable except to a practised eye. Those who are desirous to add to their plantations of this finest of all hardy flowering shrubs should see the varieties as they bloom here, and select for themselves. They will be in good condition for at least another week; and Mr. WATERER'S liberality is such, that even those who only go to look and admire, are made welcome to the floral treat.

—— A specimen of HYDRANGEA THOMAS HOGG, with six trusses of snow-white flowers, the largest measuring 16 inches in diameter, was presented at a recent meeting of the Pennsylvania Horticultural Society, and a special vote of thanks to Mr. ROBERT BUIST, the exhibitor, was awarded.

—— We are sure our readers will peruse with very great interest the following communication from Mr. BUIST (whose name has been mixed up in this matter), relating to the GROWTH OF VINES UNDER BLUE GLASS :—

"Your number of May 12 has an item on blue glass and Grape growing. The theory was fully treated, I think, in *London's Magazine* over fifty years ago. My wealthy and jovial friend, General PLEASONTON, has closely associated me with his theory. His grapery is about 100 feet long and 25 feet wide, with four rows of Vines the whole length. The excessive growth of the Vines, from my standpoint, could readily be traced to warm, rich, dry, elevated borders at the foot of a hill. Every shoot, lateral, and leaf was allowed to grow and carefully trained their whole length; the entire house was a mass of wood and foliage. The following spring the laterals and main shoots were cut to a line about 8 feet from the bottom of the glass, the crop was prodigious; every Vine carried from five to forty bunches of well-coloured fruit and of good size. The Vines were only eighteen months' planted. The succeeding years I considered a failure. Your Grape growers can readily infer whether it was blue glass or rich culture, or both, that produced the crop. The General, you will see by the accompanying pamphlet, does not say that I attributed the crop to his theory of blue glass. *R. Buist, Philadelphia, May, 1877.*"

—— The usual monthly dinner of the HORTICULTURAL CLUB, on Tuesday, the 5th, was one of the most successful that has hitherto been held. Several foreign horticulturists were present, and a most pleasant evening was spent. Messrs. ALFRED WEEKES, Chelsea, and J. ASHBY, Ascot, were admitted members.

—— CARDAMINE PRATENSE can be seen growing in large patches in Mr. SAMUEL BARLOW'S garden at Stakehill House, Chadderton, for the sake of its leaves, which are picked in December, January and February, and eaten as Cress. Mr. BARLOW states that it is very delicate and most enjoyable at that season of the year, and much appreciated in his family circle. The leaves are slightly pungent, and the taste is by no means disagreeable. By some it is esteemed as a remedy in scorbutic diseases, obstructions to the liver, and jaundice, &c. Mr. BARLOW allows the Cardamine to seed itself, and is never without a crop.

—— According to Mr. W. CRAIG a solution of chloral hydrate, in the proportion of a grain and a half to an ounce of water, serves as a PRESERVATIVE OF VEGETABLE TISSUES, even retaining their natural colours. This is an experiment easily tried.

—— The last number of the *Bulletin d'Arboriculture* opens with a biographical notice and portrait of the late Dr. RODIGAS, one of the most celebrated hybridists, and who in raising seedlings acted, not in a haphazard way, as so many still do, but with predetermined aim and well reasoned method. Numerous fine varieties of Ranunculus, Anemone, Hepatica, Iris, Lily, Dodecatheon, Phlox, Pæonies, &c., attest his skill. In 1848 Dr. RODIGAS became Professor of Horticulture and Botany at Lierre, where he remained for twelve years, and afterwards established himself at St. Trond as a physician, giving occasional lessons and demonstrations on fruit culture and agriculture, and always taking a foremost part in horticultural affairs.

—— A new part of HOOKER'S *Icones Plantarum* has just been issued, comprising illustrations and descriptions of twenty-five new or rare plants, chiefly of botanical interest.

—— Mr. G. S. BOULGER writes from the Scientific Club, 7, Saville Row, W., to say that Mr. HARKER, of Southgate Street, Gloucester, is associated with him in the preparation of the GLOUCESTERSHIRE FLORA, previously mentioned by us. Communications on the subject may be sent to either of these gentlemen.

—— Dr. M. C. COOKE has just published a volume entitled *Contributions to Mycologia Britannica*, and comprising an account of the MYXOMYCETES, arranged according to the method proposed by Dr. ROSTAFINSKI in his *Monograph*, with all his figures, on twenty-four plates, and comprising full characters of all the orders, families, and genera, and descriptions of the British species, with the original analytical tables, translated from the Polish. All communications should be addressed to 2, Grosvenor Villas, Junction Road, London, N.

—— The French have a proverb to the effect that a cold May and a hot June yield bread and wine. In this country, at any rate, fruit will be very scarce. Never do we remember to have seen such havoc among outdoor Peach trees, Cherries, Pears. The strong gale of the 1st of the month completed the mischief, and even the young leaves and shoots of the Ash are blackened and twisted off.

—— The *Revue Horticole* has a coloured figure of ARIA HOSTII, a species allied to our common White Beam, but with corymbs of rosy pink flowers. It is the Sorbus Aria var. sudetica of LINNÆUS, and has other synonyms. It is grown by MM. SIMON LOUIS, of Metz, under the name of CRATÆGUS HOSTII. We have not seen the plant in English nurseries, but judging from the figure it should be very ornamental.

—— In 1873 there were 474,061 hectares [a hectare = 2½ acres about] in France devoted to market gardens and the culture of vegetables, which produced a value of 461 millions of francs (the average yield is nearly 500 millions (£20,000,000 sterling). According to the investigations carried out in 1862 the land under these cultures was 443,000 hectares, and the aggregate value of the produce 444,000 francs. The value of the hectare of produce appears to range between 915 fr. and 1200 fr.

—— The last part of the *Transactions of the Scottish Arboricultural Society* contains several papers of considerable interest, such as Dr. M'NAB'S paper on the Anatomical Structure of the Leaf as a Means of Determining the Species of Abies; on the Timber Supply of Australia, by Mr. KRICHAUFF, who bears testimony in passing to the excellence of the German forest schools, and to the labours of Baron VON MUELLER in Australia, Dr. HECTOR in New Zealand, and others. Mr. DUFF contributes an excellent paper on the Arboriculture of the County of Kent, preceded by a brief account of the physical features and geology of the county. The coppice woods of Kent are well worth study by those interested in forestry, and some of them are most favourable specimens of woodcraft.

—— Mr. TURNER informs us that he will show a very large collection of NEW PELARGONIUMS at the Royal Horticultural Society's Exhibition on Tuesday next.

—— At the last meeting of the LINNEAN SOCIETY on June 7 several papers were read, including one on the morphology of Sapotaceæ, by Mr. MARCUS HARTOG; on the causes of the multiplication of parts in flowers, by the Rev. GEO. HENSLOW; and on the morphology of Primroses, by Dr. MASTERS, who discussed the subject from the point of view of comparative morphology, mode of development, minute anatomy and teratology, and alluded to the most recent views held by botanists on the subject, illustrating them by his own observations on the development of the flower, and by numerous teratological specimens throwing light on the nature of the free central placenta and ovules.

—— We have just seen and compared in the Knap Hill Nursery the three Firs, including ABIES PARRYANA, respecting which a discussion has been going on in our pages since we took occasion some time since to mention the peculiar beauty of a plant of the latter from Professor SARGENT'S garden, which was then and is now in Mr. WATERER'S possession; and having carefully examined them all, we have no hesitation in affirming that for all garden purposes, the three plants which have been mentioned are perfectly distinct. We speak of their vegetative organs only, not having had the opportunity to examine cones of the recent acquisition, but these, in our view of the matter, are quite enough to separate the three plants. We found that the first of the trio to grow in spring—a fatal defect in our English climate—was Abies Engelmanni, which commenced to grow so early that all its young growth was completely killed by the May frosts, and this happens so constantly year after year in the climate of Knap Hill that this plant is utterly worthless either as an ornamental or useful tree, never growing beyond the state of a miserable scrub. The next to grow was Abies Menziesii, which we found a few days ago (June 11) with its young growth pretty well advanced, and perfectly healthy, having been developed since the occurrence of the frosts which had cut up A. Engelmanni. Latest of all was Abies Parryana, which had scarcely yet made any development of its young growth, from which fact it may be concluded that it is practically safe against damage from spring frosts, since it remains quiescent till the risk of spoliation from these is past. We have used the name ABIES PARRYANA because the plant appears to us sufficiently distinct to bear a separate designation, its aspect being quite different from that of the other two, irrespective of colour (which varies in degree in different plants), being smaller in its parts and much less coarse-looking than either; while it certainly has not the deflexed footstalks so conspicuous in A. Menziesii, though it has the pungent mucro, with somewhat less rigidity, perhaps, characteristic of that plant. *T. M.*

—— The *Florist* for the present month opens with a fine coloured illustration of a very beautiful Camellia called Madame Cachet. It is a double white flower, with the petals marked with a central stripe of pink. The flower is of good form and substance. The plate was taken from a plant in the possession of Messrs. VEITCH. A characteristic representation of Doyenné du Comice is given in the same number.

—— An excellent strain of EAST LOTHIAN STOCKS came under our notice a few days ago in Battersea Park, where Mr. ROGER has used this flower with considerable effect amongst the other spring flowering plants still in fine condition in the radiating beds near the west or Albert Bridge entrance. The Stock seeds were obtained from Messrs. THOMAS METHVEN & SON, of Edinburgh, and the young plants, after being wintered under glass, were turned out in March before they had shown a flower, so that selection was impossible. The percentage of single ones is exceedingly small, and the plants are dwarf in habit and very free flowering, and the colours, purple, scarlet, and white, are all that can be desired.

—— BEDDING-OUT is now being pushed on with great alacrity in the parks, and, as regards Battersea Park, will soon be completed should the present fine growing weather hold out. The park is very interesting just now, so many of the trees and shrubs being either in flower, or about to do so. The isolated clumps of Iris germanica and its allies, are very finely in bloom, and so also are many good useful subjects in the herbaceous borders.

—— Professor E. MORREN, of Liège, whose collection of living BROMELIACEÆ is the richest in existence, grows them suspended in his stove, in one corner of which is placed a piece of carbonate of ammonia. An interesting account of this collection is given in the *Illustration Horticole*, wherein we are told by M. ANDRÉ that, contrary to what is usually

believed, the great majority of these handsome plants belong to the cold temperate region between 2500 and 3500 metres above the sea.

—— The third part of *Familiar Wild Flowers* contains small coloured plates of the wild Crab Apple and the Borage, with popular letterpress accompaniment.

—— We are glad to see that the medical profession in Melbourne are agitating the question of providing a botanic garden proper where Baron VON MUELLER may properly perform his functions as Government Botanist. It is pleasing to observe that the colonists, or some of them, are beginning to be a little ashamed of the way in which they have treated a man who has with almost unparalleled zeal and energy devoted his life and his resources to their interests. A grave blunder has, we believe, been committed, but there is still time and means of partially repairing it.

—— In our last issue, p. 724, we alluded to a singular instance of DISEASE in PEACHES and NECTARINES, and, as we have since received other specimens, we deem it of importance to lay before our readers a figure showing the effects of the disease (fig. 122). At present we know little or nothing of the history of the disease or of the causes inducing it, but

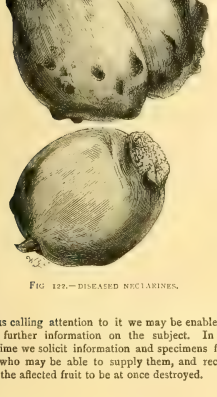


FIG 122.—DISEASED NECTARINES.

by thus calling attention to it we may be enabled to glean further information on the subject. In the meantime we solicit information and specimens from those who may be able to supply them, and recommend the affected fruit to be at once destroyed.

—— A dinner to Mr. F. W. WILSON has been arranged by the Lindley Club, whose guest Mr. WILSON will be, at the Criterion, on Tuesday, July 3 The dinner is intended as a complimentary recognition of Mr. WILSON'S able and courteous management of the exhibitions at the Crystal Palace during the past five-and-twenty years. Tickets, 12*s.* each, may be obtained of Mr. JOHN MCKENZIE, 1 and 2, Great Winchester Street, E.C.

—— The *Revue Horticole* gives a woodcut of a fruit of LILIUM SPECIOSUM, producing roots at the base of the seed-vessel at the junction with the stalk. From this it may be inferred that the young seed-vessels of other Lilies might be taken off and struck as cuttings. M. CARRIÈRE does not tell us whether in the present case the ovules or seeds were perfectly formed or not.

—— VIOLA CORISANDE has proved a showy and very useful bedding variety in Battersea Park this season. Mr. ROGER planted a small bed of it near the west entrance, and its peculiarly distinct, light mauve shade of colour has been very pleasing,

GREENHOUSE PLANTS.

THEIR CULTURE AND MANAGEMENT.

PLUMBAGO CAPENSIS.—This is a Cape plant, introduced more than half a century ago. It is one of the most generally useful hardwooded greenhouse subjects, not nearly so much cultivated as it deserves to be from the numerous ways in which it may be grown; for it succeeds equally well in a large pot; as a trained specimen to twine round a pillar; planted out to clothe a wall, or to hang loosely from the roof of a cool conservatory, or confined to the limits of a 6-inch pot, in which way it will flower profusely, forming one of the best possible table or window plants, to which size it may be restricted for years, occupying a very limited space in winter, and amply repaying the little attention it requires by flowering for weeks in succession. The flowers are produced from the extremities of the young shoots, and are borne in large bunches; individually they are like a small Phlox in form, but, of the most lovely pale blue colour. There are few plants grown that offer such a pleasing contrast in both colour and form of flower to the generality of other blooming subjects, as does this Plumbago. It is a free grower, and not at all difficult to manage, either in a small or large state.

There is no way in which it can be grown that it is more useful than in small pots, for general decorative purposes, for as, if a number are at hand, a portion, if desired, can be brought into flower in a little heat earlier, to precede such as are allowed to come on gradually in the greenhouse; by this means a succession may be kept up for three months in summer and autumn. Being a strong-rooted plant it will succeed well in loam, as it, in common with most things that will thrive in this description of soil, has in it a greater disposition to flower than if in peat; but the loam should be good in quality, and contain plenty of vegetable fibre, and should have added to it one-sixth of sand, and the pots should be well drained. The plants ought to be procured in spring, and should be in a free healthy state, struck from cuttings the season previous, and in 4 or 5-inch pots. Let them be potted about the end of March, just as they begin to grow; and now it is necessary to determine to what size they are intended to be grown. If the object is to keep all or a portion for flowering in a small state, these should be moved into 6 or 7-inch-pots.

If the intention is to grow them larger they ought to have pots at least 9 or 10 inches in diameter. In other respects the treatment they require is the same, excepting that the smallest sized may need keeping closer stopped in, so as to induce a proportionately more compact habit of growth. Pot them moderately firm, and if the shoots are at all straggling, shorten them back to about 8 or 10 inches in length, tying them out horizontally well down so as to induce them to break back, in which way they will push almost every eye. Place them in a house or pit, where they can be kept at a temperature of about 45° in the night, with proportionate increase in the day, with sun heat, closing the house early enough in the afternoons whilst the sun is up, so as to raise the temperature, syringing them overhead at the same time, and as the season advances and the weather gets hot, use sufficient water under the stages, and about on the paths to keep the atmosphere in a moist condition to promote free growth. All that will be required through the spring and early summer, will be to pinch back any shoots that may show a disposition to outgrow the others, and to tie all to sticks so as to keep them in shape. About August they will commence to bloom, and as soon as the flowers begin to open cease syringing. They may then be moved to the conservatory, or any place where flowering plants are required—where they will receive a moderate amount of light and air to ripen up the growth, no more of which for the season should be encouraged. When the blooming is over give less water and place the plants for the winter in an ordinary greenhouse temperature of from 35° to 40° in the night. They may be either cut back at once, or this can be deferred until nearer spring; the shoots of such plants as are intended to be grown on in the small pots should be cut to within a few eyes of where they were shortened to the spring previous, and again about the end of March, before they begin to grow, turn them out of the pots, shake three-fourths of the soil from them and replace in the same pots with new soil, and in every way treat as in the preceding summer; so managed they will last for years, flowering freely. They may during the season of active growth have manure-water given them once or twice a week, which will enable them to make stronger shoots and finer heads of flowers. Such as are intended for larger specimens should not be cut nearly so close in, the shoots may be shortened to within about 12 inches of where they were cut back to in the spring previous; if the plants have made satisfactory progress they will bear a 4 or 6-inch shift, removing a portion of the old soil; the new material should now be used in a more lumpy state than in the first potting: the after treatment through the spring and summer in other respects should be the same as the season previous. Attend to training the shoots as they progress; as the plants get strong they will make comparatively lengthened growths that will require either the use of a wire trellis or a number of moderately strong sticks round which to train the shoots, not tying in the points too closely, or they will have an objectionably formal appearance. After flowering they will again need cutting back, wintering them as before and repotting in the spring; they may be confined to the same pots, shaking away a portion of the exhausted soil and replacing it with new, or if they are required to be grown into large specimens they can have more root-room given them; so managed they will last for a number of years, and will be much assisted by the use of manure-water during the growing season.

This Plumbago is an excellent plant for training to a conservatory pillar, where if allowed to hang somewhat loosely it has a fine appearance; in such a position it may be either kept in a moderately large pot, and the soil partially renewed every spring, or it can be planted out. When it is wanted to cover a back wall or a considerable extent of rafter, the most satisfactory method will be to plant it out in a prepared border. This must have the usual sufficient drainage, and should be composed of 8 or 10 inches of good turfy loam with enough sand to keep it open; in planting see that the roots are not allowed to remain in the curved state which the pot has necessarily kept them in; when any subject of this description is turned out in an open border, and the roots let to stay in such a position they do not usually make satisfactory progress: restrict the quantity of water until the plants have commenced growing freely, after which they will require a good supply both at the roots and overhead by the syringe; attend regularly to stopping and training, especially in the first stages of growth, so as to furnish the space, regularly cutting back every winter to induce the production of young flowering shoots regularly over the whole position the plants are wanted to cover: when the soil becomes exhausted remove a few inches of the surface, each spring replacing it with new, and still further encouraging growth by the use of manure-water.

Insects.—The plant is somewhat liable to the attacks of red-spider, if not sufficiently syringed overhead, but when this is attended to regularly as advised no trouble is likely to be occasioned by it. Aphides will live upon the young shoots, and may be destroyed either by syringing with tobacco-water or fumigating. Seale sometimes infests it, and is most effectually removed by washing with a strong solution of insecticide when cut back in the winter. *T. Baines.*

SUGAR IN JAPAN.

THE following mode of cultivating the Sugar-cane in Japan is given in a recent official report. The plants are raised from seed [?], and are said to attain the height of about 10 feet, and never to bear any flower. At the commencement of the cold weather small bundles of Sugar-cane roots are planted in rows, stem downward and root upwards, on a slope of about 45°. The following spring they are taken up, and about 2 inches of cane, both above and below the joint having been cut off, they are planted out in proportions of about 500 lb. weight of cane to an acre of ground. The soil is well looked after in spring, and a quantity of small holes dug here and there. Into these the lees of oil are poured, and they are then filled up with earth, in which the cane slips are planted so soon as they show signs of budding or having taken root.

As soon as planted a little liquid manure is applied. At the end of fifteen days the slips or shoots attain to a height of 7 or 8 inches, when fish manure mixed with the lees of oil is applied. In dry seasons the

ground is also watered. The plants are liable to the attacks of three kinds of insects, which do them much harm, and consequently some precaution has to be taken against their attacks. During the winter the canes that have attained the highest growth are either broken off just above the roots, or are cut with a sickle; they are then stripped of their leaves, and made up into bundles of about 80 lb. weight each. About 10,800 lb. of cane are produced on a quarter of an acre of ground, and this quantity will yield from 6 to 7 piculs of sugar. The sheds in which the cane is crushed are for the most part about 24 feet square, and in each there are three crushers worked by oxen. The teeth of the crushers are kept constantly fed with cane, about four or five being inserted at a time. A workman stands behind on the watch for any canes that may slip through the crusher without being caught in the action of the mill. The canes that have so passed are handed to a third man, who feeds the mill from the opposite side. The mill having a reverse action it thus results that not one cane is lost. The cane juice, after expression, is removed to a separate building in quantities of about 200 lb. weight at a time, and the mill is cleaned after each such removal. The syrup then goes through no less than four refining processes, and is afterwards removed to where it is to be made into sugar. The working of about 2200 lb. of cane is considered a fair day's work. The syrup is, of course, boiled, a small quantity of lime being mixed with it, which is skimmed off when at boiling-point. The syrup, if sufficiently boiled, should be clear—a thick appearance indicating that either too much or too little lime has been used.

The syrup is now placed in a tub, called by the Japanese "sumashi oke," in which it is allowed to settle; fresh syrup is again poured into the boilers, and boiling goes on as before. As soon as the syrup is once more at boiling point that which has been already boiled is poured in and mixed with it, the white froth being skimmed off and placed in an empty tub. The syrup is now divided between the two boilers and allowed to simmer for about two hours, being constantly skimmed during this time.

In order to ascertain the amount of boiling which the syrup has undergone a Bamboo is inserted, and on withdrawal the drops are allowed to fall into a saucer containing water. If the drops congeal rapidly the fires are at once withdrawn from the boilers, the syrup promptly poured into coolers arranged in set of four and constantly stirred; so soon as it has sufficiently cooled it is poured into tubs, one man attending to each tub. To make the very best quality of sugar a picul of ordinary sugar is divided into nine parts, and each is wrapped in a hempen cloth; they are then placed in receptacles, pressed down with heavy weights, and are thus sweated for one night. On the following morning the sugar thus sweated is placed on a table and kneaded for about two hours, after which it is again wrapped in cloths and the same process gone through for three successive days and nights. On the fourth day it is placed in clean receptacles, and is now termed first quality sugar. To obtain a superfine quality the sweating and kneading is gone through for an extra day.

About 133 lb. of ordinary sugar will thus be made to yield about 50 lb. of first quality sugar; the remaining 80 lb. are, of course, not wasted, but from it are obtained about 40 lb. of a sugar known to the Japanese under a special name, and the residue also finds its way to market. The second quality is known as "jui-mai," and is made by sweating a certain quantity of coarse sugar. Sugar is generally known to the Japanese under the three headings—white, black, and candied, but the two former are again known under a variety of names. A good deal of black sugar is produced in the Loochoos, in Sakurajuna, Araki, Haunaoka, and Jaramidzer. Any marked difference as to good or inferior kinds of black sugar depends on the quality of the cane and the skill of the workman, but the above-mentioned places have always sustained a reputation for producing the best sugars. Sugar-candy is made by boiling down a certain quantity of best quality of sugar, and adding the white of egg. Split pieces of young Bamboo about an inch in length are then put into the syrup, which crystallises around them. A good deal of sugar-candy is made in Osaka. Either Japan sugar cannot compete with that produced in China, or the supply is not equal to the demand, for the import of China sugar is always an important item in the import returns of the port of Kanagawa.

SADLERIA CYATHEOIDES.

LONG since known to botanists, though not indeed very familiar to those of this country, the Sadleria of the Sandwich Islands has remained an absolute stranger to our gardens until within the last year or two, when both Mr. Bull and Mr. Williams have imported living plants. It is one of the smaller of the arborescent forms, and is remarkable for its graceful habit, combined with its stout-textured fronds. Mr. Bull's figure, which we annex (fig. 123), gives a good idea of its elegant style of growth, but represents a plant not yet old enough to have formed a stem or trunk.

The Sadleria cyatheoides of Kaulfuss (Blechnum Fontainesianum of Gaudichaud, Woodwardia cyatheoides of Mettenius) forms an erect trunk-like stem of moderate thickness, and some 3 feet in height, the upper end densely packed with linear dark-coloured scales, which also surround the base of the elongated and arching stipes. The fronds are 4 to 6 feet long, with pinnæ 8 to 12 inches long, and three-fourths of an inch broad, cut down to the rachis into numerous linear pinnules about half an inch long. The fructification is that of Blechnum, that is to say, the receptacle is central and elevated, and forms a continuous line close to and on both sides the midrib of the pinnules, and on this the spore-cases are seated, covered each while young by a narrow subcoraceous indusium. The venation, however, is distinct from that of Blechnum, the veins forming a series of costal arches.

It is a fine addition to our cultivated stove Ferns, being quite distinct in character from any other of the dwarfer arborescent species hitherto known in gardens. *T. M.*



Home Correspondence.

Vanda teres.—We have just now in flower a plant of Vanda teres. The plant is about 3 feet high, and has three spikes on it, and on each spike eleven flowers. It is grown in a pot of crocks, and the stem is covered with moss to the height of 18 inches from the pot, and the longest roots drawn towards it. Since I covered the stem with moss I find another shoot has sprung from the part of the stem thus covered. *Duncan Munro, Finnart Gardens, Gareloch-head, Dumbartonshire, N.B.*

The Winter Campaign.—In 1875 and 1876 I sent you a list of the gains and losses of the previous winters. I now send a similar list for the winter of 1876-7, but omitting the losses, which are only of interest to myself, and of which the record is of little value to others, for the death of a single plant in a particular locality is no certain proof of its tenderness, because the death may arise from many other causes; but the survival of a single plant is so far a proof of its hardiness that it is an encouragement to others to try it elsewhere. In the annexed list the plants have been tried by me for the first time, and so no mention is made of those named in the former lists, and they have all been in the open ground without any protection:—

Dracæna australis	Podocarpus chilensis
Abutilon Thompson	Helianthemum Fumana
Canna Achiras	Mesembryanthemum uncinatum
Trachelospermum jasminoides	Lapageria rosea
Amaryllis Ackermanni	Trachelium cæruleum
Aster angophyllus	Matisia Cleniana
Callistemon lanatum	Tecoma mirabilis
" lance-olatus	Echeandra terniflia
" viridiflorum	Phalangium nepalense
Choisya ternata	Bomarea Caldasiana
Amicia Zygomeris	Fuchsia splendens
Gardenia ovata	Richardia alto-maculata
Carmichaelia australis	Agapanthus umbellatus
Eryngium serra	Primula sikkimensis
" pandanifolium	Agave brachystachya
Libonia floribunda	Dicksonia antarctica
Deeringia celosioides variegata	Ceterach aureum
Leptospermum lanigerum	Struthiopteris japonica
Hypericum tomentosum	Athyrium Goringianum pictum
" hyssopifolium	

Henry N. Ellacombe, Bitton Vicarage, Gloucestershire.

Bedding Lobelias.—Early in the spring a correspondent made inquiry as to the best bedding Lobelia. In response to that I gave a favourable opinion of Blue Beauty, a kind which has been largely used in the Royal Horticultural Gardens, at the Crystal Palace, and at Heckfield, with great satisfaction. Others, however, had their pets, and whilst one vaunted the merits of Ebor several exalted Emperor William to a seventh heaven of glory. Feeling exceedingly humbled I at once obtained plants of the Warrior King from one of your correspondents, and have grown them until they are now fairly in bloom. Now that I can test the merits of Blue Beauty with those of the Emperor, I find that ordinary observers would at once class them as one and the same kind. This, however, would be wrong, as on a close examination I find that the flowers of the latter are just a shade darker than are those of the former, but what is gained in depth of hue is lost in absence of that brightness which characterises Blue Beauty. Then the flowers are of the same size, and with both well borne on the top of the plants, but Blue Beauty does appear to carry a denser top, and consequently more flower. However, this may arise from the fact that my plants of this kind were propagated by division, whilst those of Emperor William were from cuttings. In the hope that others may bring to South Kensington on the 19th similar plants of other good kinds for comparison, I wish to add that I purpose staging, for the opinion of the Floral Committee, a few established plants of Blue Beauty in 48's—the regular market pot—to show not only its value for bedding purposes, but also its excellent qualities for market cultivation. *Alex. Dean, Bolfour, W.*

Abies Menziesii.—The question with me is not whether A. Engelmanni is the same as the plant spoken of by M. André as A. Menziesii Parryana—that I leave with M. Ortgies to settle when it suits him. Had he in his first article compared the buds of A. Menziesii Parryana with those of Engelmanni, I would not have called it in question; but as it was the old-fashioned normal type of Menziesii that he compared with Engelmanni, and gave to the former the characters of the latter, and knowing that his remarks affected the non-botanical readers of your journal more than they did the botanical readers—botanists generally being independent of imperfect descriptions of well-known Pines—I was induced to make an effort to correct erroneous impressions. *G. Syme.* [All these plants are different enough as growing at Knap Hill (see p. 758). EDS.]

Helix pomatia (p. 692).—This snail is very abundant in the neighbourhood of Leatherhead, Surrey, almost taking the place of the Helix aspersa. It is sparingly found near Gloucester (a Roman station), and, as your correspondents mention, at Cirencester and Witcombe, but not generally through the county, even where the soil is calcareous. As mentioned by Mr. Lewis Jeffreys (in *British Conchology*, vol. i, p. 179), its manner of hybernating is curious:—"These snails become indolent, lose their appetite, and associate together. Each snail then excavates with its large and muscular foot a hole in the ground, just large enough to contain the shell; this it roofs in and lines with earth and dead leaves, making with its slime a kind of mortar, and smoothing over the inner surface of its winter domicile. Having accomplished this it closes the mouth of the shell with a thick calcareous lid, the substance of which, when poured out from the edges of the mantle, resembles liquid plaster of Paris. It then withdraws its body far into the interior of the shell, covering, as it retires, the empty space with several layers in succession of a fine membrane or film, in order the more completely to exclude the cold air. In this snug receptacle it remains in a torpid state over the return of spring." . . . "It then loosens and casts aside its winter bands, and resumes its former life." *G. E. O.*

Orchard-Houses.—You ask for information as to the effect of the frost in orchard-houses. The May frost destroyed the Apricots with me, but the Peaches which did not open until after the frost have failed equally. For eighteen years of my orchard-house experience the crops have failed now for the first time. The Peach blossom was never finer in appearance, but scarcely any fruit has set. It fell off when about the size of a Pea. The house is not heated at all; it is only a glass shed, but it has always before yielded abundantly, even when the crops out-of-doors have failed. My fruit is gone. Plums do not average a dozen per tree. There are no Pears. Half the Gooseberries have dropped off, and not more than half of the berries on each bunch of Currants have formed. In nearly fifty years of my garden experience I do not remember so general a failure of crops. Strange to say, the Apples have shared the same fate, although they were subjected to no frost at all. Strawberries promise well, but Raspberries look sickly. I am inclined to think that the failure is not due to the frost, but to some more general cause, for the protected trees and bushes are not better furnished with fruit than the unprotected, and those that did not open till

long after the frost are as deficient as those subjected to that wonderful May cold; yet never was bloom more abundant, never was there a better promise. Is this universal weakness of the blossoms of this year due to the wet weather, or to the lowering of vitality by the late frosts? or is there some unknown electrical or other meteorological cause? The subject well deserves investigation. It could scarcely be the wet winter, for orchard-house trees were not exposed to the deluges of rain; nor can the frost have done it at all, for protected fruits have shared the same fate as the unprotected. Can the meteorologists discover any special features of the season, electrical or otherwise, as having been exhibited since the summer of last year? *Edward W. Cox, Mont Mount, Mill Hill, N.W., June 9.*

Ivy on Garden Walls, &c.—At the present time I do not know of any prettier hardy plant foliage than that of the Golden Ivy, patches of which introduced amongst the green-leaved varieties have a most pleasing effect. Another point in the use of Ivy for house coverings which has recently come under my notice is the use of the large-leaved common sort for covering villas. I recently saw an instance in which this Ivy was so healthful upon a house that it seemed to be out of all proportion for the place: the coat of leaves was so thick that they made the covering look quite heavy, and had the effect of narrowing the windows as well. If some of the finer-leaved kinds had been used for this purpose, instead of the common sort, it would have been much better, and less attention would be required for trimming. At least some of the smaller-leaved varieties, such as chrysocarpa and palmata, grow fast, close to the wall, and are well-adapted for covering villas or for use in such places where a thick coat of the common sort might be too heavy. *R. MacKellar.* [The varieties known in gardens as pedata and himalaica are charming varieties for small residences. EDS.]

Blair Athole Plants.—Your correspondent, Mr. H. Harpur-Crewe, is correct, no doubt, in his remark at p. 729 that Anthericum canaliculatum is a Cape plant. My list of the plants of Ben-y-Ghlo and the other mountains of Glen Tilt was taken, with due acknowledgment, from Dr. John MacCulloch's *Tour in the Western Highlands*, 1824, or from an account of Dunkeld and Blair Athole, published without the author's name in 1823, and said to be by the same writer. Dr. MacCulloch personally examined the flora of the district. Have other investigators examined his list? It has been copied and re-copied, not always with acknowledgment. *H. Evershed.*

Darlingtonia californica.—Many dozens of this interesting Pitcher-plant have flourished finely in a cold frame during the past winter, and one of them is now in flower. We believe the plant is quite hardy. *James Backhouse & Son, York.*

The Wreck of the Fruit Crop of 1877.—This is now complete. To the loss of Peaches, Nectarines, Apricots, Pears, Plums, have now been added that of Apples, the last, heaviest, and worst loss of all. It is rather difficult also to account for the latter. The fact has already been noticed that the Apple blossom was much later and also much paler than usual. The former was a hopeful sign; lateness, as a rule, denotes safety, and it was earnestly hoped it might have proved so this season. The paleness was no doubt a symbol of weakness, and the paleness mastered the lateness—perhaps that is the best way of putting it. At all events, the most serious matter is that the Apple crop has failed. The failure could hardly be the result of frost during the blooming period, for since about the middle of May we have had no frost of sufficient severity to destroy Apple blossoms. Was the bloom thus destroyed in an embryotic or unopened state? This is unusual. Closed blossoms of Apples, Pears, Peaches, Apricots, &c., are generally held to be frost-proof. The blooms also, though pale, seemed perfect. On examination they showed no flaw, revealed no sign of imperfection, they simply have not set, and are now fallen and withered by handfuls. Why? Is it the fault in the bloom or in the climatal conditions to which the bloom has been exposed? There are not a few who contend that it is in the former. The wood, and consequently the bloom-buds, were immature and unripe last autumn, they assert, and consequently there is no fruit this spring, or summer-tide. This is a short, simple explanation of a most serious fact, but it seems to have little solid basis to rest upon. The fruits of immaturity are mostly imperfect, a scant bloom or setting of fruit. Now this spring was characterised by a profusion of bloom and a good set of all fruits but Apples and Peaches. Nectarines, Apricots, Pears set exceptionally well. Plums also flowered most profusely, but set not at all, or fell off immediately afterwards. Apples, again, did not flower so profusely or robustly as usual. The pale colour, however, was probably far more owing to the climate of the May of 1877 than to any immaturity handed down from the autumn of 1876. We have been accustomed to think the closed blossoms of fruit-buds safe: perhaps the experience of this year will induce us to modify this opinion. It is more than probable that the severe frosts during the early part of May crippled the Apple blossoms in bud. Hence probably the pale colour and the failure of the crop. If not, we must look for the cause of failure in the harsh, cold, and dry air that prevailed through May and the early part of June. No rain, no genial atmosphere, sharp, keen, dry winds, and the whole of the Apple crop has withered up and perished. Would overhead syringing have saved it, or the creation by artificial means of a genial atmosphere by surface waterings? Court-pendu Plat and the Red Beefing are now (June 12) in full flower. Surely these will escape. Also Walnuts and Hollies are only now in full flower. These will surely also set and crop, especially as we were favoured from the west with a thunderstorm and a heavy shower about 3 A.M. this morning. But, broadly stated, the fruit crop of the year is utterly wrecked and ruined, and the Apples, which hardly flowered until the beginning of June, have followed Peaches, Nectarines, Apricots, Plums, Pears, to utter destruction. This, in fact, will be one of the worst fruit crops we have had for years. *D. T. Fish.*



FIG. 123.—SADLERIA CYATHEOIDES.

Parasitical Plants.—*Lathræa Squamaria.*—This curious parasite was sown some years ago at the base of an old Holly; last year it produced sixty-three stems—some of them becoming 10 inches high—of its singular looking, naked, purplish stalks, and pale yellowish flowers. The late frost of this spring "cut" many of the stems, so that only about a dozen have developed. *Orobanche Hederæ.*—We have been singularly (?) fortunate in "persuading" this remarkable parasite to grow and flourish, after many vain attempts. Last summer we had twelve to twenty stems of it on Ivy, the latter creeping upon a steep

sunny bank. One new stem is already developed, and, as the species is perennial, we hope it may be permanently established. *James Backhouse & Son.*

The Weather and the Fruit Crops.—As in many other localities, vegetation in this place is full three weeks later than usual, owing to the cold, dry, easterly wind, which prevailed in April and May. Under other circumstances this might have proved a disadvantage, but with the long-continued frosts we had it has been quite otherwise, for it enabled vegetation to survive the severe ordeal it had to pass through. And now when we look around us on the wide extent of woodland scenery, nothing is to be seen to mar the beauty of the landscape in the shape of blighted leaves. With the absence of grass and other rough herbage, wild flowers have been seen in great profusion, spreading out far and wide, in striking masses of colour. I remember the late Sir Edwin Landseer once saying to me, that one bold stroke of colour, when properly placed, was more effective than a number of small touches. It may well be said of the earth at this season of the year, that it yields its increase, for we have wild flowers following one another in succession—Primroses, Anemone nemorosa, Oxalis Acetosella, Viola canina and Scilla non-scripta: the latter forms perfect sheets of blue colour, running in and out underneath the forest trees—

"And Daisies and Buttercups gladden the sight,
Like treasures of silver and gold."

Of bush fruits, the Gooseberry is the only kind that is rather a thin crop. Plums on standards and against the walls are safe, so are the Pears and Cherries. Apricots, too, which have been protected during the frost with thick canvas, are well formed and trees healthy, Apples are in blossom and promise well. Vegetables in the kitchen garden look well though late. The hybrid Rhododendrons, sent out by Mr. Waterer years ago, are flowering in great perfection, and so is the R. ponticum, and also our collection of Azaleas. *John Cair, Inveraray.*

Paraffin and Seed Protection.—I tried the experiment of soaking Peas in paraffin for four hours, and I feel certain every Pea germinated. I have six rows of them now ready for picking. *F. Osborne, Doggetts, Rochford, Essex.*

—— For several years I have not been able to grow early Radishes or raise plants of Broccoli, Cabbage, and all other kinds of greens, owing to the destruction by small birds, such as greenfinches, &c. This season I moistened the seed with paraffin, and have an abundant supply. *H. Gibbens, The Nursery, Folkestone.*

Campanula Allioni, now flowering in the York nurseries, promises to be one of the best of the genus for rockwork. It spreads rapidly from underground stolons, and forms little erect rosettes, 2 inches high, densely clustered. The flowers are very large, almost exactly resembling erect purple Canterbury Bells. They cover some of the banks and ledges of their native mountains with "almost solid sheets of bloom." *James Backhouse & Son.*

The Caper Spurge, Euphorbia Lathyris.—Will you be so good as to inform me if this plant is rare [no]. for several specimens suddenly appeared in our garden this spring, and I must save one, as it is now in bloom, got weeded away. It is a very graceful plant, but of rather a suspicious character, is it not? [Yes.] At any rate it belongs to a dangerous order, and although one may take, under medical advice, the products of some of the Euphorbiaceæ, I should not like to venture on Capers grown in one of the seeds of this plant. *Helen E. Watney.* [See Lindley's *Vegetable Kingdom* for a brief account of the properties of this plant. EDS.]

Gardening in the North of England.—After all the accounts I read of the scarcity of wall-fruits I am agreeably surprised to find that one of our Peach trees has set a crop; indeed, the gardener talks of thinning. It was covered with a wool net, and has two natural protectors in the shape of Holly bushes planted on each side of it—certainly a choice spot, for the Peach and Nectarine trees in the walled garden have not a vestige of fruit on them. I imagine the bees have kept very close quarters this cold spring; ours never made their appearance until June 4, when they came out uncommonly strong, and soon attempted swarming. Many years ago they located themselves in the ceiling of the house, and, never having been molested, I suppose they have plenty of food, without venturing abroad in doubtful weather. Although 575 feet above sea level, we have four promising blooms on a Maréchal Niel Rose in the open air, and a Tropæolum speciosum has not died down during the winter, and is now in full leaf. Being on the limestone rock the garden is very dry, and this may partly account for plants thriving here which do not generally survive so far north. The moist damp spring has well suited newly planted trees and shrubs. Out of 2000 planted last autumn we have not come across one dead one, and some as much as 18 feet high—very encouraging to all lovers of tree culture. *E. O. M., East Layton Hall, Darlington.*

Reports of Societies.

Royal Botanic: *June* 13.—With a larger and even better exhibition than the last, a fine afternoon, and a very much larger attendance of visitors than usual, the prospect of the Royal Botanic Society looked brighter on Wednesday last than it has done for a long time back. As regards the usual order of specimen plants and such-like subjects as are generally brought out at these exhibitions, there was a greater number than usual, the long north door leading to the conservatory having to be requisitioned for the placing of many subjects that could not be squeezed into the large marquee. Of Orchids there was the largest and finest display that has come under our notice here for several years past—they were indeed a grand feature in the exhibition. The miscellaneous groups of new and rare plants contributed by the leading nurserymen also formed a bright and interesting feature; and the two slopes devoted to show and fancy Pelargoniums were wonderfully well filled and exceedingly gay. The weakest point in the show was undoubtedly the fruit department, which was—as has been the case during the past few years—very meagrely represented. This is the more to be regretted, as undoubtedly fine displays have been made here, and could be made again were more liberal prizes offered; and at present the Society has no rival in a condition to compete with it at this season. The display of cut flowers was, excepting as to cut Roses, exceedingly interesting; and in addition to all these there was the attraction provided by Mr. Anthony Waterer, in the form of a magnificent display of Rhododendrons in the American garden, which, by-the-bye, has been remodelled, and in its altered form reflects much credit upon those who carried out the alterations. The general effect has been considerably heightened, and the comfort of the visitors increased by means of the additional gravel paths and wider paths. The tent, however, goes far to spoil the whole show, the gutter being brought down so low as to cut the view in two.

STOVE AND GREENHOUSE FLOWERING PLANTS were contributed in good numbers, but they were scarcely so fresh and interesting as on the last occasion. In the open class for twelve Messrs. T. Jackson & Son came in 1st, with a fine group, consisting of Erica eximia superba, about 4 feet over and superbly flowered; but the next well bloomed specimens of Clerodendron Baltourianum, Bougainvillea glabra, Aphelexis macrantha purpurea, and smaller but nicely done examples of Statice profusa, Erica Cavendishiana, Dracophyllum gracile, Pimelea mirabilis, and Phænocoma prolifera Barnesii. Mr. D. Donald, gr. to J. G. Barclay, Esq., Knotts Green, was placed 2d, with good specimens of similar subjects; and Mr. James Child, gr. to Mrs. Torr, Garbrand Hall, Ewell, and Mr. G. Wheeler, gr. to Sir Francis Goldsmid, Bart., were bracketed equal 3d. The best six contributed to the amateurs' class came from Mr. James Child, who had large and magnificently flowered Erica depressa, a fine Azalea Model, in a very fresh and good condition; a large Aphelexis, and Stephanotis floribunda, &c. The 2d award went to Mr. J. Hinnell, gr. to F. A. Davis, Esq., Anglesea House, Sydenham, who had well-furnished, neat and fresh specimens of Erica ventricosa magnifica, Bougainvillea glabra, Erica Cavendishiana, Darwinia tulipifera, Aphelexis macrantha purpurea, and Dracophyllum gracile. Mr. G. Legg, gr. to S. A. Saulli, Esq., Cleveland House, Clapham Park, was 3d. The best six among man's half-dozen came from Mr. B. S. Williams, a fine fresh lot of good specimens, including Erica Cavendishiana, Statice profusa, Ixora coccinea and I. Prince of Orange, both well-flowered; Allamanda grandiflora, and Aphelexis macrantha purpurea. The next best were contributed by Messrs. T. Jackson & Son, large and well-flowered examples of almost similar subjects. 3d, Mr. J. Peed, Roupell Park Nursery, Norwood Road. The open class for a dozen in 12-inch pots, intended no doubt to bring out plants of somewhat recent introduction, failed entirely in that respect, the plants staged to bring half-speciens and of, to us, too familiar subjects. The prizes went to Messrs. T. Jackson & Son, Mr. James Child, and Mr. G. Wheeler, in the order named.

ORCHIDS.—As before remarked, the bank usually devoted to these most attractive subjects was more than usually well filled. The amateurs' class for twelve was an uncommonly good one. The 1st prize fell to Mr. Denning, gr. to Lord Londesborough, who had a very fine Angulos Clowesii, Cattleya Iobata with ten spikes, Lælia purpurata with five, a nice Cattleya Mendelii, Odontoglossum cirrhosum, with three spikes; and O. Alexandræ, with five; Lælia cinnabarina, and a very good piece of Dendrobium Bensoniæ, Odontoglossum vexillarium, a grand plant with eleven spikes; Vanda Dennisonæ, with four, and Cattleya Mossiæ, with four, &c. Mr. J. C. Spyers, Sir Trevor Lawrence's gr., was a good 2d, with a fine mass of Odontoglossum Phalænopsis, Cattleya Warnerii, with thirteen beautifully-coloured flowers; Dendrobium formosum giganteum, Cypripedium Veitchii, Masdevallia Harryana violacea, with about two dozen flowers; the showy Calanthe Dominii, with a dozen good spikes; a very good Dendrobium Devonianum, Lælia purpurata and L. majalis, and Odontoglossum cirrhosum, &c. Mr. F. Rutland, gr. to the Duke of Richmond and Gordon, Goodwood, was a very good 3d, and an extra prize was awarded to Mrs. Heming, gr. to A. Philbrick, Esq., Avenue Road, Regent's Park, who had, amongst other good plants, one of Odontoglossum vexillarium with five fine spikes. In the corresponding class for nurserymen, Mr. B. S. Williams as usual took the 1st prize, showing amongst others a fine mass of Cypripedium barbatum superbum; Orchis foliosa, with fourteen good spikes; Vanda tricolor superba, Dendrobium formosum giganteum, Cattleya Mossiæ, a fine variety; Odontoglossum cirrhosum, &c. The 2d prize went to Messrs. T. Jackson & Son, who in a group of smaller specimens than Mr. Williams had a good example of Dendrobium moschatum. The trade class for six also found Mr. Williams to the front, with a group which included Vanda tricolor formosa, with two good spikes; Cypripedium barbatum grandiflorum, Cattleya Mossiæ superba, beautifully flowered; Odontoglossum vexillarium, with thirty-nine grand flowers on five spikes; Epidendrum vitellinum majus, &c. 2d in this class came Mr. E. Morse, of Epsom, who had a Saccolabium Blumei majus, with a grand spike of flowers; and two fine Aerides. The amateurs' class for six was also a very good one. Mr. H. James Douglas came in 1st, with a capital lot of plants, which consisted of Dendrobium formosum giganteum, with four spikes; Odontoglossum crispum, with three; a good mass of Cypripedium barbatum grandiflora, Masdevallia Harryana, with several very fine blossoms; Dendrobium nobile, and Cattleya Mossiæ superba. Mr. W. P. Roberts, gr. to W. Terry, Esq., Peterborough House, Fulham, was a very good 2d, showing Vanda teres, with ten grand flowers; Cattleya Mossiæ, with sixteen; Cypripedium barbatum nigrum, very good; Cattleya Skinneri, Sacolabium præmorsum, and Masdevallia Harryana. The 3d prize went to Mr. J. Hill, gr., The Poles, Ware, Herts, who had in his group fine examples of Cœlogyne Lowii, Aerides Fieldingii, and Cypripedium caudatum, &c. Mr. F. Rutland also contributed a nice group.

FERNS AND FINE-FOLIAGED PLANTS were particularly well shown, and, as usual, were most effective in the position assigned to them. The strongest class was the amateurs' for six fine-foliaged plants, in which the competition was very keen between the groups contributed by Mr. Legg and Mr. C. Rann, gr. to J. Warren, Esq., there was not a pin to choose, so good were both, and equal 1st prizes were awarded. Mr. Legg had that remarkably handsome Stevensonia grandifolia that has been seen here before, and also the very fine Cycas revoluta, as well as grand examples of Crotons Weismanni and variegata, a very fine Geonoma pumila, and Alocasia macrorhiza variegata. Mr. Rann had a very fine Croton interruptus, a handsome Cycas revoluta, equally good examples of Zamia Lehmanni and Areca sapida, Dasylirion glauca, and an exceedingly good specimen of Cyathea dealbata. Mr. D. Donald took 2d honours with a couple of good Crotons, and a large fresh and clean plant of Alocasia metallica, and a nice young Cocos Weddelliana, &c.; 3d, Mr. James Child, whose most noteworthy objects were first-rate plants of Geonoma Verschaffeltii, Croton Weismanni and Phyllotænium Lindeni, &c. Mr. F. Hill, gr. to H. Taylor, Esq., Avenue Road, also staged a very excellent group. Mr. B. S. Williams and Mr. J. H. Ley had the competition to themselves in the nurserymen's class, and took the prizes in the order named—the first mentioned having a very large Cycas circinalis, a handsome Chamærops humilis, Croton pictum, Dasylirion acrotrichum, Pandanus Veitchii, and a very brightly coloured Croton Weismanni. Mr. Ley's collection was also a very effective one. Mr. William Bull came in 1st for twelve fine-foliaged and Dracænas, with young, vigorous, and cleanly grown specimens of Dracænas Mooreana, Baptistii, Shepherdii, amabilis, Chelsoni, Regina, Rex, Goldieana—a remarkably telling group. Mr. G. Legg was a very good 2d, having very fine examples of the most popular varieties. The best six Palms in the open class came from Mr. J. H. Ley, and included Latania borbonica, Astrocaryum megecanum, Euterpe edule, Geonoma Schottiana, and Chamærops tomentosa. The 2d prize went to Mr. G. Legg, and the 3d to Mr. G. Wheeler. The nurserymen's class for half-a-dozen Ferns, in which Mr. B. S. Williams was 1st and Mr. J. H.

Ley 2d, contained nothing remarkable, but the corresponding class for amateurs was a very good one. Mr. C. Rann, gr. to J. Warren, was 1st, with large and handsome specimens of Alsophila australis, Dicksonia squarrosa, Cyathea Dregei, C. medullaris, C. dealbata, and Dicksonia antarctica. Mr. D. Donald was a good 2d, and Mr. James Child a close 3d. In Mr. Donald's group was a magnificent specimen of Mooreana, about 5 feet through; and, fine examples of Adiantum cardiochlæna, Dicksonia antarctica, &c.

ROSES, HEATHS, AND PELARGONIUMS.—Roses in pots were shown only by Messrs. Paul & Son, Cheshunt, who contributed to the classes for nine and six a capital lot of plants; but of course, as a consequence of the lateness of the Roses, they were not the finest that the Messrs. Paul & Son have shown this season. The 1st prizes in both instances were most worthily awarded. The Heaths were also not so good as on the last occasion. Amongst amateurs for six, Mr. G. Legg was 1st with medium-sized and very fresh examples of E. obbata, E. jubata rubra, E. ampuliacea obbata, E. Candolleana, E. Paxtoni; and in the corresponding class for nurserymen Messrs. T. Jackson & Son were 1st with fine specimens, fresh and well-flowered, of E. tricolor dumosa, E. tricolor, E. Cavendishiana, E. ventricosa ferruginea major, E. depressa, &c. Show and fancy Pelargoniums were contributed in considerable numbers, and of excellent quality. Mr. James, gr. to W. F. Watson, Esq., was the most successful exhibitor among amateurs, taking the 1st prizes in the open class for nine and the amateurs' class for six, and 2d for six fancies. Amongst his most noticeable examples were thoroughly well flowered plants of such fine varieties as Mary Hoyle, Princess of Denmark, Pericles, Prince Leopold, Statesman, Snowflake, Blue Bell, Archduchess, Pompey, King Charles and Victory. In the open class Mr. Turner was a good 2d, and Messrs. Dobson & Son 3d. In the nurserymen's class for six Mr. Turner was 1st and Messrs Dobson & Son 2d; and Mr. Turner was again 1st amongst nurserymen for six fancies, Messrs. Dobson 2d in both instances. The best half-dozen fancies shown by an amateur came from Mr. Henry King, gr. to R. Tew, Esq., Wolsey Grange, Esher, who had a very fine lot of plants, full of flower and very bright. The varieties shown were Fanny Clark, Tormentor, Mrs. Alfred Wigan, Roi des Fantaisies, and Vivandière. Mr. J. Weir, gr. to Mrs. Hodgson, The Elms, Hampstead, was a good 3d. For six Zonal Pelargoniums in flower Mr. J. Catlin, gr. to Mrs. Lermitte, Finchley, came in 1st with a grand lot of plants, about 4 feet over, and perfect in development of flowers and foliage; and Mr. G. King was 2d, with smaller but exceedingly well finished specimens.

CUT FLOWERS.—Roses should have formed the principal feature in this department; but, as a result of the lateness of the season, they were shown only in small numbers, and nothing could be said as to quality. The best dozen yellows, one variety, came from Mr. James Chard, gr. to Sir F. Bathurst, Clarendon Park, Salisbury, who also secured the 1st prize, with a dozen blooms of the white Rose La Marque, and the 1st prize for a basket of Hardy Roses, as well as the highest award for a basket of Roses, mixed colours. Mr. W. P. Roberts, gr. to W. Terry, Esq., was the only exhibitor of twenty-four trusses of Pyrethrums, and the 1st prize was worthily awarded. The class for twenty-four trusses of hardy herbaceous flowers was a most interesting one, many good things being shown that are not admissible in any other way. Mr. James Douglas was 1st, with a charming lot of flowers, including his new hybrid Aquilegias, fine spikes of the showy Scilla peruviana, Spiræa palmata, Orchis fistulosa, Statice armeria grandiflora, Dielytra spectabilis, Aquilegia cœrulea, &c. Mr. E. Morse, of Epsom, was a good 2d, and Mr. Roberts and Mr. G. Wheeler equal 3d, both showing exceedingly well. Mr. Douglas was also well 1st in the corresponding class for stove and greenhouse flowers, showing some fine Orchids, such as Odontoglossum hastilabium, O. crispum, Masdevallia Harryana, Cattleya Mossiæ, Dendrobium nobile, &c., Ericas, Bougainvilleas, Ixoras, Aphelexis, and Anthurium Scherzerianum, &c. The 2d prize went to Mr. James Bolton, who had amongst other fine things some grand spathes of the same Anthurium, Clerodendron fallax, Oncidium flexuosum, Gardenias, Allamandas, Begonias, &c. Mr. W. Bones was a good 3d, and an extra prize was awarded to Mr. E. Morse for a nice lot. A most interesting class was that for a "group, basket or bouquet of wild flowers, each collection from a definite area of 5 miles radius around any parish church." The first prize collection, which came from Mr. J. Green, Poles, Ware, was a most commendable one, the number of plants being somewhat extensive, and each amply represented, tastefully set up and very neatly labelled with the common and scientific names. They were collected within the prescribed area around the parish church of Thunbridge, Herts. The 2d prize went to Mr. J. Chard, and an extra to Mrs. Soder, Weald Hall Cottage, Brentwood.

NEW PLANTS were largely and most admirably represented by choice groups from Messrs. Veitch & Sons, Mr. William Bull, Mr. B. S. Williams, Messrs. Rollisson & Sons, Messrs. J. Laing & Co., and others, and the following Botanical Certificates were awarded:—To Messrs. Veitch & Sons, for Rhododendron Maiden's Blush, Acalypha Macafeana, Croton reginæ, C. hybridus, Gymnogramma Mülleri, Pteris ensiformis variegata, Anthurium Warocquianum, A. Veitchii, Dicksonia Berteriana, Lipuria elegantissima, and Aralea indica imbricata; to Mr. William Bull, for Coleus pictus, Araucaria excelsa albo-spica, Zamia Roezlii, Cycas media, Dieffenbachia Chelsoni, Croton Bismarckii, Aralia ornata, Croton splendidus, Cyathea Dregei, Lomaria Dalgaisnæ, Cycas media latissima, and Odontoglossum vexillarium roseum; and to Messrs. J. Laing & Co., for Begonia Gloire de Nancy.

FLORISTS' FLOWERS, especially Pelargoniums, were also well represented, and Floral Certificates of Merit were awarded:—To Mr. Turner, for show Pelargoniums Venus, white, with a small puce spot on each petal; Silvio, a fine bright scarlet, with almost black blotches; Henry King (fancy), very dark rose, shaded with pale lilac; and Mrs. Pope (fancy), white, blotched with magenta. To E. D. Rutter, Esq., Clewer Manor, Windsor, for show Pelargonium Toby, a rich blood-red, with a dark maroon blotch. To the Rev. A. Matthews, Gurnley, Leicestershire, for show Pelargonium Bertie, a bright rosy pink, with very dark spotted petals. To Mr. T. S. Ware, Tottenham, for a new bedding Viola named Freedom, which is of a bluish purple colour, and good in form. And to Mr. James Douglas, for his hybrid Aquilegias, hybrida cœrulea and hybrida californica.

FRUIT.—In this department the display was a fair one for "the Park," as compared with recent experiences, but nothing like what we used to see here. Of the two collections of nine dishes the best came from Mr. Miles, gr. to Lord Headington, Wroxton Abbey, who staged a fine Queen Pine, excellent dishes of Foster's Seedling and Black Hamburgh Grapes, large and well-coloured Violette Hâtive Peaches, and Elruge Nectarines, a handsome fruit of Cox's Golden Gem Melon, Sir Charles Napier Strawberries, Brown Turkey Figs, and a splendid dish of Black Tartarian Cherries. Mr. W. Bones, gr. to D. McIntosh, Esq., Havering Park, Romford, took the 2d prize, a fairly good collection, but wanting in variety. Only two pairs of Queen Pines were staged, and the prizes went to Mr. J. Akehurst, gr. to S. Copestake, Esq., The Grove, Ealing Town, and Mr. F. Bell, gr. to the Duke of Richmond and Gordon, Goodwood, in the order named. Those which took the highest award would weigh about 4 lb., and the next a trifle under. The prizes for a single Queen went to Mr. Bones, Mr. J. Whitman, Esq., Loxford Hall, Ilford, Mr. Rutland, and Mr. Akehurst; and in the class for any other variety, Mr. Miles took the chief award with a very good Charlotte Rothschild. Of baskets of 12 lb. of black Grapes, half-a-dozen were staged, and the best were contributed by Mr. James Douglas, whose fruit was a beautifully coloured sample of Black Hamburgh. The next best, also a fine sample, came from Mr. P. S. Kay, of Finchley; and Mr. P. Edwards, gr. to Mrs. Tristam, Fowley, Liphook, Hants, was a very good 3d. The other three samples were also good and well-coloured. In the corresponding class for white Grapes there were only four competitors, but all of them staged very excellent samples for the season. Mr. G. Grimmett, gr. to J. Wilmott, Esq., Isleworth, was 1st, Mr. Douglas 2d, and Mr. W. Robins, gr. to C. D. Lee, Esq., Hartsfield House, Aplebury, 3d. Mr. P. Feist, gr. to R. G. Ashton, Esq., Bishopsgate House, Staines, equal 3d. All but Mr. Douglas staged Muscat of Alexandria. The Loxford grower had the Canon Hall Muscat in fine condition, but scarcely so ripe as his more successful rival. Mr. W. Bones sent the best dish of Black Hamburghs, a very nice sample in bunch, berry, and colour, but not large. The next award went to Mr. Sowerby, gr. to the Earl of Macclesfield, Shirburn Castle, Oxon, and the 3d to Mr. Bolton, gr. to W. Spottiswoode, Esq., Combe Bank, Sevenoaks. The last-named exhibitor came in 1st in the class for any other black variety with a good sample of Black Prince; and three nice bunches of Madresfield Court won the 2d prize for Mr. Wilmot's gardener, who also secured the highest award in the next class, for Muscat of Alexandria Grapes, with a very good dish; Mr. P. Edwards was 2d with very nice bunches and berries, not, however, fully coloured; and Mr. W. Robins was 3d. In the any other white variety class, Mr. Douglas came in a good 1st, with a capital dish of Buckland Sweetwater. Mr. Sowerby was 2d with a nice dish of Foster's Seedling; and Mr. C. W. Alderson, Langley Lane, South Lambeth, was 3d, with small bunches of Buckland Sweetwater, "grown within 1¼ mile of Charing Cross," if there is anything in that. Of Peaches there were only half-a-dozen dishes. Mr. Robert Sowerby took the 1st prize with fine specimens of Royal George and Alexandra Noblesse; Mr. G. Cornhill, gr. to J. S. Virtue, Esq., Outlands Park, the 2d; and Mr. W. Robins, 3d, with the same varieties. Nectarines were represented by eight dishes, all of which may be classed as good. Very fine dishes of Lord Napier and Violette Hâtive, shown by Mr. Halliday, gr. to J. Norris, Esq., Castle Hill, Bletchingley, came in 1st; Violette Hâtive and Elruge, from Mr. R. Sowerby, 2d; and Elruge and Pitmaston Orange, from Mr. G. Cornhill, and Elruge and Violette Hâtive, from Mr. Miles, were placed equal 3d. The best out of four pairs of Melons came from Mr. Gilbert, gr. to the Marquis of Exeter, Burghley Park, Stamford —Gilbert's Victory of Bath, green, and of delicious flavour, and a new scarlet variety named Excelsior, a handsome, heavily netted fruit of excellent quality; Mr. Miles was a good 2d, with Reid's Scarlet-flesh and Cox's Golden Gem, the first-named being very fine in flavour; 3d, Mr. George Halliday, with small fruits of Golden Gem and Scarlet Gem. The heaviest scarlet-fleshed variety was Duke of Edinburgh, shown by Mr. Gilbert, gr. to Major Wingfield, Burley Park, Reading, 5 lb. 4 oz.; 2d, Mr. R. Gilbert, 4 lb. 13 oz.; 3d, Mr. Miles, The Shah, 4 lb. 6½ oz. Mr. Miles took the 1st prizes in both the classes of Cherries with Black Circassian, Elton, and Governor Wood, in the samples. In the miscellaneous class a 1st prize was awarded to Mr. Woolridge, gr. to the Duke of Northumberland, Syon House, for a very fine dish of Vanillas; Mr. Roberts, gr. to W. Terry, Esq., Peterborough House, Fulham, had a 3d prize also for Vanillas; and Mr. Douglas a 2d for some fine Tomatos.

York Annual Floral Fête: *June* 13, 14, *and* 15.—The city of York on this occasion fully sustained its high place in the annals of horticultural demonstrations, the exhibition, as a whole, being the finest which has taken place since York became a centre of horticultural influence. Exhibitors came from a larger area than hitherto, and consequently the competition in all the classes of the very comprehensive schedule was very keen—in fact, "Greek met Greek," and the tug of war was in many classes furious. Therefore it was that the judges had in many cases a most difficult task to perform. This was notably the case in the class for twenty plants (twelve in bloom, and eight fine-foliaged), the contest in this class being between Mr. T. M. Shuttleworth, of Preston; Messrs. E. Cole & Sons, Manchester; and Mr. T. F. G. Williams, of Worcester, the prizes being awarded in the order. The flowering plants in the Messrs. Cole's group were doubtless much fresher than those in the 1st prize group, but the foliage plants in Mr. Shuttleworth's collection were much superior, and the group, as a whole, deservedly obtained the post of honour. Pelargoniums formed a most attractive feature, filling one large tent, and in every class the competition was spirited, and all the exhibits above the average.

Roses also formed a grand feature, Mr. H. May, of Bedale, being 1st in all the classes in which he competed. This applies to both cut flowers and pot plants, and this says much for the new grower when it is remembered that he had Mr. Charles Turner, of Slough, as an opponent. Mr. Turner was the only exhibitor in the class for large Roses, and put up a fine lot. Ferns, both hardy and exotic, were exhibited in large quantities, and the quality, with one or two exceptions, all that could be desired. Orchids were not numerous, Dr. Ainsworth, of Manchester, being the only exhibitor of note, and the most noteworthy plant in his collection was a grand plant of Aerides Fieldingii, with four fine spikes, grown to perfection. Cut Botanicals were very meritorious for this period of the year, whilst bouquets and other cut flowers were exhibited in excellent condition, and drew around them a large number of admirers, especially the ladies, who severely criticised the awards, and the latter one was heard to say, that "Men knew nothing about bouquets." Fruits formed a most imposing display. Several collections of six varieties were staged, Sir H. W. Thompson, Bart., York, F. J. S. Foljambe, of Worksop, and the Marquis of Ripon, being successful exhibitors. Black Grapes were exhibited in fine condition by T. H. Preston, Esq., of York, and J. Fielden, Esq., of Todcaster. White Grapes were equally well done by R. Varvill, Esq., of York; T. H. Preston, Esq.; Mr. Alderman Weatherley, of York; and T. Salt, Esq., of Leeds. A few Pines were exhibited, the best coming from the gardens of the Earl of Zetland.

Messrs. Stardish, of Ascot, had a miscellaneous collection of plants, consisting of the charming Japanese Maples and rather a striking group of Tree Carnations. Thus it will be seen that this was no ordinary meeting. The weather was very fine on the opening day, and the attendance of visitors good, and should the financial result be commensurate with the organisation and outlay, this year's York Floral Fête will be

a success. Mr. Wilson, the secretary, did not leave a stone unturned to ensure the success of the undertaking and the comfort of all concerned.

The Royal National Tulip Exhibition.—The date of this exhibition, originally fixed for May 25, was eventually postponed till June 5, in order that a show of Tulips might actually take place. The season has proved a most backward one in Lancashire, and even at the date of the postponement the leading cultivators, such as Mr. Samuel Barlow, of Stakehill, and the Rev. F. D. Horner, of Kirkby Malzeard, could scarcely show a flower. The Derby growers, and a few of those farther north, but more favourably situated than the Manchester growers, came in with fairly good flowers, and so the show proved much better than was at first expected; and, notwithstanding the fact that death has been very busy among the ranks of the Tulip cultivators during the past two or three years, robbing them of such men as Richard Headly, Dr. Hardy, J. D. Hextall, W. Willison, Michael Potter, and others, it is yet satisfactory to know that there is no decrease in the supporters of the Society, for the number of subscribers has increased to fifty-three in 1877 as compared with forty-eight in 1876.

The "National" was held as usual in the Botanical Gardens of the Manchester Botanical and Horticultural Society, which not only gives accommodation to the Tulip growers, but subsidises their fund with a gift of £10.

The blue riband of the National Tulip show is the cup offered for the best stand of twelve dissimilar Tulips, two feathered and two flamed in each of the three classes. This was won by Mr. William Whittaker, of Salford, who is this season in fine form, and who staged Mrs. Lea and Industry, feathered roses; Sarah Headly and Mrs. Lea, flamed roses; Masterpiece and John Morris, feathered bizarres; Sir J. Paxton and Ajax, flamed bizarres; Bessie and Violet Aimable, feathered bybloemens; Talisman and Bacchus, flamed bybloemens. This stand contained fine flowers generally; and Industry and Talisman were exceptionally fine. 2d, Mr. David Barber, Stanton-le-Dale, with Heroine, Industry, Clara and Triomphe Royale, roses; Sir J. Paxton, both feathered and flamed; Dr. Hardy and a seedling, bizarres; and Norval, Mary Barber, Duchess of Sutherland, and Violet Sovereign, bybloemens; 3d, Mr. Samuel Barlow, Stakehill House, Chadderton, with Lady Grosvenor and Modesty, feathered; Mrs. Lomax and Lady Sefton, flamed rose; Ashmole's 104, and Tiny Tim, feathered, and Ajax and Orion, flamed bizarre; Bessie and Martin's 101, feathered; and Bacchus and Adonis, flamed bybloemen. Mr. Barlow's flowers were generally small and undersized, but they manifested the splendid quality that is always characteristic of his growth. 4th, Mr. Daunt Woolley, Stockport; 5th, Mr. Samuel Cooper, Timperley. In class 2, for six dissimilar Tulips, one feathered and one flamed in each class, eight prizes were offered and all awarded. 1st, Charles Forman, Chatterton, was 1st with Heroine, feathered, and Triomphe Royale, flamed rose; Barlow's Sir J. Paxton, flamed, and Lord Byron, feathered bizarre; Jemima Forman, feathered, and Duchess of Sutherland, flamed bybloemens; 2d, Mr. Thomas Haynes, Derby, with Heroine, feathered, and Aglaia, flamed rose; Sir J. Paxton, feathered, and the same variety flamed bizarre; Mrs. Pickerell, feathered, and Duchess of Sutherland, flamed bybloemen; 3d, Mr. William Whittaker, with Sarah Headly, feathered, and Mrs. Lea, flamed rose; Masterpiece, feathered, and Sir J. Paxton, flamed bizarre; Bessie, feathered, and Talisman, flamed bybloemen; 4th, Mr. Samuel Barlow, with Mrs. Lea, feathered, and Annie Macgregor, flamed rose; Storer's 3 A, feathered, and Masterpiece, flamed bizarre; Martin's 101, feathered, and John Peacock, flamed bybloemen; 5th, Mr. James Thurston, Wolverhampton; 6th, Mr. John Morris, Leigh; 7th, Mr. David Barber.

As there are in connection with the National Tulip Society certain growers with small collections who subscribe only half a guinea per annum, it is customary to have a class specially for these, and from which the large growers are excluded. The 1st prize for six Tulips, one in each class was taken by Mr. H. Housley, Stockport, with Rose Aglaia, shown both feathered and flamed; Masterpiece, feathered, and Sir J. Paxton, flamed bizarre; Violet Aimable, feathered, and Chancellor, flamed bybloemen. 2d, Mr. Henry Hill, with Heroine, feathered, and Mary Barber, flamed rose; Sir J. Paxton, feathered, and Dr. Hardy, flamed bizarre; Adonis, feathered, and Duchess of Sutherland, flamed bybloemen. 3d, Mr. Richard Yates, Leigh, with Mrs. Lea, feathered, and Lady Talfourd, flamed rose; Masterpiece, feathered, and Dr. Hardy, flamed bizarre; Violet Aimable, feathered, and Lord Denman, flamed bybloemen.

In the class for three feathered Tulips, one of each section, Mr. W. Whittaker was 1st, with Mrs. Lea, rose; Masterpiece, bizarre; and Adonis, bybloemen. 2d, Mr. Charles Forman, with Heroine, rose; Sir J. Paxton, bizarre; and Adonis, bybloemen. 3d, Mr. Thomas Haynes, with Sarah Headly, rose; Sir J. Paxton, bizarre; and Mrs. Pickerell, bybloemen. 4th, Mr. H. Housley; 5th, Mr. D. Barber; 6th, Mr. S. Barlow. In the class for three flamed Tulips, one of each, there was also a spirited competition, the best coming from Mr. James Thurston, who had Aglaia, rose; Sir J. Paxton, bizarre; and Talisman, bybloemen. 2d, Mr. Samuel Barlow, with Annie Macgregor, rose; Sir J. Paxton, bizarre; and Bacchus, bybloemen. 3d, Mr. Thomas Haynes, with Triomphe Royale, rose; Sir J. Paxton, bizarre; and Duchess of Sutherland, bybloemen. 4th, Mr. William Wardle, Burton-on-Trent, with Triomphe Royale, rose; Dr. Hardy, bizarre; and Carbuncle, bybloemen. 5th, Mr. Thomas Mellor; 6th, Mr. David Barber.

Class six was a peculiar one, as it was open to amateurs growers only, *i.e.*, those which have not yet won a prize in the National Show. It was for one feathered and one flamed flower in any class, and all the stands staged in class 6 were also allowed to compete in class 7, also for the same subjects, but open to all cultivators. In class 6 Mr. Henry Hill was the only exhibitor who received an award, having bizarre Lord Lilford, and bybloemen Duchess of Sutherland. The leaders of the National Tulip Society do all they can to encourage the advent of maiden growers, as all who enter in class 6 receive a number of valuable bulbs. In class 7 Mr. W. Whittaker was 1st, with Masterpiece and Sir J. Paxton, both bizarres; 2d, the Rev. F. D. Horner, Kirkby Malzeard, with Mrs. Lomax, rose, and Bacchus, bybloemen; 3d, Mr. William Wardle, with Industry and Aglaia, rose; 4th, Mr. Woolley, with Dr. Hardy, bizarre, and Bacchus, bybloemen; 5th, Mr. David Barber; 6th, Mr. C. Forman.

In the classes for single blooms there were, as usual, a large number of flowers, and the making of the awards in these classes must severely tax the patience of the judges. The best flamed bizarre was Sir J. Paxton, from Mr. J. Turner, then followed Mr. Thomas Haynes, with Dr. Hardy; Mr. J. Turner, with Sir J. Paxton; Mr. W. Whittaker, with Orion; Mr. Joshua Hague, with Masterpiece; Mr. C. Forman, with the same; Mr. J. Thurston, with Ajax; Mr. D. Woolley, with Captain White; and Mr. W. Whittaker, 9th and 10th, with Ariosto and Smith's Prince of Wales. In the class for feathered bizarres Mr. H. Housley was 1st with Royal Sovereign and 4th with Lord Byron; Mr. W. Whittaker 2d with Masterpiece, 3d with Sir J. Paxton, 5th with Field Marshal, 7th with George Hayward, and 8th with Bonus; Mr. J. Turner 6th with Real Gem, Mr. C. Forman 9th with Demosthenes, and Mr. R. Yates 10th with Mr C. Campbell. In the class for flamed roses Mr. D. Woolley was 1st and 2d with Aglaia, and then followed Mr. T. Mellor with Mabel, Mr. W. Whitaker with Meteor de St. Arnaud, Mr. H. Housley with Triomphe Royale, Mr. W. Wardle with Industry, Mr. S. Barlow with Lady Sefton and 9th with Rose of England, Mr. S. Cooper 8th with an unnamed variety, and Mr. W. Whittaker 10th with Sarah Headly. In the class for feathered roses Mr. H. Housley was 1st with Mabel, 5th with Aglaia, and 7th with Mabel; Mr. W. Whittaker 2d with a seedling, 4th with Mrs. Lea, 8th with Industry, and 10th with Mrs. Headly; the Rev. F. D. Horner 3d with Modesty, Mr. C. Forman 6th with Heroine, and Mr. S. Barlow 9th with Little Annie. The flamed bybloemen was Talisman, from Mr. W. Whittaker, and the same was 2d with Duchess of Sutherland and 5th with Headly's Adonis; 3d, Mr. S. Barlow, with Talisman; 4th, Mr. T. Haynes, with Clarke's Thalia; 6th, Mr. D. Woolley, with Lord Denman; 7th, Mr. John Morris, with William Bentley; 8th, Mr. T. Haynes, with Salvator Rosa; 9th, Mr. H. Hill, with Chancellor; 10th, Mr. S. Barlow, with David Jackson. Mr. Whittaker also had the best feathered bybloemen in Headly's Adonis, and he was also 3d with the same, and 2d with Violet Aimable; Mr. C. Forman, with Mary Forman; Mr. D. Woolley 5th and 6th, with Bessie and Talisman; Mr. J. Hague 7th, with Mrs. Allsop; Mr. T. Mellor 8th, with Angelina; Mr. S. Cooper 9th, with Sarah; and Mr. D. Barber 10th, with Mrs. Pickerell.

The premier feathered Tulip was Heroine, rose, shown by Mr. David Barber in class 2; and the premier flamed Tulip Sir Joseph Paxton, bizarre, shown by Mr. C. Forman in class 2.

There yet remain the breeder classes, and flowers of extraordinary beauty are found among them. Mr. Samuel Barlow's collection is so varied, and contains so much that is new and fine, that for years past he has ranked as the champion breeder cultivator among Tulip fanciers. On this occasion he was awarded the 1st prize for six blooms, having Mrs. Barlow and Lady May, rose; Lord Provost and Richard Yates, bizarre; Glory of Stakehill and Talisman, bybloemen, a very fine lot indeed; 2d, Mr. David Barber, with Dr. Hardy, Adonis, Queen of England, Mrs. Barlow, and two seedlings; 3d, Mr. J. Hague; 4th, Mr. W. Whittaker. The best three breeders came from Mr. Thomas Haynes, who had Beauty of Litchurch, Mrs. Bright, and Dr. Hardy; 2d, Mr. S. Barlow, with Alice Grey, Annie Macgregor, and Sir J. Paxton; 3d, Mr. H. Housley, with Sulphur, Mabel, and Duchess of Sutherland; 4th, Mr. W. Whittaker; 5th, Mr. T. Mellor; 6th, Mr. Joshua Hague.

In the class for single blooms of bizarre breeders the best was Sir J. Paxton, from Mr. David Barber; and then followed William Willison, Dr. Hardy, Excelsior, and seedlings. The best rose breeder was Mrs. Barlow, from Mr. S. Barlow, and then followed Annie Macgregor, Lady Grosvenor, Atkins' seedling, Mabel, Lady May, and Mrs. Bates. The best bybloemen breeder was Beauty of Litchurch, from Mr. Thomas Haynes; the remainder of the other flowers were seedlings.

The premium breeder Tulip was Mrs. Barlow, a very fine rose, from Mr. S. Barlow's collection.

The Northern Counties' Tulip Society: *June* 8.—The fourth annual exhibition of this Society was held at the Abbey Hey Hotel, Gorton, Manchester, on the above day. Formerly it was the custom to hold a number of small Tulip shows in the neighbourhood of Manchester, and some of them are still continued, but a few of the leading growers, dissatisfied with the public-house associations they encouraged, agreed to form a Northern Counties Society, and much success has attended their efforts. It is not in any sense of the word the rival of the National Tulip Society.

The flowers were staged for judging in the large dancing saloon in the rear of the hotel, and after the prizes had all been awarded the flowers were removed to a room at the hotel which is specially arranged for the purpose, inasmuch as it contains a centre plant stage, similar to those that might occupy the centre of a span-roofed greenhouse, and on this stand the flowers are arranged in three classes, while the stands of flowers occupy tables arranged round the sides of the room. The "pans," as they are termed, viz., collections of three and more blooms, are generally shown on ordinary flower stands, but the single flowers are set up in wooden tubes placed in ginger-beer bottles, and there is always a great number of these. The prize flowers are all kept together. This room of Tulips, which is shady and cool, is kept open for the inspection of any one interested in the Tulip for several days.

In the case of the Northern Counties show the largest class is for six varieties, one of each of the classes. The best six came from Mr. William Whittaker, Salford, who had flamed bizarre Sir J. Paxton, very fine; feathered bizarre Field Marshal rose Mabel, feather rose Industry, a delicately beautiful new variety shown in fine condition; flamed bybloemen Talisman, and feathered bybloemen Bessie, very fine. 2d, Mr. Thomas Mellor, Ashton, with Sir J. Paxton, flamed, and Charles X., feathered bizarre; Duchess of Sutherland, very fine, flamed, and Agnes, feathered bybloemens; Mabel, flamed, and Heroine, feathered rose. 3d, Mr. Samuel Barlow, Chadderton, with Sir J. Paxton, very fine, flamed, and George Hayward, feathered bizarre; Countess of Sefton, flamed, and Heroine, feathered rose; John Peacock, flamed, and Bessie, feathered rose. 4th, Mr. John Morris, Leigh. Class 2 was for six varieties also, the competition confined to half-guinea subscribers, and the flowers were generally inferior to those in the preceding class. The best came from Mr. James Hulme, with Sir J. Paxton, flamed bizarre, and Charles X., feathered; Rose Mabel, flamed, and Heroine, feathered; bybloemens Chancellor, flamed, and Violet Aimable, feathered. Mr. James Leigh was 2d, Mr. R. Ashton, 3d; and Mr. John Heap, 4th. In class 3, for three feathered Tulips, Mr. W. Whittaker was 1st, with bizarre Masterpiece; bybloemen Violet Aimable, very good; and rose seedling, a very good and promising high-coloured flower; 2d, Mr. James Hulme, with Masterpiece, Violet Aimable, and Mrs. Lea; 3d, Mr. Thomas Mellor, with Sulphur, Norval, and Heroine. Two other prizes were awarded in this class. Mr. W. Whittaker, who was in strong force on this occasion, was also 1st, with three flamed Tulips, having bizarre Sir J. Paxton, bybloemen Talisman, very fine; and Rose Aglaia; 2d, Mr. John Turner, with Sir J. Paxton, very fine; Duchess of Sutherland, and Triomphe Royale; 3d, Mr. S. Barlow, with Sir J. Paxton, Nimbus, a new variety of the late Dr. Hardy's raising, not yet distributed; and a particularly effective flamed bybloemen, and Aglaia; 4th, Mr. Thomas Mellor.

In class 5, for Tulips in pairs, one feathered and one flamed, the judgment, which was most conscientiously and laboriously made throughout, appeared to have been made on scarcely intelligible grounds. Mr. John Turner was placed 1st, with flamed bizarre Dr. Hardy and feathered rose Heroine. The flowers were both small and wanting in character, and should have been, we think, 3d at most. 2d, Mr. James Hulme, with flamed bizarre Dr. Hardy, and feathered bybloemen Violet Aimable; 3d, Mr. Joshua Hague, with flamed bizarre Dr. Hardy, and feathered bizarre George Hayward. Mr. W. Whittaker's pair of flowers

were quite in keeping with the high character he had shown in the other classes, and were deserving of the 1st prize, the varieties being flowered bizarre Sir J. Paxton, and feathered bizarre Masterpiece.

In the classes for single flowers an immense number were staged. The best flamed bizarre was Sanzio, but what is generally written in Northern Tulip circles as "Saint Jo," shown by Mr. W. Whittaker; then followed Sir J. Paxton, Lord Warden, Dr. Hardy, Sanzio, Ariosto, Lord Delamere, the first broken flower that has yet been shown, and Orion. The best feathered bizarre was Masterpiece, from Mr. W. Whittaker, and he was 2d with the same variety, and 3d with Lord Byron; then followed Surpasse Catalaque, one of the oldest Tulips in cultivation; Richard Yates, Lord Ratcliffe, a flower that broke in character the first time of blooming, style of Masterpiece, but paler in colour—a very fine show variety; Magnum Bonum, and Sir J. Paxton. With the exception of the 4th prize, which went to Mr. John Knott, all the rest went to Mr. W. Whittaker, who has this season been strong in feathered bizarres. In the class for feathered bybloemens Mr. W. Whittaker was 1st, 2d, 3d, 4th and 5th with Headly's Adonis, Violet Aimable, Agnes, Bessie, and Adonis; then followed William Bentley, Angelina and Edgar. Mr. Whittaker had the best flamed bybloemen in Duchess of Sutherland, and the second best in Talisman: following these were Duchess of Sutherland, Bacchus, Adonis, Norval, and Violet Aimable. In the feathered rose class Mr. Whittaker was 1st and 2d with Mrs. Lea and Industry, then followed Andromeda, Mrs. Lea, Heroine, Aglaia, Rachel, and seedling. In the class for flamed roses, Mr. S. Barlow was 1st with Annie Macgregor, and 2d with Mrs. Lowndes; then followed Lovely, Aglaia, Triomphe Royale, Madame de St. Arnaud, seedling, and Agnes Strickland.

In the breeder classes the flowers were all very fine. Mr. S. Barlow was 1st with bizarre Richard Yates and Sir J. Paxton; bybloemen Talisman and Glory of Stakehill, a splendid flower; rose-flamed Annie Macgregor, and Hepworth's Lady May—one of the finest of rose breeders in cultivation. 2d, Mr. Thomas Mellor, with Dr. Hardy and Flir, bizarres; William Bentley and Bridesmaid, bybloemens; and Lady Grosvenor and Annie Macgregor, roses. 3d, Mr. Joshua Haigue; 4th, Mr. W. Whittaker. With three breeders, one in each class, Mr. Barlow was also 1st with bizarre No. 2 seedling; bybloemen Glory of Stakehill, and Annie Macgregor, a beautiful rose breeder for colour. 2d, Mr. Thomas Mellor, with Storer's seedling, Orion, and Annie Macgregor; 3d, Mr. W. Whittaker, with Sir J. Paxton and two seedlings. The half-guinea subscribers had a class for three breeders also, and here Mr. John Heap was 1st, Mr. James Hulme 2d, and Mr. James Wild 3d. The flowers were considerably inferior to those staged in the other breeder classes.

In the class for a single bloom of a rose breeder Mr. S. Barlow was 1st with Mrs. Barlow, 2d with Mabel, and 3d with Annie Macgregor; then came Olivia, Nanny Gibson, and Mrs. Bates. In the class for bybloemen breeders the two finest were Alice Grey and Talisman, shown by Mr. S. Barlow, but they were placed 4th and 5th. Mr. James Turner was 1st with William Bentley; the others were unnamed. In the class for bizarre breeders Mr. S. Barlow was 1st, 2d, 3d, and 4th, with Sir J. Paxton, Richard Yates, seedling, and Mrs. Lea. Sulphur and Hepworth's seedling were also shown.

The premier feathered flower was Industry, rose, shown by Mr. W. Whittaker, perfect in every respect; the premier flamed flower, Sanzio, bizarre, shown by the same exhibitor; and the premier breeder, Lady May, rose, from Mr. S. Barlow.

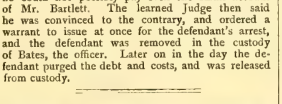
After the prizes were awarded the judges and exhibitors dined together; Mr. Samuel Barlow, President of the Society, in the chair; and the remainder of the afternoon was spent in much instructive gossip about Tulips. The Secretary of the Northern Counties Society, Mr. James Wild, of Ashton-under-Lyne, has been a cultivator of Tulips for nearly half a century.

Law Notes.

JUDGMENT AND COMMITTAL.—At the Westminster County Court, on Tuesday last, the case of *Gardener* v. *Marks* was heard before Mr. Judge Bayley, in which the defendant, a salesman at Leeds and Covent Garden, was summoned to show cause why he did not pay the plaintiff the sum of £18 for goods sold and delivered, and upon which judgment had been obtained in this Court. The plaintiff, who was represented by a gentleman whose name did not transpire, said that the defendant carried on business in a large way both in Leeds and London, and that if the learned Judge would order a warrant of committment to issue against the defendant it would make him pay. The defendant said if that was the case it would have the effect of driving him to bankruptcy. After a witness was called to prove the defendant's means, the learned Judge thought that as the amount was a large one the plaintiff would be more likely to get his money by ordering easy instalments, and therefore ordered the defendant to pay the debt and costs, at the rate of £2 a month, subject to a commitment.

Bartlett v. *Marks* was next called on for hearing, in which the plaintiff, Robert Bartlett, a solicitor of Bedford Street, Covent Garden, summoned the defendant, who was the defendant in the former action, to show cause why he had not paid the plaintiff's bill of costs, amounting to £2 5*s.* 6*d.*, upon which the plaintiff had recovered judgment. The plaintiff said that since judgment had been obtained the defendant had large transactions in the market, and came weekly from Leeds expressly to make large purchases. Mr. Bartlett then examined the defendant, who said that he came up from Leeds frequently, and had a private house at Leeds and a stall in the Leeds market. He used to trade six months ago as Philip Marks & Son, of Leeds, but did not do so now. He had bought sixty boxes of Peas last week in the market at 4*s.* a box, but part were on commission for C. O. Jacobs, of Russell Street, Covent Garden. He had also bought fifteen baskets of Cherries at 7*s.* 3*d.* a basket, which were sent to Bradford, but they only realised 1*s.* each, and Cherries were selling to-day in the market for 7*d.* a basket for which 8*s.* had been given two days previously.

In reply to the learned Judge the defendant said he could not possibly pay even the small account of Mr. Bartlett. The learned Judge then said he was convinced to the contrary, and ordered a warrant to issue at once for the defendant's arrest, and the defendant was removed in the custody of Bates, the officer. Later on in the day the defendant purged the debt and costs, and was released from custody.



STATE OF THE WEATHER AT BLACKHEATH, LONDON.
FOR THE WEEK ENDING WEDNESDAY, JUNE 13, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to 32° Fahr.	BAROMETER. Departure from Average of 18 years	TEMPERATURE OF THE AIR. Highest.	TEMPERATURE OF THE AIR. Lowest.	TEMPERATURE OF THE AIR. Range.	TEMPERATURE OF THE AIR. Mean for Day	TEMPERATURE OF THE AIR. Departure from Mean Average of 16 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100.	WIND. Average Direction.	RAINFALL.
June	In.	In.	°	°	°	°	°	°			
7	30·02	+ 0·22	69.1	43·1	25·8	54.2	− 3·4	39·7	58	WSW : S.W.	In. 0.00
8	29·89	+ 0·09	75·1	48·0	27·1	59·6	+ 1·9	47·6	65	S.S.E. : S.S.W.	0.00
9	29·93	+ 0·14	70·7	55·1	24·6	65·0	+ 7·1	51·0	60	WSW	0.00
10	29·94	+ 0·14	78·2	55·5	22·7	64·7	+ 6·6	50·6	60	WSW	0.00
11	29·87	+ 0·08	84·1	53·0	31·1	66·9	+ 7·9	53·2	63	WNW	0.10
12	29·71	− 0·08	76·3	55·7	20·6	64·3	+ 5·8	60·1	85	E.E. : E.	0.24
13	29·85	+ 0·07	65·2	52·3	12·9	56·8	− 1·9	51·0	84	N.E.	0.00
Mean	29·84	+ 0·09	75·4	51·8	23·6	61·5	+ 2·4	50·6	68	variable	sum 0.34

June 7.—A fine bright day. Partially cloudy. Cool.
— 8. A very fine warm day. Partially cloudy.
— 9.—A brilliantly fine warm day. Clear.
— 10.—A very fine day. Clear and warm.
— 11.—Very fine and bright till evening, then cloudy. A warm day. Slight thunderstorm, with heavy rain and vivid lightning at 10 P.M.
— 12.—Fine and warm, but very cloudy throughout. Thunderstorm, with heavy rain in early morning.
— 13.—Overcast and dull till 3 P.M.; fine and bright after. Cloudless at night. Cool day.

LONDON: *Barometer.*—During the week ending Saturday, June 9, in the vicinity of London the reading of the barometer decreased from 29.93 inches at the beginning of the week to 29.70 inches by the evening of the 4th, increased to 30.08 inches by the evening of the 5th, decreased to 29.93 inches by the evening of the 6th, increased to 30.23 inches by the evening of the 7th, decreased to 30.01 inches by the evening of the 8th, increased to 30.14 inches by noon on the 9th, and was 30.12 inches at the end of the week. The mean reading for the week at sea level was 29.99 inches, being 0.37 inch above that of the preceding week, and 0.01 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 82½° on the 4th to 66° on the 6th; the mean value for the week was 74½°. The lowest temperatures of the air observed by night ranged between 43¾° on the 7th to 55° on the 9th; the mean for the week was 49¼°. The mean daily range of temperature in the week was 25¼°; the greatest range in the day was 33°, on the 3d, and the least 15¾°, on the 5th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—3d, 64°, ×7°.1; 4th, 65°, ×7°.9; 5th, 57°.9, ×0°.6; 6th, 55°.3, ×−2°.2; 7th, 54°.2, ×−3°.4; 8th, 59°.6, ×1°.9; 9th, 65°, ×7°.1. The mean temperature of the air for the week was 60°.1, being 2°.7 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 152° on the 3d, 148½° on the 9th, and 145¾° on the 4th; the mean of the seven high values was 136°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 39¾° on the 3d, and 40½° on the 6th and 7th; the mean of the seven low readings was 42¾°.

Wind.—The direction of the wind was S.W., and its strength moderate. The weather during the week was fine, bright, and dry. Lightning frequently seen on Monday evening, the 4th inst.

Rain fell on three days during the week, the amount measured was only 0.09 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 83¼° at Manchester, 82½° at Blackheath, and 82° at Cambridge; at Truro, Plymouth, and Portsmouth, 67°, 68°, and 68½° respectively were the highest temperatures in the week. The mean value from all stations was 76½°. The lowest temperatures of the air observed by night were 39¾° at Wolverhampton and 40° at Nottingham; at Portsmouth 49½° was the lowest temperature. The general mean from all stations was 45°. The range of temperature in the week was the greatest at Manchester, 40¾°, and the least at Portsmouth, 19¼°. The mean range of temperature from all stations was 31¾°.

The mean of the seven high day temperatures was the highest at Blackheath and Cambridge, both 74½°, and the lowest at Plymouth, 63°; the mean value from all stations was 68¼°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 46½°, and the highest at Norwich, 53½°; the mean from all stations was 50°. The mean daily range of temperature in the week was the greatest at Blackheath, 25°, and the least at Plymouth, 11°; the mean daily range from all stations was 18¼°.

The mean temperature of the air for the week from all stations was 57½°, being 4½° higher than the value for the corresponding week in 1876. The highest took place at Norwich, 61½°, and the lowest at Wolverhampton, 55°.

Rain.—Large amounts of rain measured during the week were small everywhere, they varying from three-tenths of an inch at Plymouth, Sheffield, and Liverpool, to two-hundredths of an inch at Cambridge; at Portsmouth no rain was measured: the average fall over the country was that of an inch nearly. The weather during the week was generally fine, bright, and warm. *Solar halos* were seen at Bristol on June 7 and 8, and lightning was seen at Blackheath on the 4th.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 76° at Edinburgh to 60° at Greenock; the mean value from all stations was 65°. The lowest temperatures of the air ranged from 41½° at Greenock to 45° at Glasgow and Leith; the mean from all stations was 44°. The mean range of temperature in the week from all stations was 21°.

The mean temperature of the air for the week from all stations was 54½°, being 3° higher than the value for the corresponding week in 1876. The highest was 56½°, at Edinburgh, and the lowest 52½°, at Greenock.

Rain.—The falls of rain measured during the week varied from 2¾ inches (nearly) at Greenock, and 2 inches at Paisley, to half an inch at Edinburgh and Leith; the average fall over the country was 1¼ inch.

DUBLIN.—The highest temperature of the air was 69½°, the lowest was 38½°, the range was 31°, the mean was 55½°, and the fall of rain was 0.40 inch.

JAMES GLAISHER.

Variorum.

THE CAROB TREE (CERATONIA SILIQUA).—In a very interesting account of "An Easter Holiday in Liguria," by Professor Flückiger, which has lately been reprinted in the *Pharmaceutical Journal*, occurs an excellent description of the St. John's Bread, or Carob tree (Ceratonia Siliqua), and of the locality inhabited by it, from which we make the following abstract. Here and there, Professor Flückiger says, a dense crown of foliage rising from powerful

knotted stems shine out in the midst of an Olive grove, or alone on the sunny shore the tree spreads out its half-bared roots often over a surprising circuit. This is the Ceratonia Siliqua. It is found nowhere else in Upper Italy, or in the central provinces, but probably in the south of the peninsula. However, the Riviera de Ponente, especially the country round Monaco, has trees to show which equal those of the *piano* of Sorrento and Amalfi. This tree is decidedly less hardy than the Olive, but it comes from Central Africa, where the Olive is not known. On the Ligurian coast it bears the historic name of "Caruba," an Arabic designation, recalling a people to whom Sicily at one time owed a season of prosperity, during which not only Islam, but also trade and valuable economic plants were introduced into Spain and Southern Italy. The Ceratonia can only be reckoned an economic plant, however, to the extent that the pods are given to horses. It appears remarkable that artificial cultivation has not yet succeeded in improving it so as to give it a savoury fruit. Even the St. John's Bread from South Italy and Cyprus is always a truly leathery dainty. Would not an attempt to obtain a better product from this stately tree be remunerative? The main object of this article is to show tree would also suit the landscape to a high degree, since in respect to its rich, full, green foliage, which may be compared to that of our Oaks and Apple trees, it stands in striking contrast to the Olive tree. The long, rigid petiole, not unfrequently a foot in length, is provided with three to five, but more frequently with four pairs of sessile leaflets, which are often nearly round, but mostly ovate. The breadth of the entire leaf at its base—*i.e.*, the length of the lowest pair of leaflets—frequently reaches 7 inches; so that, notwithstanding the leaves are only simply pinnate, the impression of a very compound foliage is produced. As it does not, like so many other pinnate leaves, bear a terminal leaflet, the enormous head of foliage assumes a rounded outline, which would appear to be somewhat too regular did not the separate leaves, by their variation in colour and shape, exclude uniformity. The divisions of the leaves are not spread out flat, but incline somewhat towards one another, and on the under side are of a lighter though duller green than on the upper. The two surfaces also differ in their behaviour in other respects. The upper surface can easily become coated with various liquids—dilute alcohol, for instance; not so the under side. The leaf tissue is of very firm texture, but each separate leaflet is always in motion, which gives to the foliage a lively appearance. Many other trees of the same division of the Cæsalpinia possess, in contrast to Ceratonia, pinnate leaves. Indeed, in examining the St. John's Bread tree critically, exceptions to the ordinary form of leaf are not unfrequently found, especially where one of the lowest leaflets is replaced by one consisting of two or four pairs of leaflets, usually not quite opposite, and often with a terminal one. Frequently the second leaflet of the lowest pair is also transformed. The variations from the ordinary leaf form are, however, never sufficiently numerous to influence the appearance of the tree. It presents, therefore, very great peculiarity quite apart from the flowers and fruit, which also have characters repeated in no other instance. On these accounts the genus Ceratonia was rightly set up for the sake of this tree only, and it has not since been enriched by a second species. This explains the remarkable fact that botanists have not found leisure to endow it with several names, and it is everywhere called by the name Linnæus gave it. When Professor Flückiger's notes were written, the trees exhibited neither blossom nor ripe fruit; only exceptionally were found isolated, belated, but still quite young crooked pods, which explain far better than the ones why the Greeks named the tree Ceratonia (Horn-fruit tree).

COX'S ORANGE PIPPIN is the finest Apple in the world. This declaration is made in full conviction both of the responsibility it carries, and of its value to all who are interested in the subject of Apple culture. Fortunately the variety is neither scarce nor dear. Its merits are well known, and indeed they are so conspicuous that, in common with other good things, it is always speaking for itself, and hence it is everywhere largely propagated and extensively planted, and is on the way to take the lead in the Apple garden, and prove to all that our declaration in its favour is warranted by the facts. It is one of the best paying Apples in Kent, and it is one of the few that may be trusted for a crop in those damp alluvial valleys or "bottoms," where spring frosts make their ravages, and fruit growing is a precarious business. Our observations of this variety, under many different circumstances, have been enlarged in a striking manner within the past few weeks. In our fruitful land in the valley of the Lea the Hawthornden is a prodigious cropper, and about twenty better varieties compete with it for popularity, not the least important amongst them being Shepherd's Fame, Lemon Pippin, Ecklinville, Cellini, Old Nonpariel, Keswick Codlin, and Blenheim Orange. This year Cox's Orange beats them all, for the trees are smothered with fruit, while on all other sorts the crops are comparatively thin more or less. It was precisely the same in the compartment occupied with Apple stocks in the Royal Horticultural Society's Chiswick garden last year. The little trial trees of Cox's Orange were then well covered with fruit, while other varieties were barren or nearly so. The uninitiated reader may be disposed to ask, What is the quality of the fruit we land in this way? Well, the question is pertinent. The answer may be summed up in few words. Cox's Orange is a better Apple than the Ribston Pippin, being as handsome, as well flavoured, and with more tender flesh. In respect of flavour and fruitfulness, and every good property, it is the finest Apple in the world. *Gardeners' Magazine.*

NEW PARKS.—*Paisley.*—On the 26th ult. a new public park—a gift to the town by a deceased citizen, Mr. Robt. Brodie, accountant—was opened with much ceremony. The park is situated at High Carriage Hill, in the southern part of the town, and extends to about 22 acres. Its value is estimated at £16,000, and during the past year or two the Town Council have expended about £2800 in laying it out and ornamenting it. *Gateshead.*—Since the grounds of Mr. William Wailes, at Saltwell, were purchased by the Gateshead Corporation and converted into a park for the use of the inhabitants, who, at that time, had little or no place approaching to a recreation-ground, great improvements have been made by way of further beautifying the estate. For some time past the Park Committee have been pushing on the work of improvement with rapidity. One of the chief features will be the long promenade, which is at present under formation at the north end of the park. On either side of the promenade the ground has been laid out under the direction of Mr. Heath, of London, landscape gardener. *Builder.*

Enquiries.

He that questioneth much shall learn much.—BACON.

189. OSIERS.—Can any of your readers inform me through your columns, whether Osiers will thrive and do well if planted on a light and porous soil, and received the overflow of sewage from a large town? *J. S.*

190. ARRACACHA.—Where can tubers of this plant (A. esculenta) be obtained? *W. F. J.*

191. CHARA.—A species of Chara has filled a lake of some acres so completely as to impede the progress of boats. Various methods of eradication have been tried, but unsuccessfully. What can be done? *L.*

Answers to Correspondents.

AGAVES TURNING FROM THE EAST: *J. H. P.* We have not noticed this in the Riviera. Did you observe them in the early morning, when the sun was in the east?

AZALEA: *A. Morrison.* The large flowers and rich apricot-yellow of the seedling of which you send a truss, are qualities which should render it acceptable as a novelty. The colour, being almost a self, is peculiar. We do not remember to have seen any quite like i

AZALEAS — PROPAGATING: *A Subscriber.* Azaleas strike readily from cuttings made of the half-ripened shoots slipped off and inserted singly in 60-sized pots, drained and half-filled with sandy peat, the surface all sand, covered with a propagating-glass in a temperature of 70°, kept moderately close, moist, and shaded from the sun. When well rooted gradually inure them to the air of the house or pit, and move them into a size larger pots. As soon as they have begun to grow pinch off the tops 6 inches above the collar, so as to induce them to make several shoots, but never allow any suckers, which spring up near the collar, to remain, as it is through letting these grow more than from any other cause that Azaleas from struck plants are often short-lived. We should advise their being kept for two years in intermediate temperature stove temperature without any rest more than they will naturally get through moving much slower in the winter, giving them larger pots as they require it, and keeping them close clear from thrips and red-spider. At the expiration of that time, so managed, they will have attained a size equal to what they would grow to in five years under the ordinary method of growing them cool, and resting in the winter—it will not, as many would suppose, injure their constitution in the least. We should recommend similar treatment to be given to grafted plants, which, when a good free-growing kind is selected for a stock, are much to be preferred to such as are on their own roots.

ENTOMOLOGICAL SPECIMENS: *W. G. F.* There is some difference between a stag-beetle and a clothes-moth. Supposing you mean butterflies, we advise you to take some young Cherry Laurel leaves, bruise them, place them in the collecting box, with the insects. Keep the box closed for a few minutes, and the prussic acid fumes will accomplish your end.

HIPPEASTRUM PARDINUM: *A. Hoeneeke.* We have found Hippeastrum pardinum to succeed well under similar treatment to the other species and varieties of Hippeastrum, and should suppose that your plant has gone wrong through some accident in the treatment, such as overpotting, or the soil having become sour by having been kept too wet, or the drainage being deficient or loose potting in light open soil, any of which causes would produce the condition described. We should advise its being placed in a smaller pot, well drained, in pure loam, with a little sand added, pressing the soil quite firm—being careful not to give too much water until the plant has begun to make roots freely.

INSECTS: *J. K.* Pyrochroa rubens. *A. M.*

IVIES: *Y. Z.* Messrs. Lane & Son, Great Berkhamstead, or Mr. Turner, Slough.

MANURE: *E. N.* We have no faith in the artificial manure you mention, either as a fertiliser or as an insecticide. Kiln-dust, or, in the absence of that, good rotten dung applied as a top-dressing, is the best manure for fruit trees in pots, and if you want a good and cheap insecticide use the decoction of quassia chips and soft soap so often mentioned in this column.

MAY: *G. Beaumont.* The sucker, no doubt, comes from the roots of the old white variety, on which the red one was originally budded or grafted. It is a very common occurrence.

MIGNONETTE: *J. G. & Co.* Your new variety is no finer than plain that comes into the market, and by no means so large as the specimens of Miles' strain that have been exhibited.

MYRTLES: *A. S.* Your Myrtle is badly infested with the brown scale insect. If you have patience enough to remove them with a sharp penknife point, and afterwards to wash the leaves carefully with a sponge, using a solution of soft soap in tepid water, you may get rid of them; but if not, unless the plant has some special association worth saving to you, you had better burn it, and buy a young clean plant from the nearest nursery. To clear the plant effectually you may have to wash it over several times.

NAMES OF PLANTS: *N. B.* Pyrus Aria, the White Beam, as so far as we can make out sexp. sent.—*G. Dodd.* 1, 2, and 8, Pinus excelsa; 3, P. insignis; 4 and 5 Picea cephalonica; 6, Abies Menziesii.—*C. E. F.* 1, Picea Lowiana; 2 and 3, Abies Douglasii.—*H. A. B.* The Fern is Athyrium Goringianum pictum, from Japan. The leaf cannot be identified without further information respecting the plant and its origin.—*J. McD.* Begonia semperflorens, Hordeum pratense.—*J. E. Dorel.* Muscari comosum, the typical form.—*J. L. B.* 1, Pelargonium Fair Helen; 2, P. glutinosum. The others are garden hybrids, which we cannot undertake to name.—*J. L. M.* 1, Narcissus poeticus; 2, Ranunculus aconitifolius fl.-pl.; 3, Myosotis sylvatica; 4, M. sylvatica var. albiflorus.—*G. E. L.* 1, Spiræa hypericifolia; 2, Spiræa canescens var.; 3, Mesembryanthemum polyanthum; 4, M. conspicuum; 5, Narcissus poeticus; 6, N. poeticus flore-pleno.—*J. R. Haig.* 1, Prunus Padus; 2 is the same.—*W. B. S.* Mespilus grandiflora.—*G. W.* It is impossible to be certain about Acacia leaves: 1 and 2 seem to be A. rubrum; 3 and 4 are, perhaps, A. opulifolium; and 5 may possibly be A. tataricum; 6, Quercus Ilex.

PACKING GRAPES: *Exhibitor.* You must have the stands on which you intend to show the Grapes made and fitted to the boxes in which they are packed, so that it can be readily taken out; and the only way to preserve the bloom is to fasten the bunches down firmly into their places on the stand before you send them from home. How to do this neatly and well you can only learn by experience.

PHORMIUM TENAX: *J. Ornant.* There is nothing remarkable in the New Zealand Flax producing flowers. It frequently does so under liberal treatment, though perhaps it can scarcely be said to be flowering.

POPULAR PHYSIOLOGY: *W. H. D.* See our last Supplement. It is a subject that has been more often treated of in this journal for nearly forty years than in any other known to us. It is no fault of ours if people will not read and master such information when it is put before them.

ROSES: *W. Wilson.* So far as we can judge from the specimen sent they are identical—Gloire de Dijon.

VINES GUMMING: *D. C. P.* Your Grapes arrived in such a state of decomposition that it is impossible to form any judgment. The gumming exudation is however probably the same which sometimes occurs on the stigma of Vines when in flower and prevents impregnation. You have seen a Vine which every year had the same peculiarity and in consequence never bore any fruit. *M. J. B.*

VINE LEAVES: No. 1. The chlorophyll is only very partially formed, and there is a good deal of autumnal tinting. No. 2 not only has the same defect, but the under surface has little spots which arise from abnormal development of the cells. No. 3 has the same excrescences, and there is a great want of chlorophyll. No. 4 is without the excrescences, but there is a uniform deficiency of chlorophyll. The whole indicates that the root-action is bad. The several conditions may arise from excessive wet, if the Vines are planted in the border, or it may be due to a bad condition of the roots. *M. J. B.*

VINES: *W. X.* The berries are "scalded," as a great many others have been this season. How this is brought about has frequently been mentioned in our columns.—*James Hopkins.* There is no visible cause for the decay of the Vine shoots, it may be only weak

growth, the main shoots by their vigorous growth depriving the laterals of nourishment.

WOODS FOR CABINET-WORK.—*A. A. H.* Write to the *Furniture Gazette* or the *Cabinet Maker*.

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.*

COMMUNICATIONS RECEIVED.—J. A. S.—E. S.—B. F. (many thanks).—W. H.—T. B.—H. E.—J. R.—J.—E. W.—H. V. (*milfe remerciements*).—J. R., Paris.—C. N.—J. F. W.—G. M.

Markets.

COVENT GARDEN, June 14.

We have this week no alterations worth quoting to make, the supply and demand being steady. Owing to the late warm weather Continental goods have arrived in very bad condition, and have been sold at very low rates. Large quantities of new Potatos are reaching us from Jersey and Cornwall at lower prices. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d.	*s. d.*
Apricots, per box	2 0	3 0
Apples, per ½-sieve	3 0	8 0
Cherries, per box	2 0	3 6
Cobs, per lb.	1 0	1 6
Grapes, per lb.	3 0	8 0
Lemons, per 100	4 0	10 0
Melons, each	1 0	2 0
Oranges, per 100	8	16 0
Peaches, per doz.	6	0 24 0
Pears, per doz.		
Pine-apples, per lb.	2	0 6 0
Strawberries, p. lb.	4	0 16 0
Figs, green, each	0	9– 1 6

VEGETABLES.

	s. d.	*s. d.*
Artichokes, per bush.	4 0	..
— Eng. Globe, doz.	4 0	6 0
Asparagus, French, Giant, per bunch	8	0 20 0
— English, p. bun.	3 0	5 0
— Fr., natural bun.	4 0	6 0
— Sprue, per bun.	1 6	..
Beans, French (new), per 100	1 3	2 6
Beet, per doz.	1 0	2 0
Cabbages, per doz.	1 0	2 0
Carrots, per bunch	0 7	0 10
— New French, per bunch	1 6	..
Cauliflowers, per doz.	2 0	6 0
— Eng., new, doz.	3 0	6 0
— French, doz.	4 0	6 0
Celery, per bundle	1 6	2 0
Chilis, per 100	3 0	..
Cucumbers, each	0 6	1 6
Endive, per doz.	1 0	2 0
— Batavian, p. doz.	1 0	1 6
Garlic, per lb.	0 6	..
Gooseberries, green, per quart	0 8	1 0
Herbs, per bunch	0 2	0 4
Horse Radish, p. bun.	4 0	..
Leeks, per bunch	0 2	0 4
Lettuces, Cos, p. doz.	6 0	..
— English, score	2 0	..
Mint, green, bunch of	0 1	0 2
Mushrooms, per pott.	1 0	2 0
Onions, per bush.	2 0	..
— young, per bun.	0 6	..
Parsley, per bunch	0 9	..
Peas, green, in bushels	10 0	..
— shelled, per qt.	4 0	..
Radishes, per bunch	0 1	0 3
— Spanish, doz.	0 6	..
— New Jersey, doz.	2 0	..
Rhubarb, per bundle	0 6	0 8
Salsafy, per bundle	1 0	..
Shallots, per lb.	0 6	..
Spinach, per bushel	1 6	..
Tomatos, per doz.	3 0	..
Turnips, per bundle	0 4	0 6
— new, per bundle	1 0	1 6
Vegetable Marrows, each	1 6	..

Potatos (old).—Kent Regents, £7 to £8: Essex Regents, £6 102. to £7; Kidneys, £10 per ton.—(New): Jersey Kidneys, 20s. to 32s. cwt.; Rounds, 14s. to 20s. cwt.

CUT FLOWERS.

	s. d.	*s. d.*
Bouvardias, per bun.	1 0	4 0
Calceolaria, p. bun.	1 0	2 0
Camellias, 12 blooms	2 0	9 0
Carnations, per doz	1 0	4 0
Cornflower, 12 bun.	3 0	9 0
Daisies, 12 bunches	4 0	8 0
Eschscholtzia, 12 bun.	2 0	6 0
Euchsias, per doz.	0 6	0 9
Gardenia, per doz.	2 0	3 0
Heartsease, 12 bun.	3 0	6 0
Heliotropes, 12 spr.	2 0	3 0
Iris, 12 bunches	3 0	12 0
Lilies (in var.), p. spr.	0 6	2 0
Lily of Val., 12 bun.	6 0	18 0
Mignonette, 12 bun.	4 0	9 0
Myosotis, 12 bunch.	3 0	12 0
Pelargoniums, 12 spr.	2 0	6 0
— zonal, 12 sprays	0 4	1 6
Pink (white and coloured), 12 bun.	3 0	6 0
Primula, double, per bunch	1 0	2 0
Ranunculus, 12 bun.	4 0	9 0
Rhododendr., 12 bun.	6 0	12 0
Rocket, 12 bunches	3 0	6 0
Roses (outdoor), bun.	0 6	1 0
— (indoor), per doz.	1 6	12 0
Rose de Meaux, 12 bunches	9 0	24 0
Spiræa, 12 sprays	1 6	4 0
Stephanotis, 12 spr.	2 0	9 0
Stocks, 12 bunches	2 0	8 0
Sweet Peas, 12 bun.	6 0	9 0
Tropæolum, 12 bun.	2 0	6 0
Wallflowers, p. doz.	4 0	9 0

PLANTS IN POTS.

	s. d.	*s. d.*
Balsams, per dozen	4 0	12 0
Bedding-out plants, per doz.	1 6	3 0
— in boxes, each	1 0	2 6
Begonias, per doz.	6 0	12 0
Bouvardias, do.	12 0	24 0
Calceolaria	7 0	21 0
Cineraria, per doz.	6 0	18 0
Clematis	24 0	60 0
Cockscombs, per doz.	6 0	12 0
Coleus, per dozen	3 0	9 0
Cyperus, do.	6 0	18 0
Dracæna terminalis	30 0	60 0
— viridis, per doz.	18 0	24 0
Ferns, in var., p. doz.	6 0	30 0
Ficus elastica, each	2 6	15 0
Fuchsias, per dozen	9 0	18 0
Heaths, variety, doz.	12 0	60 0
Heliotrope, per doz.	6 0	18 0
Hydrangea, per doz.	12 0	30 0
Liliums in var., each	1 6	10 6
Mignonette, per doz.	4 0	18 0
Myosotis, per dozen	4 0	12 0
Myrtles, do.	3 0	9 0
Palms in variety, each	3 6	21 0
Pelargoniums, p. doz.	12 0	36 0
— scarlet, per doz.	4 0	12 0
Petunias, per doz.	9 0	24 0
Rhodanthe, per doz.	6 0	15 0
Richardia æthiopica, per doz.	18 0	36 0
Spiræa, per doz.	12 0	30 0
Valeria purpur., doz.	12 0	18 0

SEEDS.

LONDON: *June* 13.—The seed markets this week have been very thinly attended, and, as is usual during the month of June, the amount of actual business doing has been almost *nil*. Of red Clover and Trefoil seeds the stocks remaining over until next season are not unduly large, and holders, in consequence, do not press their goods for sale. Of the new crop of Trifolium incarnatum, the home and foreign reports are satisfactory, and prices are accordingly expected to open at a moderate level. As previously noted, a few offers of Trifolium have come to hand from France—the seed to be delivered here in something under two months from the present time. Mustard and Rape seed move off slowly on former terms; choice samples of both these articles are scarce, and under the stimulus of a brisk sale quotations would probably advance. Canary seed continues to droop in value, but Hemp seed is unchanged. In feeding Linseed there is no movement. The inquiry for blue Peas shows increased animation, and the few lots left are being bought up at an advance on recent currencies of fully 2*s.* to 3*s.* per qr. Late as it is, the demand for spring Tares is not yet quite over. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday trade was extremely dull. The warm, brilliant weather and the promising appearance of the crops rendered millers very cautious in their purchases of Wheat, and any offer of less money was eagerly accepted. This applies not only to Wheat but to Barley, Oats, Maize, Beans, Peas, and flour, all of which were decidedly cheaper where pressed for sale. The top price of town-made flour was reduced 4*s.*, or to 56*s.* per sack.—On Wednesday there was very little trade for cereal produce. The supply of English Wheat was small, but there was a pretty large show of foreign, and, as on Monday, where there was any pressure to sell lower prices had to be submitted to. Oats and Maize found very few buyers, while there was little or no inquiry for other descriptions of produce.—Average prices of corn for the week ending June 9:—Wheat, 65*s.*; Barley, 32*s.*; Oats, 27*s.* 7*d.* For the corresponding week last year.—Wheat, 47*s.* 4*d.*; Barley, 32*s.* 10*d.*; Oats, 27*s.*

CATTLE.

At the Metropolitan Market on Monday there was a larger number of beasts than on Monday se'nnight. The sudden setting in of hot weather made buyers cautious, and prices on the average were lower. The top quotations were only realised for choicest qualities, and a clearance was not effected. The supply of sheep was not excessive, trade was heavy, and prices lower. Sales were dearer. The few calves on offer made a fair price. Quotations:—Beasts, 4*s.* 4*d.* to 5*s.* 2*d.*, and 5*s.* 6*d.* to 6*s.*; calves, 5*s.* 4*d.* to 6*s.* 4*d.*; sheep, 4*s.* 8*d.* to 5*s.*, and 5*s.* 8*d.* to 6*s.* 4*d.*; lambs, 7*s.* 4*d.* to 8*s.* 4*d.*—On Thursday trade, though quiet, ruled rather steadier, and the tendency of prices was upwards. Beasts were quoted the turn dearer, and so were sheep, notwithstanding the warm weather. Supplies in both cases were short. Calves were rather firmer.

HAY.

At Whitechapel on Tuesday Clover was firm, but there was a dull trade for hay and straw at rather less money. Prices were:—Clover, 100*s.* to 128*s.*; inferior, 85*s.* to 95*s.*; prime meadow hay, 90*s.* to 120*s.*; inferior, 70*s.* to 85*s.*; and straw, 40*s.* to 56*s.* per load.—Thursday's trade was very quiet, with fully an adequate supply. Quotations:—Clover, best, 118*s.* to 130*s.*; inferior, 100*s.* to 115*s.*; hay, best, 113*s.* to 123*s.*; inferior, 75*s.* to 108*s.*; and straw, 42*s.* to 56*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 128*s.* to 132*s.*; inferior, 105*s.* to 116*s.*; superior Clover, 132*s.* to 140*s.*; inferior, 110*s.* to 120*s.*; and straw, 46*s.* to 60*s.* per load.

POTATOS.

The Borough and Spitalfields reports for Monday state that there was a steady demand, and, with moderate supplies, quotations were much the same as last week:—Kent Regents, 100*s.* to 130*s.* per ton; Essex ditto, 80*s.* to 110*s.*; rocks, 120*s.* to 130*s.*; flukes, 120*s.* to 200*s.*; Victorias, 110*s.* to 170*s.*—The arrivals in London from abroad last week comprise 16,944 bags from Antwerp, 4063 sacks 17 bags Dunkirk, 2687 packages 1726 boxes and 649 bags Lisbon, 3608 bags Ghent, 4958 Stettin, 764 packages 41 sacks 23 boxes 180 casks and 23 bags Malta, 1377 bags 287 sacks Boulogne, 830 bags Harlingen, 270 Brussels, 736 packages Gibraltar, 2414 bags Rouen, 2898 bags Hamburgh, 4581 boxes Ostend, 65 cases Valencia, and 20 packages Palermo.

COALS.

There was a better demand for house coals on Monday than prevailed on the previous occasion, but prices remained unaltered. The quotatiins were:—Walls End—Haswell, 19*s.*; Hetton, 19*s.*; Hetton Lyons, 18*s.* 9*d.*; Lambton, 18*s.* 6*d.*; Original Hartlepool, 19*s.*; South Hetton, 19*s.*; Chilton, 18*s.* 3*d.*; East Hartlepool, 18*s.* 9*d.*; South Hartlepool, 17*s.*; South Kelloe, 17*s.* 9*d.*; Tees, 18*s.* 9*d.* Wednesday's figures showed no alteration.

COCOA-NUT FIBRE REFUSE may be had at 1*s.* per 4-bushel bag, bag included; a truck, 700 bushels, £1 9*s.*; one-horse load may be had at the factory, 3*s.*, by sending for it.
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COCOA-NUT FIBRE REFUSE, newly made.—Reduced price, in 4 bushel bags, at 1*s.*, bags included: 100, 20*s.*; or Truck-load, 30*s.* Delivered free to any rail in London.
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Fresh SPHAGNUM, 10*s.* 6*d.* per sack.
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Prepared by JOHN KILNER, Wortley, near Sheffield.

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J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

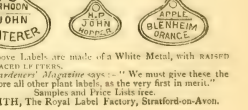
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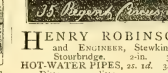


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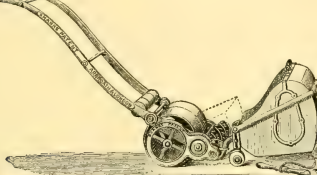


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Boots for Horse's feet, 20*s*. per set.

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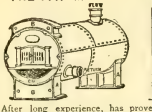
25-inch Machine	£13	10	0
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30-inch Machine	17	0	0

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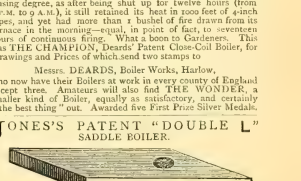


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10 „	..	..	0	6	0	21 „	.. ..	0 11 6
11 „	..	..	0	6	6	22 „	.. ..	0 12 0
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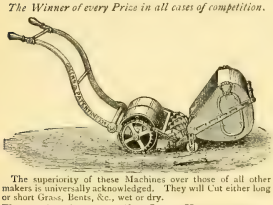
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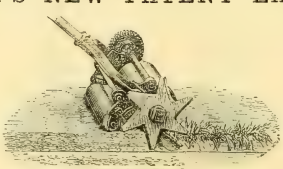
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Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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With the Number for JULY 7 will be presented a Special Twelve-page ROSE SUPPLEMENT, and a beautifully COLOURED PLATE of a GROUP of ROSES.—(See back page.)

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EDWD. CARPENTER, Sec.

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Mr. E. S. DODWELL, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W.; or Mr. E. BENNETT, Rahley Nurseries, Barnet, Herts; or Mr. W. W. ROBERTSON, Royal Aquarium, Westminster, S.W.

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Cemetery Nursery, Gravesend.

Primulas, Primulas, Primulas.

WILLIAMS' superb strain, 1*s.* 6*d.* per dozen, 10*s.* per 100; package and carriage free. CINERARIAS, choicest assortment, same size and price. The above are quite equal to those I have sent out in previous years. Cash with order.
JOHN STEVENS, The Nurseries, Coventry.

New and Choice Orchids, &c.

THE NEW PLANT and BULB COMPANY beg to call attention to their NEW LIST (No 34), just published, and to respectfully invite all intending Purchasers to send for a copy before giving their Orders. Post-free on application. Lion Walk, Colchester.

CHARLES TURNER'S New Spring CATALOGUE contains choice selections, with full descriptions, of Cinerarias, Chrysanthemums, Dahlias of all classes, Pelargoniums, including Show, French, Fancy, Zonal, and Tricolor; New Roses, and all the new and popular Bedding Plants: which may be had, post-free, on application.
The Royal Nurseries, Slough.

The Finest New Bedding Plant of the Season.

AGERATUM "LADY JANE."—For medium-sized beds or ribbon lines this is *par excellence*—compact habit of growth, dense dark green foliage, and good constitution, growing from 12 to 14 inches high. The flowers when fully expanded are a bright blue, produced in abundance throughout the season.
Price 3*s.* per dozen. Special price per 100 and 1000.
R. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.
The Nurseries, Winchester.

To the Trade.—Tea Roses on Seedling Briar.

EDWIN HILLIER has to offer very fine Plants of NIPHETOS, DEVONIENSIS, and SOUVENIR D'UN AMI at 80*s.* per 100. Extra fine plants, in twenty-five or fifty varieties, 55*s.* to 65*s.* per 100. Cash or reference to accompany all orders. New (1877) CONTINENTAL ROSES, fine plants, 18*s.* per dozen.
The Nurseries, Winchester.

To the Trade.

HYDRANGEA "THOMAS HOGG," new White.—Upwards of 200 plants of this beautiful novelty now ready (see *Gardeners' Chronicle*, June 16, p. 758). Strong plants, 30*s.* per dozen; second size, 24*s.* per dozen: from cutting pots, fire by post, 20*s.* per dozen.
WILLIAM GROVE, St. Owen and Tupsley Nurseries, Hereford.

Pansies and Violas.

MESSRS. DOWNIE AND LAIRD, Royal Winter Gardens, Edinburgh, beg to intimate that they Collected at Show and FANCY PANSIES, and VIOLAS, embracing all the finest in cultivation, are now in fine flower at their Pinkhill Nursery, and may be seen any day (Sunday excepted). Over fifty varieties of bedding Pansies and Violas have been planted out in rows 30 feet long to test their merits.

LOBELIA BLUE BEAUTY without doubt has proved the finest Blue Lobelia, also one of the very best Bedding and Decorative plants in cultivation. Strong plants, in flower, 6*s.* per dozen, 40*s.* per 100. Three plants, free by post, for 2*s.* 6*d.* Trade quotations.
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

Clearance Sale.

CHOICE AMERICAN and OTHER POTATOS. Price 12*s.* per sack, or 8*s.* per cwt., free on rail, Norwich. Early Rose, Champion Regents, Red-skin Flourball, Breese's Peerless, Brownell's Beauty, Yorkshire Hero, Scotch Blue Regents, Wood's Scarlet Prolific, Alpha, &c. Orders will be sent out in succession till all are cleared.
DANIELS BROS., Seedsmen to the Queen, Norwich.

WANTED, IMMEDIATELY, 300 or 400 GERANIUM VESUVIUS. State price to S. COOPER, Nurseryman, Hadleigh, Suffolk.

WHOLESALE LISTS of FLOWER SEEDS WANTED.—The Advertiser requires at once the following, of last year's saving:—Double Hollyhock, Sweet William, and Wallflower. State price per pound.
F. K. T., High Wycombe, Bucks.

TREE FERNS—Splendid Pair—ALSOPHILA AUSTRALIS; fronds, 5 feet; length of stem, 2 feet; in No. 4 pots. To be Sold cheap. Apply
M. CHAPMAN, Sydenham Park Nursery, Sydenham, S.E.

SNOWDROPS, NARCISSUS, &c. Please quote per 1000 to
AUSTIN AND MCASLAN, Seedsmen, 16, Buchanan Street, Glasgow.

CATALOGUES. — His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (by post) to
S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

Verbenas, Lobelias, &c.

WILLIAM BADMAN can still offer VERBENAS, Purple, White, Scarlet, from single pots, 12*s.* 6*d.* per dozen, 100*s.* per 100; LOBELIAS of sorts, HELIOTROPIUM and AGERATUM, 12*s.* 6*d.* per dozen, 100*s.* per 100. Terms cash, packing included.
Cemetery Nursery, Gravesend.

Verbenas for the Million.

S. BIDE can still supply a few thousand VERBENAS, strong, spring struck, healthy plants, in good variety, and true to name, at 6*s.* per 100. Also well hardened plants, fit for immediate bedding, at 8*s.* per 100. Package free for cash with order to
S. BIDE, Alma Nursery, Farnham, Surrey.

JEAN VERSCHAFFELT'S NURSERIES, 134, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium. CATALOGUES free on application.
Agents in London: Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

EAST LOTHIAN INTERMEDIATE STOCKS.—We have to offer finest strains of the above for present sowing, in four varieties, Scarlet, Purple, White, and White wall-leaved, in packets, 1*s.*, 2*s.* 6*d.*, and 5*s.* each variety. These Seeds are of the same strain as that supplied to Battersea Park, which has been much admired.
THOMAS METHVEN AND SONS, 15, Princes Street, Edinburgh.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Pines.

TO BE DISPOSED OF, from 80 to 90 Fruiting and Succession PINES; also a small Selection of ORCHIDS.
A. GRANT, The Gardens, Withington Hall, Chelford, Crewe.

To the Trade—Turnip Seeds.

H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application to
Seed Growing Establishment, Wisbech.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of those varieties from MR. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.
Mr. WEBB, Calcot, Reading.

COCOA-NUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand testimonials. Four-bushel bag, 1*s.*, bag included; truck-load, loose, free to any Rail, 25*s.*
POTTER OYLER, Spitalfields Market, N.E.

COCOA-NUT FIBRE REFUSE may be had at 12*s.* per 4-bushel bag, bag included; a truck, 250 bushels, £4 5*s.*; one-horse load may be had at the factory, 3*s.*; by sending for it.
M. GAREY, 57, Old Montague Street, Whitechapel, E.

COCOA-NUT FIBRE REFUSE, as supplied to Carters, Veitch, Wills, Bull, Ewing, Daniels, &c. Cheapest and best advertised. SILVER SAND, PEAT, LOAM, LEAF-MOULD, per bushel, sack, ton, or truck; SPHAGNUM, RAFFIA, &c. Write for Price List.
M. H. BENTOTE, Nunhead, S.E. (near Junction).

SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to
JOHN SHAW AND CO., 29, Oxford Street, Manchester.

SUPERIOR TANNED NETTING, TIFFANY, &c.
MARENDAZ AND FISHER, Wholesale Russia Mat Warehouse, James Street, Covent Garden, W.C.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING
GARDEN POTS of best quality, are requested to send their orders to
J. MATTIEWS, Royal Pottery, Weston-super-Mare.
Pit & List on application.

SALES BY AUCTION.

Wills' New Hybrid Draconas.—(No. 4950.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 26, at half-past 12 o'Clock precisely, the entire stock of about 24 of the very finest of the above magnificent HYBRID DRACÆNAS, raised by Mr. F. Bause, at the Melbourne Nursery, Anerley. Mr. Wills has determined to give the Trade an opportunity of purchasing the above magnificent plants.

On view the morning of Sale, and Catalogues had.

Established and Imported Orchids, Tree Ferns and PALMS, &c.—(Nos. 4970 and 4971.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY and WEDNESDAY, June 26 and 27, at half-past 12 o'Clock each day, a Collection of Specimen STOVE and GREENHOUSE PLANTS, including Palms, Tree Ferns, &c.; an importation of Oncidium Marshallianum, Rchb. f., Sanderiana, F. D. Herschelii; some good Amaryllis and established plants of Odontoglossum vexillarium, O. coronarium, O. Lindeni, &c.; a small importation of Brazilian Orchids, several small collections of established Orchids, including a number of plants of Odontoglossum Alexandræ, a large number of Cattleyas, Lælias, Oncidiums, Miltonias, all healthy and well-established plants; fine plants of Bollea coelestis, and an importation of Orchids from the New Plant and Bulb Company, including plants of Cattleya Acklandiæ, C. Leopoldii, Coryanthes macrantha, Dendrobium species, and many other Orchids, and a few Cacti.

On view the morning of Sale, and Catalogues had.

Imported Orchids.—(No. 4972.)

MR. J. C. STEVENS has received instructions from the New Plant and Bulb Company to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., without reserve, on WEDNESDAY, June 27, a splendid importation, in grand condition, of CATTLEYA ACKLANDIÆ, LÆLIA DAYANA, a new DENDROBIUM; also another new ORCHID (genus unknown), &c.

On view the morning of Sale, and Catalogues had.

The Collection of Established Orchids

of W. H. Michael, Esq., of Cholmeley Park, Highgate.

MR. J. C. STEVENS begs to announce that he has received instructions from W. H. Michael, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, THURSDAY and FRIDAY, July 4, 5 and 6, at half-past 12 o'Clock precisely each day, without reserve, the valuable COLLECTION of ORCHIDS, made and exhibited by that gentleman, who is now removing from Highgate, consisting of some of the finest varieties. Amongst other good things will be found the following:—Aerides Fieldingii, Lobbii, &c.; Angræcum, Chysis bractescens, Cymbidium Mastersii and eburneum; Cattleyas in great variety, including Mendelii, gigas, and Dowiana; Lælia elegans, Turneri, Schilleriana, purpurata, and a grand assortment of superbrown; Odontoglossum of all the principal kinds, including Alexandræ, Pescatorei, cirrhosum, Andersonianum, a magnificent variety; nebulosum, luteopurpureum, Rossii, Rossii roseum, Roezlii, and vexillarium; Dendrobiums Falconeri, Wardianum, Devonianum, albo-sanguineum, Huttoniæ, M'Carthiæ, &c.; Oncidiums splendidum, varicosum, Lanceanum, Weltoni, macranthum, &c.; Phalænopsis grandiflora, Schilleriana, amabilis, Luddemanniana, and rosea; Saccolabium retusum, gigantenm, Holfordii, &c.; Vanda Batemanni, Denisoni, cærulea, tricolor, cærulescens, Batemanni, suavis Veitchii; Cypripedium Veitchii, Dayanum, Argus, Boxeri, Sedeni, caudatum, &c.; Angræcum eburneum, superbum, and sesquipedale; Burlingtonias, Brassias, Pescatoreas, &c.

On view the morning of Sale, and Catalogues had.

Beverley, Yorkshire.

IMPORTANT SALE of carefully selected STOVE and GREENHOUSE PLANTS in the best possible health, no expense having been spared to make this one of the best collections in the country. Also a large quantity of other beautifully grown stock.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Wm. E. Dixon, who is giving up showing, to SELL by AUCTION on the Premises, the Norwood Nursery, Beverley, Yorkshire, (ten minutes' walk from the Station, on TUESDAY, June 26 and following days, at 11 for 12 o'Clock precisely each day, the whole of the magnificent collection of STOVE and GREENHOUSE PLANTS, which has taken numerous prizes at the leading shows, consisting of well-trained specimens of various size, comprising Rougieinvillea, Allamanda, Dipladenia, Allamanda, and other choice Exotics; Stephanotis, Aralcas, Crotons, Dracænas, Tree Ferns, Palms, Anthuriums, Begonias, Orchids, and a large collection of Ferns plants. Also a large quantity of thriving Succession Stock, including Stove and Greenhouse Palms, Ferns, Anthuriums, Orchids, &c.

The Stock may be viewed any time prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Kew Nursery, Kew Road, Richmond, Surrey.

SPECIAL and HIGHLY IMPORTANT SALE to the TRADE of 20,000 choice, RARE and NEW PLANTS, consisting of 6000 Cocos Weddelliana, 2000 Areca purpurea, quite new; 4000 Areca rimata, 1000 Areca Herbsti (not yet sent out, and being the entire stock of this great novelty); also the following well-known and approved varieties, viz.: 1000 Areca Baueri, 1000 Phœnix reclinata, 2000 Kentia Fosteriana, 500 Corypha australis, 1000 Geonoma species, 1000 Latania borbonica and others; also some SPECIMEN PALMS, admirably adapted for Conservatory and Indoor Decoration, together with 1200 AMARYLLIS (in imported choice collection), 500 PRIMULA SINENSIS, 500 MALVA SEBOLDII, 1000 PÆRIS, of sorts, 500 ANTHURIUM SCHERZERIANUM, 500 MYRTLES, 300 SAXIFRACA PERALENSIS, 1000 beautifully-grown YUCCA ALOIFOLIA VARIEGATA, &c., &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. H. Herbst to SELL the above by AUCTION, without reserve, on the Premises, on TUESDAY, July 3, at 12 for 11 o'Clock precisely, in consequence of the number of Lots.

May be viewed one week prior to the Sale. Catalogues had on the Premises, and of the Auctioneers, Estate Agents, and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

FOR SALE, Nearly TEN YEARS' LEASE of a small Old-established FLORIST'S BUSINESS. Price £125, with large Dwelling-house. Main thoroughfare. Post-office, Southampton Street, Camberwell, S.E.

To Nurserymen and Florists.

FOR SALE, on Lease, a NURSERY, containing Six Greenhouses, Pit, Nursery Stock, &c., with good Jobbing Business. Dwelling-house on premises.
G. BUSHEY, London Road, Brighton.

TO be SOLD, a HOUSE, 8 ACRES of excellent ARABLE LAND, and 2 ACRES of GRASS LAND, suitable for Seed Growers and Nurserymen, 4 miles from Spalding, Lincolnshire, and close to a railway station. For particulars apply to
W. HALL, Morton, Bourn.

DINNER to Mr. F. W. WILSON.—The Friends of Mr. F. W. WILSON, at the instance of the LINDLEY CLUB, have invited him to a COMPLIMENTARY DINNER at the "Criterion," Regent Circus, W., on TUESDAY, July 3, to Commemorate his Twenty-five Years' Labours as Manager of the Exhibitions at the Crystal Palace. Accommodation will be provided for a limited number of Exhibitors and others, who wish to join the party, and it is desired that the necessary Tickets should be secured at once, that the Committee may know in time how many to provide for.
Tickets, 12s. each (exclusive of wine), may be obtained of Mr. HUGH MACKENZIE, 3 and 5, Great Winchester Street Buildings, E.C.

Re John Harrison, deceased.

Pursuant to the Act of Parliament of the 22nd and 23d Vic., cap. 35, intituled "An Act to Further Amend the Law of Real Property and to Relieve Trustees,"

NOTICE IS HEREBY GIVEN, that all Creditors and other Persons having any CLAIM or DEMANDS upon or against the Estate of JOHN HARRISON, late of Catterick Bridge, in the County of York, Nurseryman, who died on the 24th day of AUGUST next: and Notice is Hereby also Given that after that day the said Executor will proceed to distribute the assets of the deceased among the parties entitled thereto, having regard only to the claims of which the said Executor shall then have notice, and that he will not be liable for the assets or any part thereof so distributed to any person of whose debt or claim he shall not then have had notice.—Dated this 21st day of May, 1877.

ALFRED E. HARRISON,
16, Churchyard, Rotherham. Solicitor to the said Executor.

Bedding Plants for the Million.

JAMES HOLDER AND SON'S GUINEA HAMPER consists of eight dozen plants, comprising scarlet, variegated and Geraniums, Verbenas, Calceolarias, single and double Petunias, Dahlias, Ageratums, Lobelias of sorts, Gazanias, Mesembryanthemums, Alternantheras, Heliotrope, Koniges, Echeverias, Sempervivums, Campanulas, Tropæolums, Mesembryanthemums, Fuchsias, &c., all strong healthy plants, in best varieties.
Crown Nursery, Reading.

RODGER, McCLELLAND AND CO. have to offer the following:—
DRACÆNA DRACO, 1½ foot, 30s. per dozen.
DRACÆNA TERMINALIS, 1½ foot, 24s. per dozen.
CHAMÆPEUCE CASSABONÆ, 42s. per dozen.
DIACANTHA, 6s. per dozen.
ARALIA LITTORALIFOLIA, good plants, 30s. to 42s. per doz.
SIEBOLDII, 9s. per dozen.
SEMPERVIVUM HOLLII, 42s. per dozen.
BEGONIA, Sutherland and Fancy, 3s. per dozen.
ECHEVERIA METALLICA GLAUCA, very strong, 12s. per dozen.
BEGONIAS, tuberous, good plants and sorts, new, out-of-doors, 6s., 9s., and 12s. per dozen.
64, Hill Street, Newry.

Surplus Bedding and Other Plants.
REDUCED PRICES.

WOOD AND SONS OFFER the following, fine established plants, in single pots:—
AGERATUM, Countess of Stair, 10s. per 100.
ALTERNANTHERA, 6s. per 100.
CALCEOLARIA AUREA FLORIBUNDA, 12s. per 100.
CAMELLIAS, in variety, to name, 30s. to 42s. per dozen.
CENTAUREA CANDIDISSIMA, 18s. per 100.
CANDIDISSIMA COMPACTA, 25s. per 100.
CLEMATIS, best varieties, to name, 12. 6d. to 2s. 6d. each.
DAHLIAS, Show and Fancy, 3s. per dozen; 25s. per 100.
ECHEVERIA SECUNDA, 12s. per 100.
FUCHSIAS, in variety, to name, 4s. per dozen, 25s. per 100.
GLOXINIAS, in variety, to name, 18s. to 30s. per dozen.
GAZANIA SPLENDENS, 12s. per 100.
HELIOTROPES, 12s. per 100.
HERBACEOUS and ALPINE PLANTS, in great variety, 4s. to 6s. per dozen.
HOLLYHOCKS, seedlings from a superb collection, free from disease, 6s. per dozen.
LANTANAS, sorts, 2s. per dozen.
LEUCOPHYTON BROWNII, 8s. per 100.
LOBELIAS, in variety, 10s. per 100.
LOPHOSPERMUM SCANDENS, 4s. per dozen.
MAURANDYA BARCLAYANA, 4s. per dozen.
PELARGONIUMS, Show, Spotted, and Fancy, in 5-inch pots, fine flowering plants, 6s. per dozen, 45s. per 100
" Golden Tricolor, in variety, 3s. 6d. per dozen, 25s. per 100
" Single Zonals, in variety, 16s. per 100.
" Ivy-leaved, in variety, 2s. 6d. per dozen.
PETUNIAS, single, 10s. per 100.
" double, to name, 14s. per 100.
PHLOX, Herbaceous, best named sorts, 6s. per dozen.
PYRETHRUM, Golden Feather, out of pots, 4s. per 100.
" LACINIATA, new, 3s. per dozen.
SALVIAS, sorts, 2s. per dozen.
SEMPERVIVUM CALIFORNICUM, 8s. per 100.
STOCKS, Ten-week, from imported seed, 3s. per 100.
VERBENAS, in great variety, 10s. per 100.
" in great variety, from stores, 3s. 6d. per 100.
The Nurseries, Huntingdon



New Plants for 1877.

B. S. WILLIAMS' ILLUSTRATED NEW PLANT CATALOGUE for 1877 is now ready, and will be sent, post-free, to all applicants.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to flower in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Strong plants in pots, 12s. per dozen; extra strong plants, 2 years old, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.
RICHARD SMITH, Nurseryman, Worcester.

To the Trade.

BEDDING PLANTS.—Fine, well grown, strong stock, per dozen:—
VERBENAS, Eclipse (scarlet), Purple King, and Boule de Neige (pure white), in splendid stuff, 12s. per 100.
GERANIUMS, Zonal, to name, 24s. per 100.
CALCEOLARIA, aurea floribunda, 14s. per 100.
AGERATUMS, HELIOTROPES, IRESINES, LOBELIAS, ALTERNANTHERA, SWEET SCENTED, VERBASCUM FELTIA, GAZANIA SPLENDENS, GNAPHALIUM LANATUM, MESEMBRYANTHEMUM, cord. var., NIEREMBERGIA GRACILIS, PERILLA, ZAGE TES SIGNATA, 9d. per dozen. GOLDEN THYME, VERBENA VENOSA, and VIOLA CORNUTA PERFECTA, 12s. per 100.
CENTAUREA RAGUSINA, 18s. per 100.
SALVIA PATENS, 2s. 6d. per dozen.
ACACIA LOPHANTHA, 4s. per dozen.
ARTEMISIA ABROTANIFOLIA, 3s. 6d. per dozen.
ABUTILON THOMPSONIÆ, 2s. 6d. per dozen.
COPROSMA BAUERIANA var., 4s. per dozen.
SEDUM ACRE AUREUM, 15s. per 100.
ECHEVERIA SECUNDA GLAUCA, 15s. per 100.
F. W. COOPER, Florist, Huntingdon.

AVAN GEERT, NURSERYMAN, Ghent, offer the following MISCELLANEOUS PLANTS, of which a good stock is now on hand, viz.:—

50	Acacias, in 25 sorts for 40s.	12	„ radicans, 9s.
12	Adiantum farleyense, 21s.	12	new Gloxinias, splendid varieties, 18s.
12	„ macrophyllum, 15s.	12	Gynerium jubatum, 15s.
12	„ gracillimum, strong, 72s.	12	Hovea Celsi, 12s.
12	„ cristatum, 9s.	12	Higginsia, of sorts, 18s.
12	Anthurium, of sorts, 30s.	6	Jacaranda mimosifolia, 18s.
50	„ of sorts, 30s.	12	Latania borbonica, table size, 18s., 36s., and 60s.
12	Aschynanthus, of sorts, 18s.	100	Livistona humilis, 3-3½ seedlings, 24s.
12	Asplenium nidus, 12s., 24s., and 36s.	12	Musa ensete, 30s. and 60s.
12	Areca monostachya, 24s. and 42s.	12	Mitraria coccinea, 12s.
6	Aralia Veitchii, 12s.	12	Maranta, 21s.
12	„ Sieboldii, 21s.	12	New Indian Azalea, Jean Vervaene, 5s. each.
12	Agave and Yucca, choice, 42s.	12	New Indian Azalea, Imbricata, 5s. each.
100	Begonia (tuberous), 42s.	100	Pandanus utilis, seedlings, in stores, 30s.
6	Bertolonia Van Houttei, 24s.	12	Phœnix reclinata, 18s.
6	„ marmorata, 15s.	12	Chamærops Fortunei, 18s., 30s. and 42s.
12	Chamærops Fortunei, 18s., 30s. and 42s.	12	„ humilis, 18s., 30s., and 48s.
12	Coffea arabica, 18s.	12	Pritchardia filifera (the new Californian Palm), 30s. and 60s.
12	Cocos Romanzoffiana, 60s.	12	Psychotria Alexandræ, a very elegant Palm, 30s. and 60s.
12	Croton, choice varr., 15s.	12	Pyschotria Jasminoides, 18s.
12	Chorozema varium, 15s.	12	Passiflora, of sorts, 12s.
12	Cyrtomium atratum, 18s.	12	choice Stove Plants, middle size, 18s.
12	Cyathea dealbata, 18s. and 30s.	12	choice Greenhouse Plants, 18s. and 30s.
12	Caladium, choice varr., 15s.	12	Dorycnium Palmeri, 30s. and 60s.
100	Darea diversifolia, 40s.	12	choice cool Orchids, 63s.
12	Dracæna, choice varieties, 18s. and 30s.	12	Saracenia purpurea, strong growing plants, 42s.
12	Dorycnium Palmeri, 30s. and 60s.	12	„ flava, 60s.
12	Disa grandiflora, 100s.	12	Thunbergii, 60s.
6	Dionæa muscipula, 21s.	12	choice Selaginella, 9s.
12	Eurya latifolia, 30s.	12	Sericobotna ignea, 9s.
50	choice Ferns, own selection, 21s., 42s. and 63s.	12	Soliya saligna, 42s.
3	Goodyera pubescens, 12s.	12	Yucca Whippleyi, nice plants, 30s.
25	Gesnera macrantha, strong bulbs, 21s.		
12	Gardenia florida, 9s.		

Surplus Stock of CACTUS REVOLUTE.

The finest stock of growing plants in Europe, splendid specimens, with fine regular heads of fronds, from £3, £5, £10, £15, and £20.



CHOICE FLOWER SEEDS
For Present Sowing.

Our own superb strains, guaranteed of unsurpassable quality, 1000 of each free on receipt of P.O.O. or Stamps.

	Per packet—s. d.
AURICULA, choicest mixed, alpine	1 0
CALCEOLARIA HYBRIDA, very choice, mixed	1 6
CINERARIA HYBRIDA, from named flowers	2 6
CARNATIONS and PICOTEE, from stage flowers	2 6
HOLLYHOCK, Fine English	0 6
INDIAN PINK, splendid double, mixed	0 4
MIMULUS, Claphami-sup-th, very fine	1 0
MYOSOTIS DISSITIFLORA—Forget-me-not	0 6
PANSY, choicest mixed English	0 6
PRIMULA SINENSIS, choicest mixed	2 6
POLYANTHUS, finest gold-laced, choice	1 0
STOCK, Brompton, scarlet Giant	0 6
„ East London, splendid	0 6
SWEET WILLIAM, very choice, mixed	0 6
WALLFLOWERS, splendid double, mixed	0 6
GREENHOUSE PERENNIALS, 12 fine varieties	6 0
HARDY PERENNIALS, 12 choice sorts, Pansy, Hollyhock, &c.	4 6

DANIELS BROS.,
ROYAL NORFOLK SEED ESTABLISHMENT,
Norwich.



ROYAL HORTICULTURAL SOCIETY,

SOUTH KENSINGTON S.W.

GREAT SUMMER SHOW, JUNE 19, 1877.

LIST OF MEDALS AWARDED.

AMATEURS.

CLASS 2.—Group of 12 STOVE and GREENHOUSE PLANTS in Flower.

Mr. G. Wheeler, Gr. to Sir F. H. Goldsmid, Bart, M.P., St. John's Lodge, Regent's Park. Large Silver Banksian.

CLASS 3.—Group of 12 FINE-FOLIAGED PLANTS.

T. M. Shuttleworth, Esq. (Mr. H. Thornber, Gr.), Howick House, Preston. Large Gold Banksian.

CLASS 5.—Group of 8 SPECIMEN FERNS.

Mr. J. Stone, Gr. to C. Walton, Esq., Manor House, East Acton. Small Silver Banksian.

CLASS 8.—Group of 12 ORCHIDS.

Mr. H. Heims, Gr. to F. A. Philbrick, Esq., Q.C., Avenue Road, Regent's Park, N.W. Small Gilt Flora.

Mr. W. Perry, Gr. to J. W. Miles, Esq., Shirehampton, Bristol. Silver Flora.

CLASS 10.—ROSES, Cut Blooms, in Boxes.

J Hollingworth, Esq., Turkey Court, Maidstone. Small Silver Banksian.

Mr. J. W. Chard, Gr. to Sir F. Bathurst, Bart., Clarendon Park, Salisbury. Large Bronze Banksian.

CLASS 14.—Group of PELARGONIUMS of any or all Classes.

Mr. J. James, Gr. to W. F. Watson, Esq., Redlees, Isleworth. Silver-Gilt Flora.

Mr. W. Lacey, Gr. to C. S. Mortimer, Esq., Wigmore Park, near Dorking. Large Silver Banksian.

Mr. J. George, Gr. to Miss Nicholson, Putney Heath. Large Bronze Banksian.

CLASS 16.—Group of Hardy HERBACEOUS PLANTS in Flower.

Mr. W. P. Roberts, Gr. to W. Terry, Esq., Peterborough House, Fulham, S.W. Large Bronze Banksian.

CLASS 17.—Group of BEDDING PLANTS, in or out of Flower, to be shown in 12-inch Pans.

Mr. W. P. Roberts. Small Silver Banksian.

CLASS 18.—Group of LILIUMS in Pots, or Cut Spikes.

G. F. Wilson, Esq., F.R.S., Heatherbank, Weybridge Heath. Large Bronze Banksian.

CLASS 19.—Group of IRIS, including XIPHIUM.

Mr. W. P. Roberts. Small Bronze Banksian.

CLASS 21.—Collection of FRUITS.

Mr. G. T. Miles, Gr. to Lord Carington, Wycombe Abbey, High Wycombe. Silver-Gilt Flora.

Mr. W. Cox, Gr. to Earl Beauchamp, Madresfield Court, Great Malvern. Large Silver Banksian.

Mr. W. Coleman, Gr. to Earl Somers, Eastnor Castle, Ledbury. Large Silver Banksian.

Mr. J. H. Goodacre, Gr. to Earl of Harrington, Elvaston Castle, Derby. Small Silver Banksian.

CLASS 22.—Single Dishes of GRAPES, PINE-APPLES, STRAWBERRIES, PEACHES, and NECTARINES, or Collections of any of these Fruits.

Mr. J. Horsnell, Gr. to J. L. Lovibond, Esq., Starts Hill, Farnborough. Small Silver Banksian.

Mr. W. Bates, Gr. to W. H. Punchard, Esq., Poulett Lodge, Twickenham. Large Bronze Flora.

Mr. P. Edwards, Gr. to Mrs. Tristram, Fowley, Liphook. Large Bronze Banksian.

Mr. Akehurst, Jun. Grove, Kentish Town. Small Silver Banksian.

Mr. W. Toomer, Gr. to W. Knowles, Esq., Ribbledale, Leigham Court Road, Streatham. Large Bronze Banksian.

CLASS 23.—Collection of VEGETABLES.

Mr. G. T. Miles, Gr. to Lord Carington, Wycombe Abbey, High Wycombe. Large Silver Flora.

Mr. W. G. Pragnell, Gr. to G. D. W. Digby, Esq., Sherborne Castle, Dorset. Large Silver Banksian.

Mr. W. Iggulden, Gr. to R. B. W. Baker, Esq., Orsett Hall, Essex. Large Bronze Banksian.

NURSERYMEN and TRADE.

CLASS 25.—Group of MISCELLANEOUS PLANTS, in or out of Flower.

Messrs. W. Rollisson & Sons, The Nurseries, Tooting. Silver Flora.

Mr. J. Wills, Royal Exotic Nursery, South Kensington, S.W. Small Gold Banksian.

Mr. B. S. Williams, The Nurseries, Upper Holloway, N. Small Gold Banksian.

Messrs. W. Cutbush & Son, The Nurseries, Highgate, N. Silver Flora.

Messrs. Osborn & Sons, The Nurseries, Fulham, S.W. Silver-Gilt Flora.

Messrs. J. Veitch & Sons, Royal Exotic Nursery, Chelsea, S.W. Large Gold Flora, and Extra Gold Medal for Nepenthes sanguinea.

Messrs. John Laing & Co., Stanstead Park Nursery, Forest Hill. Silver Flora.

Messrs. T. Jackson & Son, Nurseries, Kingston-on-Thames. Small Gold Banksian.

Mr. W. Bull, King's Road, Chelsea, S.W. Large Gold Banksian.

CLASS 27.—Group of FINE-FOLIAGED PLANTS.

Mr. J. Wills, Royal Exotic Nursery, South Kensington, S.W. Silver-Gilt Flora.

Messrs. James Carter & Co., 237 and 238, High Holborn, W.C. Silver Flora.

CLASS 28.—Group of PALMS and CYCADS.

Mr. J. Wills, Royal Exotic Nursery, South Kensington, S.W. Silver-Gilt Flora.

Messrs. Hooper & Co., Covent Garden, W.C., Group of Palms. Small Silver Banksian.

CLASS 29.—Group of FERNS.

Messrs. J. Ivery & Sons, The Nurseries, Dorking. Large Silver Banksian.

CLASS 34.—ROSES, Cut Blooms, in Boxes.

Mr. C. Turner, Royal Nurseries, Slough. Large Silver Banksian.

CLASS 35.—Group of ERICAS.

Messrs. T. Jackson & Son, Nurseries, Kingston-on-Thames. Silver-Gilt Flora.

CLASS 38.—Group of PELARGONIUMS of any or all classes.

Mr. C. Turner. Silver Gilt Flora.

CLASS 40.—Group of Hardy HERBACEOUS PLANTS in Flower, in Pots.

Mr. R. Dean. Large Bronze Banksian.

CLASS 41.—Group of BEDDING PLANTS in or out of Flower, to be shown in 12-inch Pans.

Mr. R. Dean. Large Bronze Banksian.

CLASS 42.—Group of LILIUMS in Pots, or Cut Spikes.

Messrs. Barr & Sugden, 102, King Street, Covent Garden, W.C. Small Silver Banksian.

CLASS 43.—Group of IRIS, including Xiphium.

Mr. R. Parker, Exotic Nursery, Tooting. Silver Flora.

Messrs. Barr & Sugden. Large Silver Banksian.

CLASS 45.—Group of DECORATIVE PLANTS, in or out of Flower, as grown for Covent Garden Market, to occupy space not exceeding 200 square feet.

Mr. J. Reeves, Nurseryman, &c., Acton. Small Gold Banksian.

Mr. H. Herbst, Kew Nursery, Richmond. Small Gold Banksian.

CLASS 47.—GRAPES, PINE-APPLES, STRAWBERRIES, PEACHES, or NECTARINES, Single Dishes or Collections of any of these Fruits.

Mr. R. Farance, Florist, Chadwell Heath, Essex. Silver-Gilt Flora.

CLASS 48.—Collection of VEGETABLES.

Mr. A. J. Harwood, Market Gardener, St. Peter's Street, Colchester. Small Silver Banksian.

CLASS 49.—MISCELLANEOUS.

Mr. J. Wills, Royal Exotic Nursery, South Kensington, S.W., Group of New Hybrid Dracænas. Small Gold Banksian.

Messrs. Hooper & Co., Covent Garden, W.C. Silver Flora.

Messrs. H. Lane & Son, The Nurseries, Great Berkhampstead, Group of Specimen Ivies. Silver-Gilt Flora.

Messrs. Barr & Sugden, Group of Double Pyrethrums. Large Bronze Banksian.

Mr. H. Hooper, Bath, Cut Blooms of Pyrethrums, Pansies, and Ranunculi. Large Bronze Banksian.

Mr. H. Cannell, Swanley, Kent, Cut Blooms of Pelargoniums. Small Bronze Banksian.

Mr. C. Turner, Collection of Specimen Ivies and Box of Cut Picotees. Silver Flora and Small Silver Banksian.

BOUQUETS and FLOWERS, &c.

Miss S. Moyses, 22, Stockbridge Terrace, Belgravia, one Bride's Bouquet. Small Silver Banksian.

TABLE DECORATIONS, &c.

Messrs. W. Wood, Parmley & Co., Dinner-table Decorations. Small Silver Banksian.

Messrs. Pounce & Sons, Table Decorations. Large Silver Banksian.

PRIZES OFFERED by MR. WILLIAM BULL.

CLASS A.—12 NEW PLANTS, introduced and sent out for the first time since the commencement of 1874. The plants entered for this competition to be only those announced in Mr. Bull's Catalogue, and sent out by him. (Amateurs.)

1st, T. M. Shuttleworth, Esq. (Mr. H. Thornber, Gr.), Howick House, Preston.

2d, Mr. C. Rann, Gr. to J. Warren, Esq., Handcross Park, Crawley, Sussex.

CLASS B.—12 NEW PLANTS, introduced and sent out for the first time since the commencement of 1874. The plants entered for this competition to be only those announced in Mr. Bull's Catalogue, and sent out by him. (Nurserymen.)

1st, Mr. B. S. Williams, The Nurseries, Upper Holloway, N.

2d, Messrs. J. & R. Thyne, Great Western Nurseries, Hillhead, Glasgow.

CLASS D.—12 NEW PLANTS, introduced and sent out for the first time since the commencement of 1874. The plants entered for this competition to be only those announced in Mr. Bull's Catalogue, and sent out by him. (Nurserymen, not having previously won any of Mr. William Bull's Silver Cups.)

1st, Mr. J. Wills, Royal Exotic Nursery, South Kensington.

PRIZES OFFERED by the PELARGONIUM SOCIETY.

CLASS 1.—6 Large-flowered SHOW PELARGONIUMS.

1st, Mr. C. Turner, £5.

2d, Mr. J. Weir, Gr. to Mrs. Hodgson, The Elms, Hampstead, London, N., £3.

CLASS 2.—4 Large-flowered SHOW PELARGONIUMS.

1st, E. B. Forster, Esq., Clewer Manor, Windsor, £2.

2d, Mr. C. Turner, £1.

CLASS 3.—6 Smaller-flowered FANCY PELARGONIUMS

1st, Mr. J. Weir, £5.

2d, Mr. C. Turner, £3.

CLASS 4.—18 Large-flowered SHOW-TYPE PELARGONIUMS.

1st, Mr. C. Turner, £5.

2d, Messrs. J. & J. Hayes, Florists, Lower Edmonton, £3.

CLASS 6.—9 ZONAL PELARGONIUMS. (Florists' Class.

1st, Mr. J. Catlin, Gr. to Mrs. Lermitte, Sen., Finchley, N., £6.

2d, Mr. C. Burley, The Nursery, Brentwood, £4.

3d, Mr. W. Meadmore, The Nursery, Romford, £2.

CLASS 7.—4 ZONAL PELARGONIUMS. (Florists' Class.)

1st, Mr. C. Burley, £2.

2d, Mr. J. Catlin, £1.

3d, Mr. J. George, Gr. to Miss Nicholson, Putney Heath, S.W.

CLASS 8.—9 ZONAL PELARGONIUMS. (Decorative Class.)

1st, Mr. J. Catlin, £6.

2d, Mr. W. Birse, Gr. to J. H. Lermitte, Esq., Knightons Finchley, N., £4.

3d, Mr. J. Weir, £2.

CLASS 9.—18 ZONAL PELARGONIUMS, irrespective of Class.

1st, Mr. J. Catlin, £5.

2d, Mr. C. Burley, £3.

3d, Mr. W. Meadmore.

CLASS 10.—12 ZONAL PELARGONIUMS, irrespective of Class.

1st, Mr. W. Birse, £3.

CLASS 11.—12 VARIEGATED-LEAVED ZONAL PELARGONIUMS.

1st, Mr. W. Meadmore, £4.

CLASS 12.—6 VARIEGATED-LEAVED ZONAL PELARGONIUMS.

1st, Mr. W. Meadmore, £2.

CLASS 13.—9 BRONZE BICOLOR ZONAL PELARGONIUMS.

1st, Mr. W. Meadmore, £2.

CLASS 14.—6 DOUBLE-FLOWERED ZONAL PELARGONIUMS.

1st, Mr. J. Catlin, £2.

2d, Messrs. E. C. Henderson & Son, Pine apple Nursery Maida Vale, £1.

3d, Mr. C. Turner.

CLASS 15.—4 HYBRID IVY-LEAVED PELARGONIUMS

1st, Mr. J. George, £1.

CLASS 16.—1 ZONAL PELARGONIUM.

1st, Mr. C. Burley, 15s.

Equal 1st, Mr. H. Cannell, 15s.

CLASS 20.—1 DOUBLE-FLOWERED ZONAL PELARGONIUM.

1st, Mr. C. Burley, 15s.

2d, Messrs. E. G. Henderson & Son.

CLASS 21.—1 DOUBLE-FLOWERED ZONAL PELARGONIUM.

1st, Mr. J. Catlin, 15s.

2d, Mr. W. Meadmore.

CLASS 22.—1 DOUBLE-FLOWERED IVY-LEAVED PELARGONIUM

1st, Messrs. E. G. Henderson & Son, 15s.

CLASS 23.—24 ZONAL PELARGONIUMS, Cut Blooms.

1st, Mr. C. Burley, £1 10s.

2d, Mr. H. Cannell, 15s.

3d, Mr. J. R. Pearson, Chilwell Nurseries, Nottingham.

CLASS 24.—12 ZONAL PELARGONIUMS, Cut Blooms

1st, J. McIntosh, Esq., Duneevan, Weybridge, £1.

QUANTITY and QUALITY.

NEW ROSES, IN POTS.
TEA and NOISETTE ROSES, IN POTS.
CLEMATISES, IN POTS, of best New and Old Sorts.
ORCHARD-HOUSE TREES, IN POTS.
VINES, IN POTS.

Also, by far the largest and most carefully grown Outdoor NURSERY STOCK in this part of England.

LISTS FREE.

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THE ROYAL NORFOLK NURSERIES, EATON, NEAR NORWICH.



Pine-Apple Nursery, Maida Vale, London, W.

E. G. HENDERSON AND SON are now sending out the following plants—several of which are being offered for the first time. See the May Bedding and Soft-wooded Greenhouse Plant Catalogue for descriptions, which will be forwarded on application :—

PELARGONIUM Queen of Stripes, large flowered section, with Carnation-like striped flowers.
,, Ivy-leaved Nemesis, the finest coloured in the group.
,, ,, Dame Blanche, very delicate colour.
BOUVARDIA ROEZLII, new species.
LOBELIA Pine-apple Gem and Princess of Wales.
MIKANIA SCANDENS VARIEGATA, a useful plant.
CUPHEA MINIATA IGNEA, brilliant.
DACTYLLIS ELEGANTISSIMA AUREA, fine.
MIMULUS, a collection of new colours, and double-flowered.
VERBENAS and PETUNIAS, new colours and varieties.
SALVIA SPLENDENS BRUANTI, the finest.
ABUTILON DARWINII TESSELATA, useful.
SEED—the best quality that can be grown—of Calceolaria, Cineraria, Primula, single and double ; Cyclamen, Pansy, &c.
See Advertisement May 5, or our SEED CATALOGUE, for prices, &c.

THE NEW SEEDLING ROSE,
"QUEEN of BEDDERS"
(NOBLE).

See Coloured Plate (after Mrs. Duffield), "Gardeners' Chronicle," May 5, 1877.

Perhaps the finest of all the English Seedling Roses of recent introduction. It is *par excellence* a really Bedding Rose in every sense of the word—requires no pegging down, support, or training of any kind, and is a continuous early and late bloomer.

First-class Certificate Royal Horticultural Society, August 7, 1876.

Its inflorescence may be imagined when it is stated that a plant 18 inches high had eighty-four buds and expanded flowers upon it on September 6, 1876.

A constant supply of buds was obtained from early June to November of that year—over five months.

Good Plants are now being sent out in strict rotation at
10s. 6d. each.
Coloured Plates 1*s.* each.

CHARLES NOBLE, BAGSHOT.

TEA SCENTED ROSES.
SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15*s.* to 18*s.* per dozen.
,, extra size, in 6-inch pots, for Greenhouse, set with buds, 24*s.* per dozen.
,, extra size, in 8-inch pots, for Greenhouse, set with buds, 30*s.* to 36*s.* per dozen.
,, Half Specimens, 5*s.* to 7*s. 6d.* each.
NEW FRENCH ROSES of 1877, 30*s.* per dozen.
HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36*s.* to 42*s.* per dozen.

CRANSTON'S NURSERIES, KING'S ACRE, near HEREFORD.
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Bedding Plants, Bedding Plants.

JOHN PERKINS AND SON beg to offer the following, in strong healthy plants, in single pots :—
CALCEOLARIA, Golden Gem, 12*s.* per 100.
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PYRETHRUM AUREA, 10*s.* per 100.
MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATA, 12*s.* per 100.
LOBELIA SPECIOSA, from Cuttings, 10*s.* per 100.
LOBELIA, The Bride, the finest White Lobelia in cultivation, 4*s.* per dozen, 25*s.* per 100 ; price per 1000 on application.
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ESTABLISHED 1785.
SPECIALITIES.
ROSES, FRUIT TREES, CONIFERS.
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KING'S ACRE, near HEREFORD.

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BEG TO ANNOUNCE THAT THEIR
PLANT CATALOGUE FOR 1877
IS NOW READY.

It contains a DESCRIPTIVE LIST of the LEADING NOVELTIES of the SEASON and a SELECT GENERAL LIST of STOVE and GREENHOUSE PLANTS, PALMS, FERNS, MISCELLANEOUS PLANTS suitable for Bedding and other purposes, and Sundries.

Post-free on application.

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TREE FERNS.
THE LARGEST AND BEST STOCK IN EUROPE.
WILLIAM BULL, F.L.S.,
Respectfully invites the Nobility and Gentry to an inspection of the above ; also of his
MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,
Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.
ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

NEW ENGLISH-RAISED SEEDLING ROSES.
MESSRS. BELL & SON,
THE NORWICH NURSERIES,

Are now executing orders for their TWO NEW ROSES, raised at their Nurseries, and described and announced below. They have been thoroughly tested here before being sent out, and can be recommended with confidence as really distinct novelties.

CLIMBING ROSE "CATHERINE BELL."
Very large flowers of a deep rose colour, the backs of the petals a delicate silvery pink, of exquisite shape and very fragrant. It is very free-flowering, and of vigorous climbing habit, making shoots 6 feet to 8 feet long in one season. Figured in *The Garden*, March 18, 1876.

"Your Rose Catherine Bell is both *belle et grande*."—Rev. Canon Reynolds Hole.

*Good Flowering Plants, in Pots, 10*s*. 6*d*. each.*

COLOURED PLATES ONE SHILLING EACH.

HYBRID TEA ROSE "MRS. OPIE."
Bright salmon-rose, tea-scented flowers, with shell-like petals, a most distinct and novel shade of colour among Tea Roses. It will form a charming companion to Madame Falcot, and will be as extensively cultivated as that variety when well known. In flower from May to November. Figured in the *Floral Magazine*.

*Good Flowering Plants, in Pots 7*s*. 6*d*. each.*

BELL AND SON, 10 & 11, EXCHANGE STREET, NORWICH.

HORTICULTURAL TOOLS & GARDEN FURNITURE.
DEANE & CO.,
46, King William Street, E.C.



18-in., 40*s.*; 20-in. 50*s.*; 22-in. 57*s.*

LAWN MOWERS.. .. .. from 25 –
GARDEN ENGINES .. .. ,, 65 –
GARDEN BARROWS .. .. ,, 22 6
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SPADES, FORKS, SCUTHES, &c.
SYRINGES and PUMPS.
GARDEN SEATS and CHAIRS.
FLOWER STANDS and VASES.
IRON HURDLES and FENCING.
WIRE NETTING, ARCHES, &c.
HOT-WATER APPARATUS.



Shanks', Green's, Archimedean, &c.

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EDGINGTON'S GARDEN NETTING the cheapest and most durable, at 1*d.* per square yard, or in quantities of 250, 500, or 1000 yards, carriage free.
EDGINGTON'S MARQUEES and GARDEN TENTS are the prettiest.
EDGINGTON'S MARQUEES for Hire are the most handsome and capacious.
EDGINGTON'S RICK CLOTHS for 71 years have maintained their celebrity as the best.
HAYTHORN'S and WALLER'S NETTINGS.
A quantity of good Second-hand Government TENTS from Abyssinia for Sale, Cheap.
Sample of material free on application.
Be particular—FREDK. EDGINGTON AND CO., 52 (only) Old Kent Road, London, S.E.

BELGIAN GLASS for GREENHOUSES, &c., Can be obtained in all sizes and qualities, of
BETHAM & SON,
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B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., in 16-oz. and 21-oz.

JOHN BOWMAN.
GREENHOUSES—every description, } From £10
VINERIES—all the latest improvements, } to £1000.
GLASSHOUSES—perfect ventilation,
HORTICULTURAL BUILDER and TIMBER MERCHANT,
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Trade WALTER MAC FARLANE & CO. GLASGOW SPARGEN FOUNDRY Mark.
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Conservatories; Winter Gardens; Arbours; Pavilions; Garden Screens; Garden Entrances; Bandstands; Verandahs; Covered Ways; Boathouses; Railings; Balconies; &c. Plain and Ornamental Castings of every description for Parks, Gardens, Pleasure Grounds, Esplanades, &c.

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SHANKS' NEW PATENT
LAWN MOWERS,
Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The *Sole-Plate* or *Bottom Blade* is made with *Two Edges*, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the Grass escaping the Box when the Machine is in use during the prevalence of wind.



PRICES,
Including Carriage to any Railway Station or Shipping Port in the Kingdom:—

NEW HAND MACHINE.

10-inch Machine	£3 10 0
12-inch Machine	4 15 0
14-inch Machine	5 15 0
16-inch Machine	6 15 0
19-inch Machine	8 8 0
22-inch Machine	9 0 0
24-inch Machine	9 10 0

The Hand Machines are all fitted with Silent Movement, and can be used either with or without the usual Front Rollers.

NEW PONY and DONKEY MACHINE.

25-inch Machine	£13 10 0
28-inch Machine	15 15 0
30-inch Machine	17 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

Price, for the 28-inch and 30-inch Machines, 30*s.* extra; 25-inch Machine, 25*s.* extra. Silent Movement, 12*s. 6d.* extra. Boots for Pony, 24*s.*; Donkey, 20*s.* per set.

NEW HORSE MACHINE.

30-inch Machine	£20 10 0
36-inch Machine	24 0 0

42-inch Machine	£28 0 0
48-inch Machine	32 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.
Price, for the 48-inch, 42-inch, and 36-inch Machines, 40*s.* extra; for the 30-inch, 30*s.* extra. Silent Movement, 20*s.* extra. Boots for Horse's feet, 20*s.* per set.

A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

SHANKS' PATENT LAWN MOWERS
Are warranted to give ample satisfaction, and it not approved of can be at once returned.

ALEXANDER SHANKS & SON,
Dens Ironworks, Arbroath; and 27, CANNON Cadenhall Street, London, E.C.
27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.
Small Lawn Mowers—6-inch, 25s.; 7-inch, 35s.; 8-inch, 50s.

Sole Medallists for the Best Hot-Water Apparatus at the United States Centennial International Exhibition, Philadelphia.

By Her Majesty's *Royal Letters Patent*

WRIGHT'S
ENDLESS-FLAME-IMPACT
HOT-WATER BOILERS.

GUARANTEED

The most Powerful, the most rapid, the most Economical, the Simplest, and the Cheapest in the World.

"The **'Boiler of the Future.'** I have no doubt about this."—WM. THOMSON, *Tweed Viaduct.*

From the "Gardener," March, 1877.
WRIGHT'S PATENT
ENDLESS FLAME-IMPACT BOILER.

"This boiler is attracting a good deal of attention in the horticultural world at the present time; and as I have just had one of their largest-sized ones fitted up here, and have now got it well tested, perhaps a few lines from me upon its capabilities may not be without some advantage to some of your numerous readers. I have had some experience as to the annoyance and extra labour caused by badly-constructed boilers, and any improvement effected in these to save labour and fuel demands the attention of all interested parties.

"To give your readers a better idea of the work this boiler has to do, I may begin by stating that our hothouses consist of a range having a total length of 192 feet, a ridge-and-furrow-roofed greenhouse being in the centre, two lean-to Vineries on each side, with Camellia-house and general plant-house at each end; on opposite side of wall we have a Fern-house, partly lean-to and partly span, 99 feet in length, varying in width from 20 to 30 feet. Attached to end of boiler-house is our laundry, with a drying chamber fitted up with about 250 feet of 4-inch piping.

"The whole of the above houses are heated with hot water, and have a total of about 3200 feet of 4-inch piping. We had formerly two oval flue boilers, one being 4 feet 6 inches long, the other 4 feet long. With these two boilers we kept hard fired we always found great difficulty in keeping up the temperature during frosty weather, and had frequently to lose a night's sleep attending to the fires. On the last day of last year the larger boiler came to grief—the water from it drowned out the fire; and in taking down some of the brickwork it was found to have cracked beyond repair. To be thus left in the middle of winter with only the one boiler was no joke. I had to look out for another without delay. I have given a good deal of attention to the construction of hot-water boilers, and I must say I had never seen one that came up to my idea of what a boiler should be until some time ago my attention was called to a drawing of Wright & Co.'s Boiler, which appeared in the *Gardener*.

"After talking the matter over with my employer, W. S. Mitchell Innes, Esq., he at once granted permission to get the boiler I had formed such an opinion of. I at once put the order into the hands of Messrs. Mekkie & Philp, boiler builders and hot-water engineers, Torphichen Street, and they have fitted it up and attached the piping in the most complete manner. I also got some additional sight valves attached, so that if anything should at any time go wrong it can be attended to without disturbing the piping.

"And now as to the capabilities of the boiler for the work. As formerly stated, I had considerable difficulty in keeping up the heat with the two oval flue boilers kept hard at work. I now find that with the remaining oval flue boiler idle, I can heat up the whole of the houses and the laundry to a degree they never were before, and that with much less coal than it took to fire *one* of the oval flue boilers.

"Our chimney consists of a flue 79 feet long, led horizontally through centre of back wall, with 18 feet of a perpendicular stalk. Some doubt was expressed that, as we required a chimney pipe attached to boiler about 6 feet long, there would be deficiency of draught: but we have found the opposite to be the case. I attached a 6-feet length of 8-inch stove pipe, with elbow at boiler, and cleaning door on the angle, and as I found the draught very strong I got a throttle-valve damper fitted into the bend of the stove pipe, and am able to regulate the fire to a nicety, and by banking up the fire at 10 P.M. and turning the damper fully half round, I can leave it to its work with the greatest confidence till the usual time of commencing labour the following morning; and instead of its forming a bugbear to sit up firing the half of the night at times, and sometimes whole ones, we can retire to rest at a reasonable hour, confident of sleep being undisturbed by unpleasant dreams of pipes and fruits going to ruin. In concluding my remarks I may say that not the least of the good qualities of this boiler is its portability. We had not the slightest difficulty in putting it down in our contracted stokehole through a trap-door 4 feet long by 2 feet broad, and fitting it up in a few hours, and I am quite confident that with the assistance of two men I could take the whole to pieces and have it again in full working order in two hours. I have no hesitation in saying that for rapidity of circulation, small consumpt of fuel, portability, and cleanliness, it has no rival, and have no doubt this boiler will win its way; and where coals are high in price it will effect a considerable saving, and as there is good fire space in it it will be found a capital boiler for burning wood and other fuel."—J. CLARE, *The Gardens, Parson's Green, Edinburgh.*

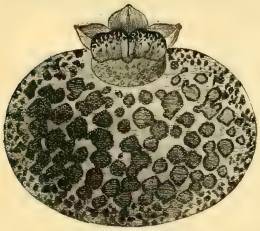
[We have a very high opinion of this boiler, and predict that it will take a foremost place in heating hothouses and all other buildings, and shall have some further remarks to make about the peculiarities of it next month.—ED. *Gardener.*]

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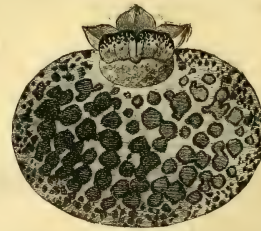
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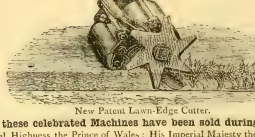
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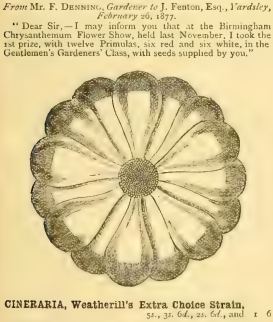


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SATURDAY, JUNE 23, 1877.

THE BULRUSH AND THE REED.

(*Concluded from p.* 749.)

THE word "Flags," employed in the Authorised Version rendering of the account of the exposure of the infant Moses, represents the Hebrew *suph*, a term evidently of extensive meaning. Here it probably stands as a collective name for waterside reedy vegetation. It holds a similar sense in Isaiah xix. 6, where *suph* is coupled with *kaneh*, the Hebrew word for Reeds in general. From reedy plants *suph* seems to have passed on to aquatic vegetation in general, both freshwater and marine, for when Jonah describes his adventures in the sea, he says "*suph* was wrapped around my head." Probably in this latter application it anticipated the use of φυκια and alga by the ancient Greeks and Romans, denoting all marine plants thrown by the tide upon the shore, or that became entangled in fishermen's implements. How beautifully it comes to the front in Theocritus:—"And halcyons shall smooth the waves, and the sea, and the south-west wind, and the south-east, which stirs the remotest sea-weeds . . . halcyons most beloved of birds, whose life is on the ripples, by the sea-green Nereids" (vii. 57—60). Ovid uses alga for the tangle that surrounds the ships of Æneas while moored at Carthage (*Ep. Dido Æneas*, 172). The ancient and sevenfold storied water which today we call the Red Sea, with the Hebrews was *Yarn Suph*, palpably because of its fecundity in arborescent "corals," the beautiful submarine quasi-vegetative growths which form one of its features, and which led old Pliny to speak of the Red Sea as a "vast forest." "*Rubrum mare et totus orientis oceanus refertus est sylvis*" (xiii. 25). *Yarn Suph* is the name employed in the Hebrew in Ps. cvii. and Ps. cxxxvi., also in Numbers xiv. 25, and Joshua ii. 10. The original sense of *suph*, or reedy plants in general, is no doubt well conveyed by "Flags," the most conspicuous of their class being the beautiful semi-aquatic Iris Pseudacorus, or yellow Water Flag, the name pointing in the first instance to the great pendulous banner-like petals. It is curious that Shakespeare, in his only use of the word Flag for a water plant, should leave us in doubt whether he intends a Reed or something that floats, like a Potamogeton.

> "This common body,
> Like to a vagabond Flag upon the stream,
> Goes to, and back, lacqueying the varying tide,
> To rot itself with motion."
>
> *Antony and Cleopatra*, i. 4.

In the Authorised Version of the Old Testament "Flag" stands for yet another original word, namely, *achu*, in Job viii. 11, where it is coupled with *gôme*. The exact sense of *achu* appears to be marsh-grass, of a kind suitable for pasture, since it is employed in the recital of Pharaoh's famous dream, when "seven well-favoured kine came up out of the river and fed in *achu*," in the Authorised Version rendered "a meadow" (Gen. xli.).

Bulrush comes before us also as a duplicate Authorised Version rendering, standing in Isaiah lviii. 5 as the representative of the Hebrew *agmon*. This, again, was probably a collective term, though applying in particular to reedy plants of the Scirpus lacustris kind. In Job xli. 2

it appears to denote, metaphorically, a cord or rope made of twisted Reeds, after the fashion of t Papyrus cordage. There the Authorised Version translates *agmon* by "hook." In Isaiah ix. 14 and xix. 15 *agmon* is evidently indefinite, the phrase "[Palm] branch and *Rush*" being figurative for highest and lowest, greatest and smallest, noblest and meanest. Rush is here a very proper and expressive rendering. Genuine Rushes (Junci), it may be well to remark, are nowhere specifically mentioned in the sacred volume. It must be observed, also, that there is another Hebrew word spelt *agmon*, but of totally different etymology and signification. This *agmon* occurs in Job xli. 20, and is properly translated caldron. The botanical term is derived from *agam*—a marsh, pond, or pool, especially of the kind of which many were left after the inundations of the Nile. Such pools were always reedy, and hence, in Jer. li. 32, the word *agam* is put as a metronym for Reeds.

The idea conveyed by the word "Reed" in its most thorough sense was in Hebrew expressed by *kaneh*, the origin of our English word cane. *Kaneh* is the term employed in the beautiful old promise—"A bruised reed He shall not break;" also wherever else, with the two exceptions named above, the word Reed is used in the Authorised Version. It was extended to the straws of corn, and, doubtless because used for one, to the beam of a balance. To connect it with any particular species of plant is not possible. Wherever in Palestine, as for example in northern Galilee, there are pools or marshes capable of sustaining vegetation of the Iris and Acorus kind, Reeds and Flags occur in vast masses, comprising among many species our own beautiful Arundo Phragmites, the Arundo Isiaca (which is perhaps only a variety of the former), the grand Arundo Donax, which seems a gigantic and stately Phragmites, and probably different kinds of Saccharum, with other large grasses possessed of plumy, often half-pendulous, and silky panicles. Any one of them would suit the idea of the ancient *kaneh*. Probably they were all *kaneh* in turn. If one before another was the *kaneh*, pre-eminently it would be the Arundo Donax, or common Spanish Reed. For it was this one which became so celebrated under the Greek name of καλαμος, and the Latin one of *arundo*; it was this one which supplied the ancients with walking-sticks, arrow-shafts (as in *Iliad*, xi. 583), measuring-rods, the beams for weavers' looms, &c., and which, according to the delicious old fable in classical mythology, was converted into the first Pandean pipes:—

> "What was he doing, the great god Pan,
> Down in the reeds by the river?
> Spreading ruin and scattering ban,
> Splashing and paddling with hoofs of a goat,
> And breaking the golden Lilies afloat
> With the dragon-fly on the river.
> * * * *
> "High on the shore sat the great god Pan,
> While turbidly flowed the river,
> And hacked and hewed as a great god can,
> With his hard black steel at the patient Reed,
> Till there was not a sign of a leaf indeed
> To prove it fresh from the river.
> * * * *
> "'This is the way,' laughed the great god Pan,
> (Laughed while he sat by the river!)
> 'The only way since gods began
> To make sweet music they could succeed.'
> Then dropping his mouth to a hole in the reed,
> He blew in power by the river.
> "Sweet, sweet, sweet, O Pan,
> Piercing sweet by the river!
> Blinding sweet, O great god Pan!
> The sun on the hill forgot to die,
> And the Lilies revived, and the dragon-fly
> Came back to dream on the river."

That καλαμος was the Greek equivalent of the Hebrew *kaneh* is placed beyond dispute by St. Matthew, who in xii. 20 employs the former when quoting Isaiah. Καλαμος stands in the New Testament wherever "Reed" is employed in the Authorised Version; also as the original of "pen" in 3 John 13, the writing instruments of the ancients, when not a metallic stylus, having been prepared from the internodes of the Donax. Though to ourselves stiff and wooden, these old original canes pens would no doubt serve far better than the flexile quill, or sharp modern nib of steel, for the broad bold alphabetic characters of the Hebrew. The best calami used for writing in Greece and Rome were obtained from Egypt, where the Donax abounds. Martial connects them with Memphis. Calamus, like *kaneh*, gradually acquired a very wide signification. Pliny applies it to the long surculi of the Hedge Bramble. Hence, when we come to the narrative of the Crucifixion, and read that "they put a calamus in his right hand," with which Calamus they afterwards "smote Him," it is perfectly allowable to accept the ancient tradition, preserved by the early writers—who, it must be acknowledged at the same time, are the very worst of biblical commentators—that the particular Calamus in question was a stalk of the Typha latifolia. Dr. Prior says that it was on account of this employment of it at or near Calvary that the plant got the name of Reed-mace. The geographical range of this singular production is one of the widest known—Mr. Bentham says, "nearly all over the globe." Growing gregariously in ponds and marshy places, and on the borders of lakes and wells, every one of the tall round stems bears at the summit a cylindrical dark-brown and velvety club, 4 to 8 inches in length, and an inch in diameter. The constituents of the club are the female flowers; everything holds together until the following spring, when the club breaks up into fleecy atoms and disappears. The Typha is described as the mock sceptre in the curious little volume of Scripture plants compiled in the sixteenth century by Lerinus Lemnius. "*Similitudinum ac Parabolarum quæ in Bibliis ex Herbis atque Arboribus desumuntur, dilucida explicatis.*" Lemnius was originally a physician of Louvain, afterwards an ecclesiastic, and friend of Conrad Gesner. The first edition of his book was printed in 1566. An English translation came out at Oxford in 1587.

With the Hebrews the *kaneh par excellence* was some kind of fragrant reed. Hence, in Isaiah xliii. 24, Canticles iv. 9, and Exekiel xxvii. 19, it is translated "sweet (or odoriferous) cane" or "calamus," which word was similarly specialised. In Exodus xxx. 23, and Jeremiah vi. 20, this fragrant Reed is called *kaneh bosem* and *kaneh hattob*. In all likelihood it was one of the fragrant Indian grasses now referred to the genus Andropogon, and represented in the common Lemon-grass of our conservatories.

By reason of the abundance of their Reeds, many places in ancient times received their names. The river Kanah, mentioned in Joshua xvii. 9, was a reedy one. Cana in Galilee was near a Reed-bed. Cannes, in the South of France, is said to be so called by reason of the abundance there of the Donax, the stems of which are still employed in the vicinity for beating down the Olives. *Leo Grindon.*

New Garden Plants.

ANTIGONON INSIGNE, *sp. n.** (See p. 789.)

Horticulturists whose experience dates back some quarter of a century will remember the excitement caused by the flowering of the gorgeous Bougainvillea spectabilis. Several years after Dr. Seemann was fortunate enough to introduce the beautiful Antigonon leptopus, which was figured in the *Botanical Magazine*. The plant we have now to bring under the notice of our readers has not yet flowered in this country, but judging from the dried specimen before us, and from the testimony of Mr. Shuttleworth, by whom it was found in New Grenada, near Ocaña, and where it was also seen by another of Mr. Bull's collectors, Mr. Carder, we have here a plant fit to rival the Bougainvillea, and much superior in beauty to the Antigonon formerly introduced. It is a trailing or climbing plant, whose general habit is shown in Mr. Worthington Smith's sketch on p. 789. The stems are slender, angular, and pubescent, the leaves about 4 by 3 inches, the upper ones smaller, supported on short terete downy stalks, and of a broadly ovate oblong form deeply cordate at the base with two rounded lobes, the apex shortly acuminate. The upper surface is puberulous, the lower softly downy. The flowers are very numerous, and borne in tufts along the sides of long racemes or panicles, which terminate in branched tendrils. Each flower is raised on a slender pedicel about ¾ inch long, subtended by an ovate-acute bract about half the length of the pedicel. The calyx, which is the showy part of the flower, has five membranous segments, the three outer are of a beautiful rosy pink colour about 1 inch in length by rather less in breadth, cordate at the base, oblong, rounded towards the apex, which terminates in a very short deltoid point. Within these are two other sepals of about the same length as the outer ones, but much narrower, falcate, lanceolate, apiculate. Within these sepals are eight stamens of unequal length, united into a short tube at the base surrounding the three-cornered ovary, but above free. The fruit exceeds the stamens in length, and is terminated by the remains of three styles, each surmounted by a capitate stigma. There is, therefore, no question that we have here a species of Antigonon belonging to Meissner's second section of the genus—that characterised by the presence of three outer ovate sepals and two inner smaller ones. In this section Meissner describes (D.C. *Prod.* xiv. 183) only one species, A. guatemalense, which is evidently closely allied to our present plant, and perhaps identical, but so far as the evidence before us goes the present plant differs in its more oblong leaves, sessile fascicles, larger bracts, and larger pink acuminate sepals. Messrs. Shuttleworth and Carder speak in the most glowing terms of the beauty of this plant, and the specimens they have brought certainly confirm their good opinion. We are glad to learn that young plants are in the possession of Mr. W. Bull. According to specimens in the Kew herbarium Patin also seems to have met with the plant at Antioquia, in New Grenada, and Ernst at Caracas. Lévy seems to have met with the same plant (or perhaps A. guatemalense) in Nicaragua, and other specimens came from Costa Rica, so that it is not unlikely we have to do with one widely diffused species, the same as that described by Meissner as A. guatemalense; in any case it is much the finest Antigonon known to us, and we hope soon to see it flowering in our stoves. *M. T. M.*

HUERNIA BREVIROSTRIS, *N. E. Br.* (fig. 124).

Dwarf; stems erect or ascending, crowded, branching at the base, 2—3 inches long, ¾—1 inch thick, glabrous, glaucous green when young, becoming purplish brown with age, sharply 4—rarely 5—angled, angles with horizontal acute teeth. Young branches floriferous on their sides, about the middle or towards the base. Peduncle obsolete, 4—6 flowered, pedicels short, 4—6 lines long, glabrous. Calyx glabrous, 5-parted, lobes lance-subulate acute, 2—3 lines long. Corolla 1¼ inch in diameter, campanulate; tube short, 3 lines deep, slightly constricted at the mouth; limb very spreading, lobes deltoid acuminate, recurving. Outside glabrous, pale green, the lobes with three strong and two faint nerves, darker, faintly spotted with minute purplish spots, inside tube excepted, minutely papillate, otherwise quite glabrous, the papillæ with a minute dark purple-red spot at apex, some of those on the throat minutely bristle-pointed, pale sulphur-yellow, thickly spotted with small blood-red spots; the tube is pinkish white, similarly spotted except at the very bottom, which is entirely blood-red, smooth and shining. Outer corona velvet-black, 5-lobed, the lobes very spreading, notched at apex. Rostra of inner corona with very short apices (about ½ line long), purplish, spotted in the upper part with yellowish.

Sent to Kew by Mr. H. Bolus, where it flowered in August, 1875. It is one of the most beautiful of the genus, and the small flowers are so neatly and pleasingly coloured, and are so freely produced, that it is sure to be a favourite with all Stapelia cultivators. Mr. Bolus gives me the following information concerning it:—He discovered it on the dry, rocky hills of Kyneveld's Pass, near Graaft Reinet, at an altitude of 2700 feet, where it seems to be tolerably common, and flowers in April. It is No. 575 of Bolus!

* *Antigonon insigne*, Mast.—Foliis breve petiolatis; petiolis teretibus; laminis ovatis oblongis profunde cordatis breve acuminatis supra puberulis subtus pubescentibus; racemis axillaribus folio triplo longioribus patentibus cirro ramoso terminatis; fasciculis sessilibus bracteis ovatis acutis; sepalis externis tribus oblongo-suborbicularibus cordatis acutis; sepalis internis duobus late lanceolatis falcatis apiculatis.—An vere ab A. guatemalense distincta sit haud omnino certus sum. *M. T. M.*

One thing is remarkable concerning it, viz., that when the fresh flowers are placed in spirits of wine they contract and shrink up in a very marked manner, which I have never observed in other Stapeliæ. The woodcut (fig. 124) represents but a small portion of the plant. *N. E. Brown.*

GONGORA GROSSA, *n. sp.**

This is a curious novelty, since it is the first direct ally of the first species introduced to Europe, Gongora atropurpurea, Hook., Exot. B. (tab. 178, 1827), from Demerara. Notwithstanding our very numerous introductions we have waited just fifty years, forgetting the ally; and now we have it, modern amateurs will not feel very proud of it. Like that old species, it has upright basilar horns to the lip, higher than the length of its nail; like it, it has a curious deeply five-cleft lip, making one think of some quadruped lying on its back, with four outstretched legs. It is exceedingly well distinguished from its elder associate by having its anterior horns with bristles outside, a tooth inside, and a small teretiuscule acuminate body between the horns. The mass of the lip is stouter. The sepals are much broader. It appears to have a whitish or yellowish ground colour, with very numerous blackish purple spots. The lip is so covered with them that it looks nearly totally blackish purple. It comes from Ecuador, and made part, I think, of that much bespoken collection, sent by a photographer, who, no doubt, professed the theory of that centro-American

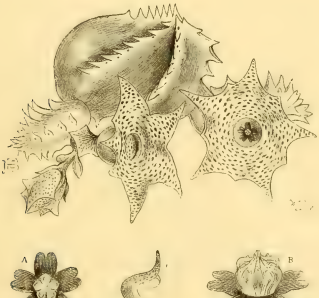


FIG. 124.—HUERNIA BREVIROSTRIS.

A, Front, and B, side-view of corona; c, Rostrum. (A and C magnified.)

editor who said that one should send over to Europe shiploads of Orchids as cargoes of coffee, sugar, potatos, cattle. No matter what they were, Europeans were too fond of such bulbs. It is well known that a collection, sent by one who may have watched some other collectors at a distance, did not even pay the cost of transit. A few friends of botanical curiosities took plants, and among them was Sir C. W. Strickland, whom I have to thank for this highly interesting unexpected species. *H. G. Rchb. f.*

DENDROBIUM LITUIFLORUM, *Lindl.*, ROBUSTIUS, *n. var.*†

Once we were so very vexed that the Dendrobiums—gratiosissimum, Boxallii, crassinode—all had the same kind of flowers, though with some very good differences in the stems. Those differences, as far as we could ascertain, were easily understood, though, indeed, one might guess Dendrobium Boxallii to be a mule between Dendrobium gratiosissimum and D. crassinode. Happily, indeed, Dendrobium Findleyanum has more and more proved a widely distinct species from those just-named. Now we stand once more in a dilemma. When we named this well-known Dendrobium lituiflorum, Dr. Lindley and myself (Dendrobium Hanburyanum, nearly at the same time), we regarded it as a great deed, a good bit, to separate it from Dendrobium nobile, Lindl., and cœrulescens, Lindl. (plants believed distinct at that time), in acknowledgment of its very slender stem, the trumpet-shaped lip, &c.

Now there come both from Assam and from Burmah beautiful Dendrobes with flowers scarcely distinct from those of the now old (1856) Dendrobium lituiflorum, and with totally distinct stems. I obtained one, a beautiful thing, just imported from Burmah, collected by Mr. Boxall. The flowers are quite like those which Dr. Lindley sketched from his type, much larger than those of the actually grown D. lituiflorum, with exceedingly warm colours, and the inferior halves of the lateral sepals much lighter than the superior ones, perhaps an accidental variation. Wanting a fuller elucidation, I addressed myself to Mr. Harry Veitch for fresh materials of the genuine thin-stemmed Assamese Dendrobium lituiflorum, who immediately favoured me with a rich supply of fresh flowers and stems. But those flowers! Oh, there is no reasonable difference to be found between them up to that queer purplish line that stands each side of the stigmatic cavity. All details are the same, so that I cannot help keeping the novelty as a variety of D. lituiflorum, for I cannot think that such an absolute identity of flowers may exist in different species. I have to thank Mr. Stuart Low for the beautiful thing in the best state. *H. G. Rchb. f.*

CYPRIPEDIUMS.

THE very mention of the name of an Orchid at this time of year almost puts one in a state of perspiration, as most of our ideas and recollections at once connect them with tropical heat and steaming hothouses. It will therefore be a relief to those who associate them with such discomforts to know that some at least of that most interesting and lovely class of plants are sufficiently hardy to be grown and enjoyed in any sheltered spot outdoors. Beautiful as are a few of the stove kinds, there are none to surpass C. spectabile for the rich delicacy of its colouring or the charming effect its flowers produce, either in a cut state or when seen on the plants growing in masses, in cool moist shady retreats as we have them here. Some of these have been established for years, but the greatest part of them have been recently introduced from North America through the New Bulb Company of Colchester, who supplied them to us in fine strong clumps, each containing several fat plump crowns, and all in capital condition, being as fresh as when dug up from their native woods, with every root intact and healthy.

If they can be obtained in quantity, and delivered in such a good state of preservation, quite a new feature will be imparted in the decoration of our cool houses, and moist shady situations in rockeries or other choice nooks and corners where the several varieties may be grouped together to show the contrast their singular forms and distinct colours affords. In favourable situations C. spectabile grows about 2 feet high, and flowers in the open air towards the end of June. The lip or labellum is much larger than the common Lady's Slipper, and of a delicate rose, while the petals and sepals are white, thus affording a soft blending of tints as pleasing as they are chaste and beautiful. C. japonicum is another lovely species, which unfortunately at present is very scarce, but as Japan appears so rich in floral treasures, it is to be hoped that this will be found in quantity, as there appears no limit to the stores of Lilium auratum and other plants supplied from that quarter of the globe, since a demand set in for them. The flowers of this variety are very large, having green sepals and petals dotted with reddish spots, with the labellum white, richly stained with crimson.

The above-named are the two best and most showy, but there are several others quite distinct, the most desirable of which are C. pubescens, C. Calceolus, and C. montanum, the two former having rather small inflated lips of a soft rich calceolaria-like colour, with sepals and petals of a brownish purple, thus forming a striking contrast. To grow them well outdoors a cool, moist, shady retreat must be chosen, but not where the soil is apt to become sour from excess, through being imperfectly drained. The spot where we have them, and where they succeed admirably, is just over a drain put in to draw away the water from a loose rich bog, formed principally of vegetable *débris*, and with this a good proportion of fresh fibry peat was added at the time of planting, and mixed together to the depth of a foot or so, which evidently suits them, as they are in the greatest state of luxuriance.

I noticed that those imported appeared to be growing principally in a kind of half-decomposed moss and woody looking fibre, and no doubt where sphagnum can be conveniently got it might be added to the peat with considerable advantage to the plants; as also any common moss chopped up, the absorbent properties of which would keep them in a uniform state as to moisture. Although they are shade-loving subjects, the situations chosen should be sufficiently far removed from shrubs or trees to be out of reach of their roots, as otherwise they would enter the rich bed, and rob them to a very serious extent. Sheltered on the north side of a rockery, and planted on a low level, where their roots can be kept cool and moist, with a good depth of peat to ramble in, they would be just at home, and form one of the most attractive objects that could be had for such a position.

Unfortunately they are slow of increase, as they only admit of propagation by division, and unless the places where they are planted are particularly suited to their growth they do not send up fresh crowns very readily, but when they do so they may be divided and replanted. If they can only be obtained in quantity, an active demand is sure to spring up for them, as they are valuable for pot culture and forcing, although to have them at their best they must be seen growing in large clumps in the open, in situations as already described above.

For growing in pots, it is best to obtain fresh imported plants, on account of their superior size and strength over such as have been under cultivation and cramped for root-room, as must of necessity be the case where space is an object, and they are kept for sale in as portable a form as possible.

The soil most suitable is good tough fibry peat, and from this as much of the earthy part should be knocked out as can fairly be done, which will then leave just the kind of vegetable matter the plants delight in. If to this is added about one-sixth its bulk of sphagnum, and a little silver sand to add weight and keep it together, they may with care in watering be made to succeed admirably and flower regularly every season. To do this, however, they must have every attention paid them while making their growth that the leafage may be as ample and clean as it is possible to keep it, for, like all perennials, they form their bloom-buds the year previous to flowering, and unless they are well managed then they have not sufficient strength to carry out that part of their work. The sized pots they look best in are deep 6 or 7-inch, in each of which three separate crowns should be placed triangularly near the sides and the soil pressed in amongst the roots in such a manner as to leave no cavities whereby the air would be unduly admitted amongst them and thus cause a too rapid drying of the same.

Gongora grossa, H. G. Rchb. f.—Omnino affinis G. atropurpureæ, Hook. Sepalis lateralibus late triangulis, hypochilii cornubus longioribus validis teretibus obtusis, mesochilii cornubus aristatis, intus superne unidentatis, interjecto callo subulato acuminato, epichilio ancipiti triangulo acuminato.—Ecuador.

† *Dendrobium lituiflorum*, Lindl. var. *robustius*, Rchb. f.—Caulibus calamum gryphinum crassis; floribus Dendrobii lituiflori optime evoluti.—Burmah.

Any ordinary frame standing in a cool shady place on a damp bottom will do to grow them in, or they may be treated with the Cinerarias, Primulas, or shrubby Calceolarias, which during the summer months require a similar position and much the same attention as to shade and a moist atmosphere, and by arranging the Cypripediums in a corner by themselves they can be syringed or watered overhead as often as may be found desirable, which while growth is active or the leaves remain fresh and green, cannot well be too frequent. Although as hardy as a Dock when established in favoured sheltered positions outdoors, it is desirable to afford them some protection in pots during the winter on account of the greater exposure the roots undergo in such a small body of soil, and the constant changes they are subjected to as regards temperature, moisture, &c., when so circumstanced. By plunging them in cocoa-nut fibre or half decomposed dry leaves, with about 1 inch of either or some moss scattered over their crowns, they will be perfectly safe in a cold frame during any severe winter, and may be taken from thence as required for forcing or to flower naturally in the greenhouse. *J. S.*

NOTE ON THE FRUITING OF HOLLY.*

IN my report for the month of May I alluded to the Holly as producing this year an amount of flower-buds rarely seen in this garden, and it seems to be general all over Scotland, probably owing to the trees not being exhausted last year, on account of the general failure of the fruit crop. At this time (June 14) numerous blooms are now open, and many of the plants white, some with fertile and others with non-fertile flowers, the latter in every instance being the most conspicuous. This mass of flowers must not, however, lead us into the belief that all will be covered with fruit at Christmas, a good crop may however be looked for. Fertile and non-fertile trees being now easily recognisable (although it is not generally known), a few observations regarding them may not be unacceptable. Perhaps the most conspicuous of the fruit-bearing kinds now noticeable in a flowering condition are, about one third of the common green variety, nearly every plant of the kind known as Hodgins' Holly, the leather-leaved Holly, the green weeping and Moonshine Hollies, also all the large plants of the common variegated or Silver Holly, as well as the old Golden Hollies, with many others. After a careful inspection of all the Hollies in the garden, which now amount to many hundreds exclusive of hedges, we find that all those which we do know as annually producing fruit at Christmas are likely to be covered with fruit this year again (unless prevented by certain circumstances which were much debated last winter). On close inspection we find, as might be expected, that those Hollies now covered with bloom, but on which no berries had ever been observed, possess stameniferous flowers only, while on all the known berry-bearing plants the ovule is generally far advanced before the buds are sufficiently open for impregnation, and when they do open, although all the anthers are formed, all appear abortive. The stamens in such flowers are all more or less curious and awkward, while in the pollen-bearing plants the stamens are all more or less upright, and densely covered with pollen. In such flowers the rudimentary female organ consists of a small barren flattened ovary, with four little projecting points on the apex; in all these cases the corolla always falls off entire, having the four upright stamens adhering to it, while with the fruit-bearing plants the petals do not fall entire, but break into separate segments by the gradual swelling of the young ovary. As I have not been able to find a single instance amongst all the original variegated silver and golden-leaved Hollies, bearing perfect stameniferous flowers, it is, therefore, evident that all these large variegated plants have been originally propagated from one stock, either by grafts, layers, or cuttings. The same observation also applies to the Hodgins' and the other pistilliferous kinds. Of recent years variegated and other seminal varieties have been raised in various of the country, but none of the variegated forms have the robust nature of the original kinds. It is, therefore, probable that both stameniferous and pistilliferous varieties may be found amongst them, as instanced by the black-twigged silver-striped Holly all being males. The blooms of the different named varieties vary much: perhaps those with the most prominent flowers, both for size and purity, are those produced on the Ilex Shepherdii, I. nobilis, and I. atrovirens—all are stameniferous plants, with large green leaves; the green Hedgehog Holly, and the variegated variety known as the Golden Queen, with numerous others, also stameniferous.

In no instance have I been able to find a plant bearing flowers having both sexes complete on the same root. Owing, however, to the quantity of seedlings now raised, I do not see why this should not sometimes occur. In some cases a few solitary berries have been observed, but as such plants were not marked at the time, it is not easy now to tell them. They will, however, be attended to in future.

Mr. Johnston, of the Lawson Company, has been kind enough to give me the following list of Hollies now in a flowering condition, and cultivated in the Golden Acres Nursery, arranged under their respective heads, which I annex:—

List of Male-Flowered Hollies.

Ilex alcicornis	Ilex ferox argentea
,, mobilis	,, pectinata major
,, Shepherdii	,, Silver Queen
,, angustifolia	,, robusta
,, ciliata major	,, ferox aurea
,, crispa	,, laurifolia aurea
,, ferox	,, Waterer's Holly
,, myrtifolia major	,, picta
,, ovata	,, Golden Queen
,, serratifolia	

List of Female-Flowered or Fruit-bearing Hollies.

Ilex grandifolia	Ilex pendula purpurea
,, heterophylla	,, picta
,, ,, magna	,, angusti-marginata
,, Hodginsii	,, Lawsoniana
,, laurifolia	,, marginata
,, pendula	,, media picta aurea
,, rotundifolia	,, balearica
,, Whittingtoniensis	

List of Hollies producing Male and Female Flowers on Different Plants or Nearly Allied Varieties.

Common green Holly	balearica nigrescens
marginata	aurantiaca (Moonlight)

[The flowering of the Holly seems to be profuse in many places. We never saw the silver-variegated Hollies so densely laden with bloom as they were a week or two since in Kensington Gardens. EDS.]

TAR PAVEMENTS.*

To many of the members the construction of tar pavements is a familiar work, but there are others, perhaps, who have not as yet tested their suitability for suburban paths. In some counties, such as Lancashire and Yorkshire, tar pavement is not a matter that would receive much attention; but in the eastern counties, and other districts not favoured in the same way, and where stone pavements cost seven times as much as tar pavement, the latter is of some importance to towns requiring a clean and economical footway. In Ipswich the mileage of footways in proportion to the population is very large, the population being 46,000, the distance of streets and roads being about 75 miles. Of this about 22 miles are town streets; and double this distance would represent about the length of paths. Formerly all the suburban paths, as well as the majority of those in third-rate streets, were made with gravel. These, however, were always in a defective state. To prevent mud accumulating in winter shingle was put on the surface. This shingle in summer-time was disintegrated, and laid on the surface as though it had been strewn with Peas or Beans. To avoid this loamy gravel was put on. Then, again, in winter this worked up into mud, and again had to be covered with shingle, and so on alternately winter and summer.

The defects gave rise to continuous complaints, and, having had experience of tar pavement in other towns, I was induced to recommend it as a substitute for gravel. My suggestion was approved of by the authority, and specimens of the pavement were laid, the first being done by contract at 1*s.* 3*d.* per superficial yard, and maintained in repair for five years. This was thought to be too much, and the sanitary authority decided to make their own. I have prepared the material in different ways, sometimes using simply pure coal tar, at others refined tar, and occasionally small portions of pitch, lias lime, and Portland cement in the preparation of it. But in practice (although I use mainly refined tar) coal tar is all that is required, and will make as good a path as with refined tar, or any other admixture. I have two ways of making tar pavements in this borough. One is with shingle—that is, fine gravel; and the other with slag, which is clinkers and refuse cinder-dirt from factory furnaces.

The process of making with shingle is simple, and is as follows:—A fire is made on the ground and covered over with shingle; when the first covering is heated through, more is added from time to time, until there are about 10 or 15 tons. For convenience in sifting over the stuff after it has been heated through, it is desirable that the fire should be of an oblong shape, presenting a form something like the mounds under which Potatos or Mangel are stored in a field. After the whole has been sufficiently heated to take out the natural moisture, it is sifted, the fine being placed in one heap and the coarse in another. When about one barrowload of each has been sifted, boiling tar is thrown upon each of them while in a hot state: the whole is then turned over with shovels, and thoroughly mixed. The coarse forms the bottom layer of the path, and the fine the top surface. After a path has been made about ten days it is dressed over the surface with boiling tar and sharp sand or ashes left from the heap of stones after burning. The sand combines with the tar, and fills up the small interstices and produces a smooth surface.

In making these pavements from slag it is not necessary either to heat the material or boil the tar. The material collected is turned over, so that all the large clinkers are broken into small pieces, after which the whole is sifted over to separate the large from the small, and is then mixed with coal tar (unless the weather is very cold, when it is warmed to make it mix more readily). The material made in this way is laid down in the same manner as described for shingle, but is not dressed on the surface with boiling tar and sand, being better without, but is covered with a copious sprinkling of white Derbyshire spar, which is well rolled into the top layer to relieve the dull, sombre appearance, and give it a pleasant effect. In laying the paths, care should be taken to roll the ground well, and bring it to a uniform surface before the bottom layer is put on, to avoid uneven or soft places, which, if not provided against, would result in the path, after being down for a time, having a series of undulations on the surface. In laying, each layer should be well rolled with a roller of about 7 cwt. The bottom layer should be 1½ inch thick, and the top one 1 inch. It is advisable to keep the prepared stuff a few weeks before it is laid down; and although the work can be done at almost any season, spring and autumn are the most suitable, when it is dry, and not too hot. Shingle tar-pavements require dressing over with boiling tar, and covering with sharp sand, from time to time, to preserve the surface, which, if not dealt with in this way, would become rough, by reason of the softer material wearing from between the joints of the stones. The material does not always turn out equally well. Sometimes a path will not consolidate, and at another time the surface will break up without any, as far as can be seen, apparent reason.

The shingle tar pavements cost 9*d.* per superficial yard, laid complete, and that made from slag 11½*d.* Preference is given here to those made of slag, which are more costly in the first instance and less durable than those made with shingle, which can easily be understood when the nature of the material is considered. In the first instance we used shingle entirely, but from favourable reports of the Sheffield paths, and from a personal examination, and from the easier mode of preparation, I was induced to adopt their plan. I believe the Sheffield paths are better than those in this town, and I have no doubt it arises from the fact that the material is of a more durable character than can be procured in Ipswich. The cost of these pavements varies according to local circumstances, being as low, in the case of Sheffield, as 7*d.* per yard, and as high in London as 2*s.* 3*d.* From information obtained some time since, I found that the general price of this kind of pavements was about 1*s.* per yard, exclusive of the cost of preparing the foundation. The price I have given for Ipswich paths includes the foundation. Tar pavements are generally adopted as an improvement on gravel paths, and are not supposed to be regarded as a material to be taken in comparison with asphalte, although I think they bear favourable comparison to many of the more costly pavements, and are, in my opinion, much to be preferred to the common asphalte prepared from pitch, to say nothing of the difference of cost, and which expands and contracts with variations of temperature.

I have tried other materials for making cheap pavements for footways, such as bricks, earthenware tiles, and Portland cement concrete; but the cost, which is about 4*s.* 6*d.* per superficial yard, precludes their use

* Read at the June meeting of the Botanical Society of Edinburgh, by Mr. M'Nab.

* Paper read by Mr. E. Barkham, C.E., Borough Surveyor of Ipswich, at a recent meeting, held in that town, of the home counties division of the Association of Municipal and Sanitary Engineers and Surveyors.

for suburban paths; and their durability is not sufficient to allow them to be put in the place of York flagging for main streets. A path made from shingle, and repaired in the way I have described, would last with the ordinary traffic of a provincial town ten years. Paths laid under my directions as long since as this are still in fair condition. It is, however, difficult to say what the life of pavement would be without very careful observations extending over a considerable period, as the duration of any paved footway is simply determinable by the amount of traffic. Having regard to the economy of first construction, reduction of dust and scavenging, and the cleanliness of the path after rain, it appears to the writer that there is no better material for suburban footways than tar pavement. It may be objected that the dull appearance, and the difficulty of repairing them so as to bring the repaired part even with the old, and the disturbance of the paths caused by laying on gas and water is against their adoption. The first objection can be avoided by using a good covering of Derbyshire spar, and the second applies more or less to any pavement, with the exception of York flagging. When I commenced to lay these paths ten years ago they were rather scarce, and had only been laid to a limited extent in a few towns; but during the last five years they have been very largely extended, and will in future occupy a permanent position among other paving materials for constructing footways in towns; this shows the suitability of the material for such footways as I have referred to in this paper.

There are now about 15 miles of these paths in Ipswich, taking the place of paths which would, if they had not been superseded with this material, have still been muddy in the winter, and so rough on the surface in summer as to make them always more or less unpleasant to walk upon, to say nothing of the indirect discomfort to the inhabitants by reason of additional dirt in winter and dust in summer. The cost of paving this length of footways with other materials would have been so considerable as to have prevented the possibility of doing it, and I look upon it as a great boon to the inhabitants of any town to get such good pavements for suburban paths at such a small cost.

OPEN AIR VEGETATION FOR MAY.*

THE weather in May, particularly the early part of it, has been rather cold and backward. During the first eight days 36° of frost were registered. The lowest markings were on the 2d, 3d, 4th, 5th, 7th, and 8th, indicating respectively 21°, 32°, 26°, 26°, 28°, and 24°; while the six highest morning temperatures were on the 17th, 19th, 20th, 21st, 25th, and 30th, indicating 44°, 42°, 41°, 41°, 44°, and 45°, all being below the maximum temperatures noted during May, 1876 The wind, with a few trifling exceptions, generally prevailed from the east, but changed to the west on the 24th, and since that time progress has been observed in vegetation. This progress, however, was slow, owing to the dry state of the atmosphere, till rain fell copiously on the 28th, which did much good. As long as the wind was in the east the foliage had a great struggle to get out, and it was remarkable to observe the peculiar yellow tinge of the young leaves of many deciduous trees, contrasting singularly with the dark green of the neighbouring evergreens. Judging from the state of the trees and herbaceous plants on May 31, this season may be regarded as one of the latest we have had for many years; indeed I do not recollect ever seeing one so backward, still averaging about three weeks late. Up to the end of the month the only species of deciduous trees that could be said to have nearly completed their foliage were the Acer Pseudo-platanus and the common Hawthorn, many others advancing, but far from complete. For comparison with future years I shall give a list of some of the ordinary trees, and the state they were in on May 31; these, however, vary in different situations and exposures. Besides the Plane and Thorn, just alluded to, the Lime trees were only partially in leaf, and those chiefly on the south and west sides. On a few Beeches the leaves were partially expanded, but many very backward. Birch trees covered with catkins, but none of the leaves fully developed. Leaves were also seen on the Norway Maple, Horse Chestnut, Purple Beech, but much later than usual; while the Elm, Walnut, Chestnut, Sorbus, Lombardy and other Poplars, Willows, Oak, Ash, and Sugar Maples were all very backward, some only breaking their buds, while no foliage was observed on the Robinias, Celtis, Ostrya, deciduous Magnolias, Tulip-trees, Platanus, Taxodium distichum, &c.

On May 31, with the exception of the Plane and Thorn, just alluded to as being in leaf, and those where no foliage was visible, most of the intermediate ones, from the small state of the young shoots and buds, had a peculiar network appearance, light being seen through every twig and leaf—a sight rarely seen in this part of the country at such an advanced period of the year.

Besides forest trees, it may be remarked that many dwarf, shrubby, and herbaceous plants have been also very late in flowering, and where this is the case it will be observed that their duration in a perfect flowering condition is often shorter than where flowers come forth at their own natural period. This is particularly noticeable with such plants as Menziesia cœrulea, M. empetriformis, Bryanthus erectus, Andromeda tetragona, &c., as well as many herbaceous plants which usually bloom between the middle and end of April or early in May, and which present a much gayer appearance than they do when late of flowering.

With reference to the ordinary garden herbaceous plants, kinds which we usually trust so much to for class illustrations, very few of those sorts generally used during May could be had in flower. A long list of such plants might be given, a few, however, will suffice for future comparison, viz., Doronicum Pardalianches, Geranium phæum, Aquilegia vulgaris, Potentilla rupestris, Heracleum giganteum, Scabiosa montana, Astrantia major, Papaver orientale, also Lupines, Thalictrums, Pæonias, Aconitums, Delphiniums, &c.

By May 31 we generally have flowers on the Horse Chestnuts, Pavia flava, Laburnums, Lilac, common and red Hawthorns, Bird Cherries, also on some varieties of Sorbus. This year we have only had the double Cherry, Gean, perfumed Cherry, Crab Apple, and Norway Maple in bloom.

It will be remembered that the Holly bushes last winter were nearly destitute of berries, and various causes were assigned for it. This year blossom-buds are to be seen on almost every tree in the greatest abundance, but few on May 31 were expanded. In my garden notes for May, 1875, I find it stated that Hollies of every description were covered with blossom, so that the surface of the ground beneath them was white with the fallen flowers, and a good crop of berries resulted. During May last year flowers were also produced in abundance. The severe frost (26°) which occurred during that month, and was general all over the country, and at a time when the Holly blossom was in perfection, must have injured the pollen to such an extent that little or no fruit was produced. Although the frost during May of this year was more severe than last, the Holly buds were not sufficiently advanced to be injured, and it will be well on in June before they can be fully developed, when it will afford a good opportunity to botanists to examine the flowers in different stages and in different situations, as well as the different varieties, and thus satisfy themselves as to the hermaphrodite or non-hermaphrodite state of these plants.

On the rock garden 212 species and varieties of plants were more or less in bloom on May 31. It will be needless to record a list of all. The following selection may be useful to those individuals wishing to cultivate a set of plants for flowering at this particular time:—

Andromeda fastigiata
" tetragona
Arenaria alpina
" palmata
" Papeana
Arctostaphylos alpina
" californicus
Aubrietia Henderson and others
Aralea procumbens
Bryanthus erectus
Coptis trifoliata
Daphne Cneorum
Dodecatheon integrifolium
Draba tridentata
Dryas Drummondii
" octopetala
Erica hibernica alba
" stricta rubra
Erythronium americanum
Gentiana verna
Helonias bullata
" alba
Hutchinsia alpina
Iris cristata
Ledum buxifolium
Ledum thymifolium
Lithospermum prostratum
Menziesia cœrulea
" Drummondii
" empetriformis
Polygala Chamæbuxus
Phlox setacea violacea
Primula cilata purpurata
" " cortusoides amœna
" " integrifolia
" " involucrata
" " luteola
" " pedemontana
" " venusta
Pulsatilla vulgaris varieties
Ranunculus parnassifolius
" " uniflorus
Rhododendron Chamæcistus
Salix lanata
" reticulata
Saxifraga peltata, and many others
Trillium undulatum
Trillium grandiflorum
Viola pedata

Read at the June meeting of the Botanical Society of Edinburgh, by Mr. M'Nab.

PEACH SETTING.

WE have this subject again revived, with all its doubts and uncertainties. It seems to be a favourite dish with gardeners, and Mr. W. Miller has studied the "flavouring up" in a way that few can find fault with: he has no objection to clear water, chilled water, tobacco water, or any other power or agency, whatever it may be, whereby a good crop of fruit may be obtained. It is quite right that every cultivator should be allowed to judge for himself the remedy or remedies that he considers needful in order to secure the best results, but I think it is hardly fair to those who are not by practice possessed of sufficient knowledge and discrimination to enable them to take a decided course of action, to lay down so wide a basis of argumentative vagueness. It is just twelve months since an exhaustive discussion on the subject of Peach setting was closed in the columns of the *Gardeners' Chronicle*, and, as far as I can remember, every "opportunity was given to discuss the merits of the various systems advanced by several correspondents."

The main object of the discussion referred to resolved itself into a review of the practice as carried out by some of the most successful and experienced cultivators of the day for over twenty years, and finally the test of the subject under debate seemed to rest on the evidence for or against the use of the syringe, as the most successful means of insuring fertilisation. I have always maintained that the process of fertilisation never took place when the flowers were in a state of saturation, and, after another year's experience, I have still no reason to alter my opinion. The different arguments advanced, both for and against the syringing system, will be fresh in the minds of those who took any interest in the matter, so that it will not be necessary to go over the same ground again. Mr. Simpson, of Wortley, who has been a stern advocate of the syringe, wrote a very able and cogent article on its behalf, in which he included every point that was worth being urged in its favour. It has been asked why should not wet pollen fertilise? Why, indeed! We have the matter in our own hands, and can test it by a constant application of moisture, let it be through a rose as fine as you like, and see how fertilisation progresses. This process may seem a rather unnatural test, but then we must bear in mind the rapidity of fructification under the benign influence of the syringe. Now this theory—for it turns out to be theory only—has fallen to the ground, and it is of no use to revive it. The editorial verdict at the end of last year's discussion was against it. I quote the words *in extenso*, as taken from the *Gardeners' Chronicle* of April 22, 1876, p. 537:—"We ought to add that, although the water would cause the pollen grain to burst, and liberate its contents, as above stated, yet the emission of the pollen tube, and its passage down the style to the ovule, or rudimentary seed, would be much more certainly insured by the moisture from the stigma itself. We apprehend, from this point of view, that the benefit of the syringing would be mainly mechanical, just as shaking the branches would be." From the above it would appear, as Mr. Miller also observes, that the great thing to be aimed at is to keep the trees in a healthy fruitful condition, rather than to depend on any artificial theories, which are harmless enough in themselves, but which are calculated to throw the inexperienced into interminable difficulties, when so many stumbling blocks are strewn in their path.

Mr. Miller refers to the assistance a hive of bees rendered him in setting the fruit in his early Peach house, and it reminds one of the lines—

> "How doth the little busy bee
> Improve each shining hour;"

but Mr. Miller does not tell us whether the remarkable docility of the bees was attributable to any preparatory training or not. I tried bees at one time, but found they were more busily engaged in a hand-to-hand combat with the top ventilators, than in assisting to fertilise the flowers; they, too, are harmless, and if they do not hurt themselves they will not harm the Peaches.

I now venture to offer an opinion on the early Peach crop, and I hope others will do the same, so that we may learn whether the crops in other counties have been as plentiful as they are here in Lancashire. I never had a more tedious task than that of thinning the fruits in our early house. I believe every flower set, and that too at a time when we were bewailing the want of sun, or even light. How are we to

account for this? Every one who has an early Peach house has a full crop, whilst the late houses are almost empty. What about the syringe, the bees, the bunch of feathers, and all other appliances enumerated by Mr. Miller? Have they all failed to produce their good effects when the weather-cock points to the east and north-east? *W. Hinds, Otterspool.*

—— I have been amused at the late articles in the *Gardeners' Chronicle* on the setting of the above fruits, for as a rule the trees with me set their fruit too thickly, without any syringing of the bloom or artificial impregnation of any kind, the only exception being with the first forced trees, for when in bloom in December or January they are assisted in dull weather in setting their fruit by distributing the pollen on the stigma with a feather, or with the forefinger and thumb. Most of the Peach and Nectarine trees here are grown under glass, and being very healthy, from the soil suiting them, they never fail in producing good crops. On a glass-covered wall nearly 800 feet in length, and planted with Peach and Nectarine trees in the border, the trees have lately been thinned of their fruit for the second time, and what were taken off would have filled a bushel. In the sharp frosts in the first week in May artificial heat was applied to this structure so as to raise the internal temperature 8° higher than the air on the outside, and this was sufficient to save the crop. In unheated orchard-houses it is reported, in several localities, that both the Peaches and Nectarines have been injured when in bloom, but this has been a most abnormal season both in the winter and spring, and such another may not occur again for some years. *William Tillery.*

Foreign Correspondence.

BANGALORE:—*The Drought.*—Returning to India from furlough I arrived at Madras on Jan. 14, when the chief topic of conversation was the ravages that famine was making in the southern peninsula, the Kurnool, Cuddapah and Bellary districts of which were stated to be the worst afflicted in this respect. Sir R. Temple, as special delegate, was making a tour of inspection through Madras, Bombay, and Mysore, with the object of giving the advantage of his experience, and aiding by his counsel the earnest endeavours that were being made to contend with the serious condition of affairs. The state of Bangalore was described to be even worse than that of Madras, and the country between the two places was spoken of as a desert, a howling wilderness, and by other terms, according to the idiosyncracy of the speaker. I had intended to travel to Bangalore by the night train, to which sleeping-carriages are attached, but the above rumours, which might possibly be exaggerated, determined me to go up by the day train of the following day to test the value of them personally, so far as this could be done by careful observation from a passing train. During the 200 miles not a drop of water was in any of the large tanks (they are called locally tanks, but are in reality irrigation reservoirs, or lakes), except at one place at the crest of the Ghauts in the middle of the jungle, and near and around which cattle, sheep, and goats, and numerous birds had congregated. Notwithstanding the absence of water and cultivation, and although the deciduous trees looked more wintry than ever I remember to have seen them, the cattle were browsing on scanty herbage, sheep were busily nibbling something that was not visible from the train, and both appeared fairly active and in better condition than the accounts would have led one to expect. The people of the wayside villages semed to be in fair case, and to be employed in their ordinary agricultural operations. Where any water or moisture remained near the surface busy hands were to be seen cultivating little patches of some stolen crop, or baling out water to some irrigated land from a recently-made well. Some of the grasses, too, seemed to stand the drought admirably, and where the grass cutters, in their labour of collecting grass for the horses and other animals, had here and there grubbed up portions of it, the patches that were left seemed to be endued with fresh vitality and vigour from this rude stirring of the soil, and, with the aid of the night dews, enabled to make fresh growth. The deciduous trees appeared to have taken a longer rest than usual. Notably among them were some of the Ficus and Acacia tribes, and a casual observer might from this added mournfulness to the scene take a somewhat desponding view, and say, as some unreasonably did say, that unless heavy and continued rain fell immediately there would be neither trees nor herbage remaining. But a closer observer would not fail to see the glistening beauty of the fresh leaves of the Palms and of other indigenous trees or shrubs. On that hot and dry morning such a sight was most refreshing. The foliage looked as if it had sent its roots down to a lower stratum, where moisture was to be found, and was revelling in the sun and heated air. In the valleys running up into the Ghauts, down which little affluents of the Palar River still retained sufficient moisture or water, this was very noticeable; and lower down, in the sandy bed of the parent stream itself, spring channels of running water were excavated by which patches of Sugar-cane and other crops were well cultivated, that greatly heightened the effect. The gravity of the situation seemed to arouse the best energies of the agriculturists, and wherever it was possible the presence of moisture or water was taken full advantage of to cultivate grain or vegetables for themselves or green food for their cattle. Old irrigation wells were cleared out and deepened, new ones were sunk, and other arrangements made to store and distribute water. By their rule-of-thumb calculation they expected rain in April, earlier than usual, and in the meantime they collected and spread manure on their fields more diligently than usual, and made every preparation against the time when their keen study of Nature's varied mood, and the prediction of their astrologers (based on the same observations) assured them that rain would not fail them, even though the Government astronomer at Madras had predicted that a failure of rain would be characteristic of this season also. At Bangalore there was a total absence of water in the tanks. The Alsoor Lake, which had not been, it was said, dry for fifty years, was entirely so this year; and at the end of March it was in contemplation to send the mounted portion of the troops out into camp where water was more easily procurable, 10 miles off; but on the morning of April 1 a steady downpour of two hours' duration brought a two or three months' supply into it, and to the others in the neighbourhood on which the 150,000 inhabitants of the station depended.

THE FAMINE.

Previous to that the difficulty in getting water was extreme for the poorer classes, and the pressure of famine was severe in all the eastern part of the province, more or less so in the central, and still less in the western—a state of affairs that required all the ability and prevision of Mr. Saunders, the Chief Commissioner, and the officers of his administration, to grapple with. The country was burned up, only here and there was a blade of green grass to be seen, or a patch of some green cattle food grown in favourable sites and under favourable conditions. Cholera and small-pox were very prevalent, and carried off thousands who were, from want of proper food, unable to contend against them. Sickness among the cattle, too, was very great, and the mortality unusually severe. Still, with all this to contend against, the agriculturists persisted in their expectancy of rain falling in due season, and laboured diligently in collecting and spreading manure, and in ploughing and cross-ploughing their fields, putting themselves and their families, with sagacious foresight, on lessened rations until better days should come. During this time relief-works under the professional department were put in hand, to give employment to all who were physically able to work, and to prevent them falling into a less capable condition. For such, works of an easier kind were provided everywhere that foresight could suggest, under civil officers of districts, to whom a wide discretion coupled with due responsibility was given. Both these classes were paid in money, and taskwork exacted from them. For those who were physically unable to work, gratuitous relief was provided at camps and kitchens, under careful superintendence, where cooked food was daily meted out to them; but among these even light work in and about the administration of such institutions was, according to capacity, insisted on; while to provide for such cases as those who were suffering, but who would not for various reasons come to these institutions, a house-to-house visitation in town and country, embracing in its organisation every acre in the province, was instituted, with the object of affording special relief in money or grain according to reported circumstances, and in this way a system of relief was organised for all classes needing it. Even before the providential downpour on April 1 the trees and shrubs put forth their young leaves vigorously, and the bare branches of the deciduous trees, one after the other, day by day "hung their leafy banners out" in a way that, considering the surroundings, was truly astonishing, and apparently as a rebuke to those who persisted in taking an unduly desponding view of the situation. The fall of rain above referred to put the people visibly in heart, gave a great impetus to all agricultural operations, and by the middle of the month the new foliage was in all its new beauty of freshness and delicately diversified colouring, aided by the brilliancy of some of the flowering ones, chief among which were the Poinciana regia, Cassia Fistula, Lagerströmia regina, interspersed with the more delicately tinted "half-mourning" of the Pongamia glabra and the fragrant Melia Azedarach, the whole heightened by the magnificence of the Bougainvillea spectabilis, the Antigonon leptopus, Thunbergia laurifolia, Petræa volubilis, Poivrea cocinea, and other showy climbers for which Bangalore is celebrated.

POINCIANA REGIA.

The Poinciana regia trees were most striking in their fulness of sportive and diversified colouring. They were in all colours, from deep crimson—which in the uncloudedsky looked disagreeably as a great ball of fire—through every gradation of orange down to almost pale broken yellow. They seemed to revel in the drought and to mark their appreciation of it by freely running to sport, as exhibited in the book of specimens sent for the consideration of the President and members of the Scientific Committee of the Royal Horticultural Society. The pollen was most abundant, and scattered about profusely. Standing under a tree gathering specimens a person becomes covered with the deep orange dust, and in this way it would be easy perhaps to accomplish a desideratum, viz., to establish the most gorgeous varieties thoroughly, and promote the sportive marking, at the same time to induce a more dwarf and less straggling habit of growth. To this end, instructions were left with the superintendent to select and establish the finest specimens of the P. regia, and to cross them also with the P. pulcherrima (of two kinds, one orange and one a well-toned yellow), to induce the shrubby growth and long duration of flowering that is so conspicuous in the latter; to fertilise with the latter some of the best kinds of the P. regia with the same object, and to carefully save the seed; the same trials to be made with P. Gillesii, of which there is one plant of shrubby growth in the Lál Bágh. If the experiments are successful—and from this year's experience there does not seem to be much doubt in the matter—it might be possible to produce small shrubs grown as small standards or as Azaleas are exhibited, with a most gorgeous inflorescence, that would wonderfully brighten up any floral exhibitions in this country. Some selected seeds from the finest flowering trees were collected in April, and the packets carefully marked. They will be sent in a day or two to the secretary. What I wish to bring forward for consideration is—whether such growth could be induced as proposed in the Poinciana regia, and to place on record the result of the effect of the late great drought in Mysore on the deciduous trees and vegetation generally as briefly contained in this memorandum, and the one by the superintendent of the Lál Bágh accompanying it. *J. Buchly, Col. and L.L.C., Brighton, June 1.* [We shall publish Mr. Cameron's letter in our next. EDS.]

PLANT PORTRAITS.

HABRANTHUS HESPERIUS, *Flore des Serres*, t. 2277.—A Chilian bulb with narrow strap-shaped glaucous leaves, and stalked umbels of bell-shaped reddish flowers, having recurved perianth segments. It is nearly hardy.

HELICHRYSUM GRAVEOLENS, *Gartenflora*, t. 889.—A woolly herbaceous plant with linear sessile leaves and clusters of small yellow flower-heads. Native of Greece. H. PLICATUM is somewhat similar, but with less woolly, narrower leaves, tapering into a long stalk and large flower-heads. This also is a native of the mountains of Greece.

HOMALOMENA (CURMERIA) PICTURATA, Regel, *Gartenflora*, t. 891.—A stove foliage plant of the Aroid family, with sheathing, stalked, cordate-ovate leaves, having a broad central silver variegation. It is the Curmeria picturata of Linden and André, *Illustration Horticole*, 1873, p. 45, t. 121.

HYBRID NARCISSI, *Floral Magazine*, t. 250.—The plate is devoted to four of the most distinct hybrids raised by Mr. Leeds, of Manchester. The forms are

of considerable scientific interest, but they do not surpass the parent forms in beauty.

HYBRID TEA ROSE MRS. OPIE, *Floral Magazine*, t. 251, is a carmine-tinted tea-scented variety, apparently of much merit. It was raised by Messrs. Bell & Son, of Norwich.

HYMENOCALLIS ADNATA, Herb., *Flore des Serres*, 2275-76.—A species with rather broad leaves, umbels of white flowers, with narrow perianth segments, and a deep wavy corona. It is a native of South America, and was introduced as long ago as 1758.

HYPOLYTRUM LATIFOLIUM, *Botanical Magazine*, t. 6282.—A handsome sedge-like or Cyperus-like plant, with broad lanceolate leaves, and flower-heads in rather dense terminal clusters of a rich brown colour. It is a native of Ceylon and other parts of tropical Asia, and would be desirable plant to introduce into a tropical conservatory.

IRIS TECTORUM, *Flore des Serres*, t. 2282.—A splendid blue Iris, figured in our columns in 1876.

IXOLIRION PALLASII, *Flore des Serres*, t. 2270.—A bulbous plant with linear leaves, erect stem, and bell-shaped six-parted flowers, of a metallic blue colour. The plant is a native of Turkestan and the Caucasus, and hardy enough to bear the climate of St. Petersburg. It is likely to be a great addition to our gardens.

LÆLIA PUMILA DAYANA, *Floral Magazine*, t. 249.—A dwarf winter-blooming species, figured from a specimen exhibited by Sir Trevor Lawrence at South Kensington. Its coloration is deeper than that of the ordinary L. pumila.

LILIUM CONCOLOR *var.* LUTEUM, *Gartenflora*, Dec. 1876, t. 885.—A yellow-flowered form of L. concolor, characterised by the presence of densely tufted bulbs, linear lanceolate leaves; segments of the perianth oblong obtuse, emarginate, yellow, purple spotted.

LILIUM NEILGHERRICUM, *Floredes Serres*, t. 2266-7, Hort. Veitch.—This is considered by M. Duchartre to be different from L. neilgherrense. It is one of the Indian Lilies, with trumpet-shaped white flowers.

LINARIA LINOGRISEA, *Gartenflora*, t. 898, is an annual species of Toad-flax, native of Portugal, with linear leaves and flowers about an inch in length, of a purplish colour, with a yellow palate.

LUMA CHEKEN, *Gartenflora*, t. 890, is a Myrtle-like shrub, native of Chili, suitable for cool greenhouse, and would probably prove hardy in the South of England.

ONCIDIUM CHEIROPHORUM, *Botanical Magazine*, t. 6278.—A charming, very sweet-scented species, commented on in our columns by Professor Reichenbach, in 1871, p. 168. It is a native of the volcano of Chiriqui, where it grows at an elevation of 8000 feet, flowering in December, with the thermometer a few degrees above freezing-point. It flowered at Kew in 1872 from plants reared by Messrs. Veitch. The pseudobulbs are about an inch in length, compressed, with sharp margins; leaves 3—6 inches long, linear-lanceolate; flower-stalk slender, drooping, bearing an elongated, densely crowded cluster of bright yellow flowers, each about half an inch in diameter.

PECTIS ANGUSTIFOLIA, Torrey, *Botanical Magazine*, t. 6286.—A branching annual Composite, with linear, coarsely ciliate leaves, and heads of yellow flowers like a Senecio. In its native country its compact habit, and dense inflorescence renders it very noteworthy. It was introduced from Colorado by Mr. Thompson, of Ipswich.

BRITISH GARDENERS.

JOHN WILLIAM LAURENCE.

MR. LAURENCE, the subject of our present portrait and memoir, has been pretty widely known as a successful Orchid cultivator, having had charge of the fine collection made by Bishop Sumner, at Farnham Castle. He was born in the year 1828, at St. John's, near Ryde, in the Isle of Wight, where his father was gardener to the late Sir Richard and Sir John Simeon for forty-four years. His father was a native of Aberdeenshire, and served his apprenticeship with the late Mr. Thompson, of Chiswick, at Haddo House. He was a thorough practical gardener and an accomplished botanist, so that the gardening education of the younger Laurence began very early. In 1842 he commenced work under his father at St. John's as kitchen-boy, &c., and he remarks thereupon: "The time thus spent is invaluable to the young gardener. Every one intending to follow the profession should so begin, and not, as is too often the case, where he ought to end, in the houses."

From St. John's he went, in 1844, to the Royal Botanic Gardens, Kew—a course followed to advantage by many young men who have attained eminence in the profession. Kew was at that time, under the able management of Sir William J. Hooker, just emerging from its chrysalis state. Here, amongst his fellow workmen, were the late Dr. Seemann; McIvor, of Dotacamund; Hill, of Brisbane; Meehan, of Philadelphia; and Whitaker, of Cewe. "Here," observes Mr. Laurence, "let me add a tribute of respect to the ex-curator, Mr. J. Smith, to whom the young men of Kew owe many of their present privileges."

His next move was, in 1846, to the Royal Gardens, at Frogmore, which were then coming into notice from the grand collections of fruit shown at Chiswick



by Mr. T. Ingram. Mr. Ingram was ably seconded by foremen who were themselves first-rate men, three of whom still hold the same position, namely Mr. Murray, forcing; Mr. Powell, hardy fruit; and Mr. Marr, kitchen garden—each willing and anxious to impart his experience to any young man who wished to improve himself. There being so much to learn at Windsor, Laurence was induced to remain more than six years, at the end of which time, in 1852, he was engaged as gardener to that grand old patriarch, and the last of the prince bishops, Dr. Sumner, Bishop of Winchester, at Farnham Castle, Surrey, who was then forming a collection of Orchids, which to the day of his death was to him a source of intense enjoyment. "As he never exhibited in collections," Mr. Laurence observes, "my aim was to produce a constant succession of bloom at all seasons of the year—a result which probably no other class of plant will yield, but which may be attained by a proper selection of Orchids, growing them as luxuriantly as possible in their growing season, and giving judicious rest when the growth is fully matured. The *Gardeners' Chronicle* of past years, and a pile of certificates of the Royal Horticultural Society (all honour to its past and hope as to its future), attest to my success. Amongst others I was fortunate in first flowering the grand Saccolabium giganteum. The gold and bronze section of Pelargoniums also originated at Farnham Castle, in Mrs. Milford."

After the death of the Bishop, in 1874, Mr. Laurence remained for a short time in the service of the present prelate; and in 1875 was engaged to W. F. Webb, Esq., of Newstead Abbey, the home of Lord Byron. Mr. Webb has been constantly improving the place since it came into his hands, but all relics of the great poet are most religiously preserved.

"In reading through the autobiographical notices of gardeners in past numbers of the *Gardeners' Chronicle*," writes Mr. Laurence, "I have been struck with the general testimony to the good feeling of employers. I must add to these my own instance, for I have received nothing but kindness and encouragement from both past and present employers; and I am old-fashioned enough to think, in these days of strikes and lock-outs, that this mutual confidence between masters and their dependents, is the only good point about the old feudal system which was worth preserving."

Florists' Flowers.

BEDDING DAHLIAS.—The bedding and bouquet Dahlias do not receive the attention they deserve, though there are evidences that a growing regard for them is springing up among gardeners. They are in the very front rank of late summer bedding plants, continuing in flower till a nipping frost robs them of their autumnal beauty. In large establishments, where striking floral effects and bold masses of colour are required, the bedding Dahlias can be made of excellent service.

Formerly we had two distinct groups of Dahlias—the bedding and the bouquet or Pompon. The former were generally of dwarf growth and great freedom of bloom. The Dahlia is naturally a free flowerer, but in the case of plants grown for a supply of blooms for exhibition purposes but very few can be seen on a plant at times in consequence of the process of disbudding, which in the case of most varieties has to be somewhat severely performed. Dahlias, when used as border flowers, are found to be loaded with flowers. The florist stays his hand, the plants are thus permitted to carry their full harvest of flowers. Good bedding Dahlias, therefore, are invariably remarkably free blooming.

The bouquet or Pompon Dahlia was, it is believed, of Continental origin, though the varieties have been increased by English raisers. The flowers were small, well-formed, striking in appearance, and the plants of tall growth. Their tall growth made them unsuitable for bedding, unless it was to form a centre to large beds. They were recommended for growing where a great number of cut flowers were required in summer and autumn. Originally there was a material difference in the characters of the two, but by reason of crossing or some such process a dwarf growing type of the bouquet Dahlia has been obtained with small, compact and interesting flowers, suitable for cutting from or for furnishing beds. At the Dahlia exhibition at the Crystal Palace, in September last, Mr. C. Turner exhibited a batch of these, among them John Sandy, buff, tipped with orange-red; Dove, blush, tipped with rosy lilac, very pretty indeed; Triumph, bright scarlet with yellow base, very effective; Lilacina, pale lilac on a sulphur ground; Little Arthur, pale yellow, tipped with red; Dr. Schwebes, scarlet; Vesta, white; and Louis Rodani, deep shaded lilac. A selection of good bouquet varieties of various growths will be found in the following:—Coronet, blush white, tinted lilac; Emotion, bright crimson, tipped with white; German Favourite, heavily edged with crimson-lake on a pale ground; Little Beauty, crimson-red, sometimes tipped with white; Little Dorrit, lilac, very pretty; Little Fairy, blush pink, spotted and striped with rose; North Light, bright scarlet; Prince of Liliputians, maroon; and White Aster, white, very free and good. The blooms of the bouquet Dahlia are very useful for mixing in with other flowers in large vases, &c., and as they are freely produced there is no lack of them, and the act of cutting appears to feed the productive character of the plants.

A selection of good, useful, fine blooming bedding Dahlias will be found in Rising Sun, the best scarlet,

very dwarf, compact, and wonderfully free; Fireball, very bright red, and decidedly good; Crimson Gem, very free, and by no means redundant of foliage; Floribunda, pale crimson, bright in colour, and a profuse bloomer; Tom Thumb, maroon, very dwarf, scarcely exceeding 1 foot in height, and very useful as an edging for taller growing forms; Sambo, almost black, and an excellent contrast to a yellow; Gladiator, crimson, free and of good habit; Leah, rich deep yellow, a most excellent bedding variety; White Bedder, an excellent white, of compact growth, very free, and lasting a long time in bloom without showing the yellow centre common to many of the whites; and Alba floribunda nana, an excellent bedding variety, but the flower soon gets thin.

The foregoing selection is that of a gardener who makes a point of growing a number of bedding varieties annually, and makes a most effective display. The following are also good, and were, indeed, the chief varieties in the Slough collection last summer:—Aurora, yellow, tipped with lake, very free, fine, and showy; Crimson Gem, rich crimson, very fine; Little Wonder, scarlet, remarkably effective; Royal Purple, free, and very good; Snowdrop, pure white, free, and effective; and Zelinda, purple.

One of the prettiest displays of bedding Dahlias to be met with can be seen every summer in Mr. Geo. Rawlings' nursery at Romford. Mr. Rawlings annually plants out a quantity, and as soon as the plants are large enough to require securing, the earth is carefully removed from one side of the stem, so as to lay it as nearly on its side as possible without breaking it, and two small sticks are placed crossways to keep it secure. When the side branches are large enough to be in danger from wind, a sharp pinch is given each, sufficient to cause it to lie down in the soil without actually breaking the stem; the prostrate shoots soon grow upwards, and bloom most effectively and freely. The pinching process is gone through two or three times, in order to have a well furnished bed.

It may be added that in order to save the trouble of staking, tying, &c., Mr. Rawlings treats his show and fancy Dahlias in the same way; and he has displays of Dahlias that cannot be met with in nurseries where the flowers are grown for show purposes.

Bedding Dahlias must be well cultivated to be effective. The ground should be enriched with plenty of manure at the proper time for preparing it, and the plants should be grown on in pots as large in size as possible before turning them out. The great thing is to get a good start, and the sooner the plants get established and start into growth the sooner will they cover the ground and show a head of bloom. Late summer and autumn is uncertain, as an early frost will sometimes lay low the promise of a rich harvest of Dahlia blossoms. Therefore is urged the necessity for getting the plants out as early as it is safe to expose them, and into active growth as quickly as circumstances will admit; syringing and sprinkling overhead and watering at the roots in dry weather, so that no serious check comes nigh the plants. *E. D.*

The Villa Garden.

SWEET-SCENTED FLOWERS. — Fragrant plants, whether the perfume be exhaled up through the fine pores of the scented petals, as in the case of the Rose, or through the leaves, as in the case of Aloysia citriodora, or the lemon-scented Verbena, as it is termed, have always been a favourite with the lovers of gardening. Perfume in flower—that is, the perfume that attracts, not repels—is equal to so many added charms.

MUSK.—The Musk is a fine old sweet-scented plant, and it will require another century of novelties to thrust it altogether out of cultivation; it is so sweet and agreeable, so powerful in its delightful perfume, so modest and winsome, and so easily grown, that no wonder it is so popular. In the crowded alleys of London the Musk, if cared for, will do well, and it is always a leading feature at the City flower show. Some of the plants are admirably grown; the difficulty lies in having them in flower at the right time—that is, when the City flower show is held.

The Musk is a rare Villa gardener's plant, if only he will grow it as it deserves to be grown. It is no use to plant it out in a dry hard piece of ground, and leave it there uncared for; or to pot it in a wretchedly poor soil and neglect it. If plants possess emotions then it is dire cruelty to the Musk to submit it to such ungenerous, undeserved treatment; it merits a better fate, and no plant better repays attention. It grows freely, flowers prodigiously, and breathes forth a fragrance so beautiful as to add a hundredfold to its usefulness.

Some of the best plants of Musk we have ever seen were raised from cuttings taken in the spring from old plants of the previous year, as soon as they began to make growth. The best cuttings crop up close to the sides of the pots, and if the soil be loosened and opened, and the cuttings taken off as low down as possible, and put into a pot of light sandy soil and kept moist, they will soon make root. No bottom-heat is required to assist them to strike root, but a little solar heat is of great assistance after they have made plants.

If four of the best-rooted cuttings be put into a 24-sized pot a capital specimen of Musk can be had. But rich soil is of the first importance, for the Musk likes a good soil. Plants have their likings—there is no mistake about it, and he that studies these things will be certain to attain to a pretty good understanding with his plants. Another point is to pot the Musk rather low in the pots, say from 2½ to 3 inches below the level of the rim. But why? Well, as Jacques puts it in Shakespeare's *As You Like It*, "the why is plain as way to parish church." If, when the Musk has pretty well filled with roots the soil in which the plants are growing, some more rich soil be added, sufficient to fill up the pot to within an inch or so of the rim, the plants will gain added strength, and grow and flower with renewed vigour. In some country districts it is customary to meet with fine examples of Musk grown by the cottagers, and it is by adopting this practice that such excellent specimens are obtained.

We are growing Harrison's new hybrid Musk, and a fine thing it is, and we commend it to the attention of Villa gardeners as a most desirable plant for them to cultivate. The habit of growth and general character of the Musk is retained, but with the addition of large and finely-formed deep yellow flowers handsomely spotted. We are not quite sure from comparison that it is so highly fragrant as the Musk, but even if this be true, it is yet an admirable companion to it.

While the Musk is growing, and also when producing its flowers, it is well to keep the pots standing in a pan or saucer of water. The Musk is a moisture-loving plant, and cannot well be too liberally supplied in this respect. The plants, too, should be kept in the shade. The sun is burning hot, as when the summer heat is fierce the blossoms soon get dried up.

There is a strong growing variety of the Musk which is grown in some quarters under the name of the Giant Musk, and the designation is an appropriate one. It has a peculiarly robust growth, with larger and stouter flowers. We have both growing, side by side, and can bear testimony to the difference existing between them. Not that the more marked robust habit of growth in the one case places it above the other; the fact that the two varieties exist is simply recorded by way of giving completeness to the foregoing remarks.

There are certain cool shady spots in the garden in which Musk may be appropriately grown. It is sometimes planted in the open border, and at best but a sorry exhibition results. But in a cool place, where the sunlight falls occasionally during the day, and where it is generally cool and shady, a pleasant Musk garden might be made by preparing a bed worthy of it, giving it a soil in which it would thrive and bring forth its flowers plenteously. Such a bed should be replanted at least twice or thrice a year. The first year it would require little else than being kept moist and nice. The second and third years a good late dressing would be absolutely necessary, and a little manure water occasionally. Under such circumstances Musk would flourish, and bring forth scented leaf and perfumed flower in abundance all through the glorious summer season.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Those who have had much practice in the cultivation of hard-wooded greenhouse plants will no doubt have noticed the much greater strength and general vigour possessed by plants, when they arrive at the state of full-sized specimens, that have from their earliest stages been grown on quickly, as compared with others that have been subjected to a slower process by more restriction at the root during the first years of their existence. When this class of plants was first taken in hand, with a view to better exemplifying the condition in which it was possible to produce them by close attention and due regard to their requirements, than the way in which they had been seen when cramped in small pots, with little or no attention to stopping their shoots and tying them out, so as to admit light and air in a manner calculated to grow each individual species to something like its natural form, it was at once seen that the first essential to success was sufficient root-space, and some growers resorted to extreme measures in this direction by moving the plants at once from 5 or 6 inch pots into others a dozen or 15 inches in diameter. Whether such was so treated was in a healthy vigorous condition, and particular care for a time afterwards was taken, so as to not over-water until the roots had freely entered the large body of unoccupied soil, the growth made by plants so treated in a given time was often marvellous. But there is a very great drawback to this, which is known as the one-shift system: it is that the comparatively small number of roots that young plants, such as those under consideration, possess grow directly to the sides of the pot, without, as they ought to, ramifying in all directions through the soil and fully occupying it; and it was frequently found in after years, although the outside of the ball immediately next the surface of the pot was encircled by a thick mass of feeding rootlets, that the soil towards the middle and centre contained nothing but the few strong roots that had originally grown through it. This gave rise to the experiment of potting young stock of this description twice in the season—early in spring and again towards the end of June—in place of moving once later in the spring, and it has been found much the best method of growing them; but it is only when their requirements on from the time of the first potting have been well attended to, that this second shift is necessary, or even admissible—that is, the plants will require to have been kept in a good light house or pit, stood on a bottom of some moisture-holding material, kept slightly damp, with plenty of light, sufficient, but not too much air, and a little shade from sunbeat by diligent early shutting up in the afternoons. With young plants both the root and top growth made under such conditions will be double that resulting from less attentive treatment, and such stock will now be in a state to warrant their being moved again into pots from 2 to 4 inches larger, according to the progress that has been made by the plants individually. Use the soil in a similar condition to that advised for the early shift, immediately shading the roof so as to obviate the necessity, for a short time, of giving more air than can be avoided, especially at the side lights. The shading should be made of either mats, canvas, or something of the sort, which not only shields the plants from the sun's rays, but tends considerably to keep down the heat to a much greater extent than follows when the glass is simply obscured by whitening, paste, or anything of a similar nature put actually on it, which latter has the still further disadvantage of keeping out the light when no shading is required. Continue to stop and tie down all growths that are taking an undue lead, but on no account resort to the uniform, indiscriminate practice of nipping out the points of the shoots, whether they require it or not, which is adopted by some, and which precludes the possibility of the current season's shoots ever attaining their wonted size and strength, and likewise induces an overcrowded condition of growth. Specimen and half-specimen plants that have done flowering should have the seed-pods immediately picked off; or those that require it have the shoots sufficiently cut back. With many things, such as Boronia serrulate, Polygalas, Chorozemas, Dracophyllum gracile, Pimcleas, and any that each year make shoots of considerable length, unless they are freely shortened in every season before growth commences they in a few years get into a long, straggling condition, which necessitates in the after-training of the plants the branches being twisted and wound round the stakes, which practice should never be carried out further than unavoidable, as however full a bag of bloom a plant so managed may carry, it has an unnatural appearance. After being cut back, growth should be encouraged as far as possible without any delay. Give air early in the morning, but close the house in the afternoon two or three hours before the sun goes off the glass, at the same time syringing the plants overhead, keeping the floors and under the stages well moistened. Heaths.—Pick the flowers immediately off all those that have done blooming, and cut such of the freer growers in as require it; this latter applies particularly to E. Cavendishiana, a Heath that admits of exceptional treatment in several ways. Any plants of this variety that have got too tall may be cut back to the extent of reducing their height as much as one half; they should be then placed in a house with a close, moist, growing temperature, such as required for Azaleas, elevating them well up to the glass and syringing overhead every afternoon. In this way they will grow very fast, and after being subjected to this treatment for six weeks can be stood out-of-doors for a short time to harden up the growth. E. depressa is another plant that needs especial treatment to induce

free flowering; it rarely blooms sufficiently two years together, and in the intervening years betwixt its producing a full crop of flowers it is much the best to pick off the few it makes, and fully expose the plants out-of-doors from the middle of this month, or if earlier none the worse; if not thus fully exposed for a long season, however much growth it makes, it seldom flowers freely. *T. Baines.*

ORCHIDS.—Whilst so many additions are continually being made to these plants from varied and different sources, reference here being had chiefly to imported plants, it will be needful to remind those who for the first time have placed under their charge a number of plants that are still in the imported state, that no time should be lost in thoroughly going over the plants and carefully examining every piece, scrutinising them so as to be fully aware of the state of the leaves, bulbs—whether the leads are in a pushing and growing state, and if any of the back bulbs and dormant eyes are sufficiently plump and solid to hold out the probability that by a partial cutting through they may be induced to push out new growth to be followed by roots, and thus add to the leading growths, and, of course, considerably increase the value of the plants, as well as the much more quickly causing them to increase in size and developе greater blooming capacities. In treating of imported plants there will always be a few unmentioned that will be left to the judgment and discretion, in the matter of treatment, of the individual who has charge of the collection. Speaking, however, generally, mention may be made of four distinct groups; and though, in some respects, the treatment of all are very similar, it will be found that each is the better for a little different method in the earlier stages. Thus we have the Aerides, Dendrobiums, Cattleyas and Odontoglossums. In reference to the first division, which will also include the Vandas, Saccolabiums, Angræcums, &c., these, when freshly imported, are generally in a very dry condition, the few remaining leaves being very thin and yellow, and having but a small amount of roots that exhibit any signs of life. The best way with such is to fasten a piece of string over round each plant separately, and hang them up in the Cattleya or Dendrobium house with the head downwards in this state they must be syringed two or three times a day, and any excess of water will thus quickly run away; in a very short time—three weeks about—the leaves will have assumed a more natural green, as well as getting more solid, and the old root-stumps will also push out some new rootlets at various places. As soon as this is observed the plants should be taken down and potted in as small pots as can conveniently be used, using the crocks in potting so as to come almost up to the edge of the pot, covering the whole with moss. Each piece should be kept separate, and then all stood in the East India-house, if it is convenient—all being stood together. Here they will come on very nicely, and be much less likely to go off than if they were potted as soon as received, there being danger in this case of the few roots rotting through the continued moisture of the moss, as well also as the water lodging in the hearts of the plants and causing the centre leaves to turn black and damp off. When the plants have remained one season in the small pots, if it is seen that the following spring they will be ready up in larger pots, in which in a season or two they will make nice blooming plants, and come in very useful for exhibition purposes. The quicker varieties of the Aerides, such as odoratum, Dayanum, virens, suavissimum, &c., may be treated thus, and answer very satisfactorily, but Fieldingii, Lobbii, affine, maculosum, &c., which are slower in growth, should be kept in single pots for two seasons at least. They then stand putting together more certainly, and look better than when such dwarf pieces are made up in large pots. The Vandas, Saccolabiums, and Angræcums should be kept separate; they can be managed thus better, since sometimes a piece, for which no reason can be assigned, will go off from the middle of the plant, and for a while considerably mar the beauty and uniformity of the plant. The collection must now be treated to very liberal supplies of water and fresh air; scarcely any fire-heat will be needed, and by the aid of the sun the houses must now, after syringing in the afternoon, run up to the maximum temperature for the whole of the season. The Odontoglossum-house, however, by the admission of air at the top and bottom ventilators and by copious waterings on the stages and floors, as well as by syringing the plants carefully overhead, must have the temperature kept down, so that there is much less variation in this division than is permitted in the others. *W. Swan, Fellingfield.*

FRUIT HOUSES.

FIGS.—If the course of treatment which was recommended for these subjects during the time the fruit was ripening has been pursued, its nature would naturally tend to increase aridity in the borders generally, and in those of limited capacity especially; therefore, after the fruit is gathered, supply any deficiency which is lacking in this way by giving the roots copious supplies of water, to which may be added some stimulating agent, until the borders are thoroughly saturated. In this division the chief aim now will be the enforcement of means to secure the second crop of fruit in a satisfactory condition; no fire-heat need be applied yet, excepting under most unpropitious circumstances, but liberal treatment in regard to heat and moisture is essential when the fruit has attained the size of Walnuts. If they be thickly placed they should be well thinned, saving the largest and those which are placed nearest the base of the shoots; and if these or the spurs on the trees be at all crowded by all means thin them unsparingly, not only for the sake of the crop of fruit, but for the purpose of consolidating the growth, as unless this be properly effected this year successful results must not be anticipated for the subsequent one. Continue to ply the syringe freely over the trees twice every day; slightly open the house early in the morning of promising hot days, and close up with sun-heat at 80° or 85° in the afternoon and liberally ventilate wherever circumstances permit. In houses where crops of fruit are nearing maturity apply the same treatment as before advised under similar conditions. Keep all ordinary matters in the way of thinning, stopping, and tying in late houses well in hand, and take advantage of a rainfall for giving copious supplies of water at the roots. *G. T. Miles, Wycombe Abbey.*

CUCUMBERS.—From this time forward the most important point in this department is daily attention to detailed management. Real summer weather having set in, plants in all stages are growing rapidly without the aid of fire-heat. Those in bearing will require cutting over twice or three times a week to prevent interlacing of young growths and overcrowding foliage. Use the syringe freely early in the morning, and at the time of closing the afternoon, after which the temperature may run up to 90°. Water overhead occasionally with tepid water if the lights are movable, as few plants are more grateful for a thorough cleansing than the Cucumber. After the house has been closed about three hours admit a little air for the sake of that fresh and moisture does not fall below 80°. Red-spider, one of the most troublesome insects we have to contend with, will now advance with rapid strides. The best remedy for its removal is a weak solution of Gishurst or sulphur-water, with sufficient soft-soap dissolved to make it slightly adhesive. Syringe the foliage, stems, and walls late in the evening; shade early the following day, and if the enemy still holds out repeat the dressing. Plants in pits and frames may require fumigating, particularly if the beds have been used for propagating. Prepare the plants by removing the linage and soiling the bed to become dry, and reduce the temperature by leaving air on until the time arrives for smoking. Light smokings at intervals of three days are best, and the smoke should be made to pass through a layer of damp moss, to prevent scorching. Always syringe and water the following morning before the sun touches the foliage. Use glasses for keeping the fruit straight and free from the unsightly blanched hue, which is produced by close contact with the surface of the soil. *W. Coleman.*

ORCHARD-HOUSE.—We have heard this season of several cases of fruit-dropping in unheated orchard-houses, and in every instance the cause has been traced to the severe frosts we had early in May. Frosts that do not kill tender bedding plants or not cause fruit to drop under glass if the past season's wood has been properly ripened and the roots are in a satisfactory state. Trees in pots which have cast their fruit should be marked for examination in the autumn. If planted out, lifting and relaying of the roots in new loam will most likely prevent a recurrence of this disappointment. Assuming that the fruit has been well thinned, all gross shoots stopped, and mulching attended to, the points to which I would now direct special attention are ventilation, syringing, and watering. If the fruit is not wanted until after the Christmas season is over, the ventilators may be allowed to remain wide open by night and by day until the crop is gathered. Water copiously all trees carrying fruit with some stimulating liquid as often as they require it. Damp the floors and walls two or three times a day, and syringe the foliage with the garden engine every afternoon about 4 o'clock. Remove Cherries when they begin to change colour, otherwise they will crack; and discontinue wetting Plums when they show signs of ripening, as Plums, like Grapes, lose half their value when deprived of their delicate bloom. Pots will now take large supplies of water. Let them be well mulched, and allow the roots to find their way through the bottoms of the pots into the border. Stop at the fifth leaf. Remove all surplus and weak growths, and admit light and air, and thin the fruit in proportion to the strength of the trees.

KITCHEN GARDEN.

As space becomes available by the removal of summer crops immediate steps should be taken to bring it into a state of preparation for the planting of spring Broccoli and winter greens of all sorts; the ground should if possible be trenched over a good depth and a good supply of manure incorporated, and a sprinkling of salt strewn over the surface previous to planting will be of a great advantage to the future crop, as all the Brassica tribe are partial to it. In selecting the various sorts of Broccoli for planting, see that they are perfect, as so many are apt to go blind in the preparatory state, also observe to plant all the earliest sorts together in rotation, and the same with the late sorts; by this means the space occupied by the early sorts may often be cleared off and prepared for other crops long before the latest crops are ready. The lions' share of space in the late crops should by all means fall to Cattell's Eclipse. See that all are correctly labelled and dated for future reference, and give the plants as much space as possible between both plants and rows, as the dwarfer and more stocky they can be grown the better is their chance of passing uninjured through the winter. In large families a good supply of winter Greens is not less in demand than Broccoli, and indeed in very severe winters is often the only reliance, so that a good breadth of the various sorts proportioned to the demand must be planted out as fast as the ground becomes vacant, a good part of which will probably be that occupied by the early Potatos, which as fast as they are cleared off should be manured and dug over and planted, reserving the later sorts, such as Buda and Jerusalem Kale, and Veitch's dwarf late Scotch Borecole, to the last planting. Continue to sow a few rows of Cabbages for succession, they are always useful, and it is better between the successional plantings than in the sprouts from older beds. The season is now very favourable for all advancing crops, and although most things are much later than usual they have made a rapid stride lately; and as weeds grow likewise, the hoe must be kept constantly at work stirring the soil even if there are no weeds apparent, as the operation itself is so beneficial in many ways to the crops—where a well stirred and pulverised soil on the surface will help very much to prevent evaporation of moisture during drought. Celery, however, being naturally a marsh plant, must have copious supplies of water with now and then applications of liquid manure, in which a few handfuls of salt may be stirred with great advantage.

Tomatos on walls or other structures should now be making good progress, and should be kept well thinned-out and securely fastened to the trellis of wind. As they are generally very rampant in growth, a good portion of the coarse foliage may be gradually removed. Capsicums and Chilies will also be making good growth, and should be firmly fastened to stout stakes, and the branches thinned out now and then. Basil and Sweet Basil will probably require a little attention in watering to give them a good start. The thinning-out of some of the main crops will still require attention. The main crop of Carrots, where they came up well, will only now be ready for thinning. A distance of 6 inches is sufficient for them, and vacancies may be filled by transplanting. Here our first main sowing in the middle of April never (owing to bad weather and slugs) put forth an appearance; a timely supplemental sowing has, however, brought a good bed, which will not be much behind. Onions should be thinned all at once, and the surface well stirred between the rows. Thin out Lettuces sown in drills, and sow more both of Cos and Cabbage varieties for succession. The thinings may be transplanted if required, but they must not want for water, or they will soon run to seed. A few particular sowings may be added to during the next fortnight. In the first place, a last sowing of Peas may be made in well-manured trenches, and as they advance in growth should be mulched and watered. A row of dwarf French Beans may be tried; with a very favourable autumn they will be very useful. A preparatory sowing of Endive may be made for early purposes, if it is much in request; but where Lettuces are preferred for autumn use the sowing for main winter crops should be deferred. A good sowing of Cabbages for autumn and early winter use will be found most useful. Salading will now be much in request, and attention must be paid to successional sowings of Radishes and small salads, whilst advancing crops must be kept well watered to render them crisp and juicy. Continue to plant successions of Walcheren Cauliflower; a cool bottom and rather shady place is best for them. Some interesting letters from various correspondents on the use of paraffin for preventing the ravages of mice on Peas are worthy of attention. I have great faith in its efficacy. My practice, however, differs from that of those who soak the Peas in paraffin for so many hours, as I do not give them as many minutes. When the drills are drawn, I put, say, a quart of Peas into a pan, and pour on them a wine-glassful of paraffin, and stir them up, and sow at once. Several rows so treated have been tried their whole length, but they never pulled out more than one Pea at a place, and that was apparently unpalatable. The rows have all been fully furnished. *John Cox, Retford.*

THE
Gardeners' Chronicle.
SATURDAY, JUNE 23, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY,	June 26	Sale of Mr. Wills' New Dracænas, at Stevens' Rooms.
		Farnham and South Hants Horticultural Society's Show.
		Sale of Orchids, at Stevens' Rooms.
WEDNESDAY,	June 27	Burton-on-Trent Floral and Horticultural Society's Show.
		Brighton and Sussex Horticultural Society's Summer Show (two days).
		Leeds Horticultural Exhibition (three days)
THURSDAY,	June 28	Torbay Summer and Rose Show.
		Richmond Horticultural Society's Show.
		Sudbury Horticultural Fête (two days).
SATURDAY,	June 30	Alexandra Palace Great Rose Show.

KEW is worth a visit at the present season —indeed we do not know when it is not so—for visit it when he may the plant lover is sure to find a vast deal to interest him. The Rhododendrons are of course past their best and have not on the whole been equal to what they are in some seasons. The Ghent Azaleas, so gorgeous last year, are not so fine this season. Indeed here, as elsewhere, the disastrous weather we have had up till quite lately after a very wet mild winter, has left its mark, and dying twigs, lacerated leaves and blackened buds show how cruel was the blow inflicted. Day by day, however, the traces of these disasters are rapidly being effaced. Kindly Nature not only heals the wounds, but she is careful to conceal their traces.

It will be remembered that several months ago we drew attention to some newly-formed beds in the pleasure-grounds, near the fine spar of Abies Douglasii, devoted to various shrubby plants, arranged according to their natural orders. Forming the edge to one of these beds is a raised border devoted to Helianthemums. When we saw them a few days since the plants were only in bud, but such was their number that they must now present a gorgeous spectacle, and will induce some of our cultivators once more to pay heed to these very beautiful but now almost entirely neglected plants. In the Temperate-house some of those fine Cordylines to which we alluded in our Special Supplement devoted to the illustration of the gardens, are now in bloom, and most graceful the flower-panicles are. In the herbaceous ground, one of the most noticeable plants is a very beautiful Crucifer —Æthionema grandiflorum — whose dense spikes of pink flowers render it specially attractive. This, again, is a plant that ought to be much more widely known. Against the wall of this department are now flowering Convolvulus Cneorum, which we have before alluded to, but which is so beautiful that no apology is needed for again calling attention to it. Habrothamnus corymbosus is also in flower, as also Rosa sericea, and the very pretty pink-flowered Abelia triflora. On the rockwork, which requires to be greatly extended, the Edelweiss of the Swiss alps (Gnaphalium Leontopodium), which answers to our Forget-me-Not, is in bloom; as also the singular Californian Pitcher-plant (Darlingtonia californica), and the pretty Jamesia americana—a shrub with leaves like those of a Ribes, and racemes of white flowers. The Orchid-house is not so full of bloom as it is at some seasons of the year, but the improved cultivation to which the plants have been subjected of late, is sufficiently obvious.

In the new T range, too, the stove plants are improved by thinning-out uninteresting plants, which can for most purposes be as well or better studied in the herbarium and by judicious pruning and regulating the form of some of the others, so that the plants have more the look of specimen plants than of the bundles of sticks which usually characterise the Botanic Gardens, especially those of the Continent. There is really no reason whatever, where sufficient means are available, why the plants in a botanic garden should not be as well cultivated as they are in private establishments. At Kew, which is a show garden, and the national horticultural establishment, as well as a scientific establishment, good cultivation is eminently desirable, and when the immensity of the place is considered, as well as the great diversity of conditions to be fulfilled, the state of the plants as a whole will be considered as very satisfactory. In the T range the Achimenes and Begonias are finely in flower. A small plant of the new Torenia Fournieri may also be seen. It is very like the old and ever beautiful T. asiatica, but has larger flowers with a deep orange eye contrasting with its lovely shades of violet and purple. The show house, No. 4, is kept gay all the year round. Just now Schizanthus pinnatus and its many varieties, a plant always well done at Kew, is very noticeable; while Scutellaria Mociniana is particularly effective in small pots. Venus de Medici Fuchsia forms a fine display from one of the rafters, its free-flowering habit being of special value for this purpose. The grand old Brugmansia arborea is in full bloom, and has not many rivals even now. Our present object, however, is not to write a catalogue, or even to call attention to the many treasures which Kew contains. We have already done this at some length in our Kew Supplement, and almost every week we have occasion to note some plants of interest that make their appearance in due season. Our more immediate object is to emphasise our oft-expressed opinion that the national botanic garden should afford examples of the best style of cultivation, as well as the richest and most interesting collections of living plants. Never, we believe, has Kew fulfilled those two conditions better than it now does.

IF summer weather, a well-dressed crowd, and, last but not least, the presence of Royalty, constitute a success, then the ROYAL HORTICULTURAL SOCIETY may certainly be credited with a success worthy of its palmiest days. And was not the show good too? some one may ask, and the reply must be emphatically in the affirmative. The show of Tuesday last was one of the best ever held at South Kensington. The quantity was large, the quality excellent, the arrangement good. Why, therefore, begin this article with an "if"? Do we intend to throw cold water on the Society now that a bright gleam of sunshine has—unwonted vision, twice in one season—shed its life-giving influence on the Society? Assuredly not. Conversant with its history, never absent from its meetings, familiar with its workings at Chiswick and Kensington, it is not likely that we are going to do more than whisper in the Council's ear hearty congratulations, but—"remember." Remember what? Why that all this is the mere effervescence of horticulture. It won't do to cultivate froth, and leave the body neglected and uncared for. Flower shows are all very well, but they are not, as most horticultural societies and the Royal Horticultural Society, which ought to know better, seem to think, the end-all and be-all of horticulture. But we have said all this a good many times already, and, were it not that we feel it necessary, we should be little disposed to play the part of CASSANDRA in the face of so brilliant a success as that of Tuesday last.

Looked at from a horticultural point of view the exhibition was specially remarkable for the groups of plants exhibited, one whole tent constituted a group in itself—we mean the Pelargonium tent. The plants were excellent samples of successful cultivation, and—may we dare say it?—only wanted half the flowers removed, and their place supplied by foliage, to be perfect specimens. But the florists, of course, won't admit that, and from their point of view they were of unusual merit. Some of the specimens were indeed cultural achievements of a high order, while Mr. TURNER'S show Pelargoniums in "half specimen" plants had a richness of colouring and a perfection of culture which rendered them specially noteworthy.

Turning from the refulgent glare of these specimens to the ice trophy of Mr. WILLS, we felt more than ever thankful to that bold and successful innovator. We are not going to criticise the taste of this erection, for really it was so deliciously cool on that scorchingly hot day that had it been open to a thousand more objections than it was, we should not have expressed them. A friend of ours—a man of course—suggested that he would have liked, after the fashion of men, to have stood with his back to it, and turned up his coat-tails, as if by his own fireside in winter time. Can Mr. WILLS have a better testimonial than this?

Inside the large tent were some of the choicest groups it has ever been our lot to witness. In Messrs. VEITCH'S group the individual plants, though small, were of extraordinary interest and beauty: there was scarcely a plant which had not a special interest and value—the bank of Masdevallias was a truly wonderful study of colour, the Nepenthes were *hors ligne*, and the little tray of miniature Orchids as charming as it was novel. All thanks to you, Messrs. VEITCH, for this delightful novelty. Mr. BULL'S group formed a great contrast to that of Messrs. VEITCH. It was less densely packed, and the specimens were larger, and, therefore, as a whole, more effective. The central group of Cycads, with its surroundings of choice new or rare plants was specially noteworthy. Mr. WILLS' group at the end of the tent, of Palms and foliage-plants, with an edging of Selaginella and Water Lily, was really a triumph of art. The individual interest and botanical merit of the plants was less than in the two previous cases, but the general impression was noble. Mr. WILLIAMS' group, towered over by a noble plant of Cycas circinalis, formed a worthy companion to that of Mr. WILLS at the opposite end of the tent; but for the general details of this, as well as those furnished by Messrs. LEE, ROLLISSON, JACKSON, and others, we must refer to our report in another column. Mr. SHUTTLEWORTH furnished a fine group of specimen plants; indeed, the members of the present Council, including Sir TREVOR LAWRENCE, who till lately was a member, are entitled to great thanks for the material aid they have given, as well as the time they have expended on the affairs of the Society. Mr. ELWES' group of miscellaneous bulbous plants, albeit exhibited in a motley and unseemly array of blacking bottles *cum multis aliis*, deserves special commendation as an example of one feature of a horticultural show which is far too much neglected by schedule-makers and exhibitors. The competition for Mr. BULL'S cups deserves also a word of notice in this place, because, as the years go on, the wisdom of Mr. BULL in awarding these prizes is shown. At first the plants were of necessity small and inconspicuous, so that only a specialist and a connoisseur could pronounce on their value, and some of them were sneered at as botanical curiosities—a very stupid sneer by the way—but now, as the plants advance in age, their merits as ornamental plants become more and more apparent. Special notice must also be given of Mr. TURNER'S cut Roses—twelve boxes—quite wonderful considering the season, and of the rich collection of Irises shown by Mr PARKER, and by Messrs. BARR & SUGDEN; and of Mr. REEVES' collection of Tuberoses, Lilies, and other plants grown for market. The fruit exhibition was fair, while of vegetables three collections were especially noteworthy considering the extremely unpropitious season.

Mr. BARRON'S work as usual was sound and conscientious; but of the arrangements for the

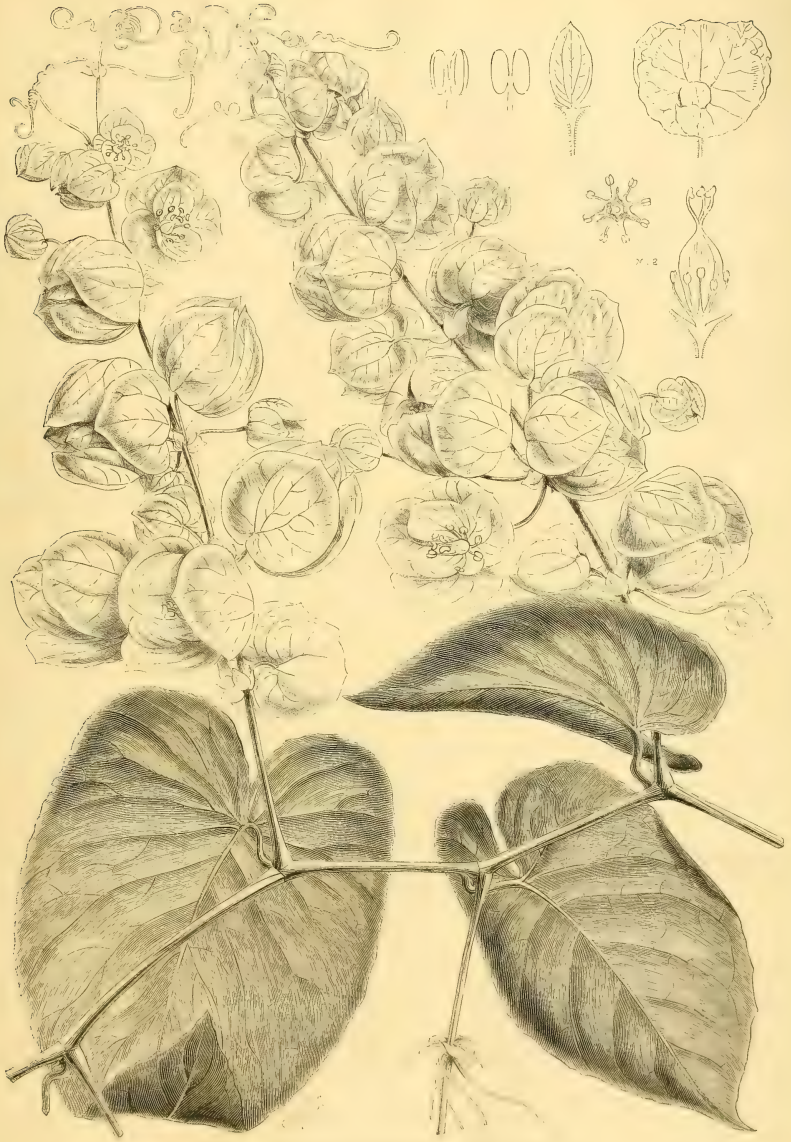


Fig. 126.—Mr. Bull's Antigonon insigne (see p. 780).

general public the less said the better. There is no chance of improvement in general management till the Society is rich enough to pay handsomely a suitable commander-in-chief.

—— THE Grand Conservatory of the ROYAL HORTICULTURAL SOCIETY at South Kensington is about to be devoted to purposes other than horticultural, but with the objects of which few horticulturists will fail to have profound sympathy. On the 30th inst. the opening of the exhibition of objects incidental to the CANTON CELEBRATION will be inaugurated by the greatest orator of his age, Mr. GLADSTONE, after which that gentleman will preside at a *déjeûner* to take place in the conservatory—a worthy place for such a feast of reason and flow of soul. On the 10th of next month the gardens will be made the scene of the annual *fête* of the NATIONAL TEMPERANCE LEAGUE, an earnest and well-intentioned body, animated with an intense desire to promote the spreading of sobriety and temperance amongst all classes of the community. The *fête* will consist of a *conversazione* in the conservatory and promenade of the gardens in the afternoon, to be followed by a monster tea in the long arcade; and in the evening there will be a huge meeting, combining addresses and music, in the Albert Hall. Hitherto these *fêtes* have been held at the rival Palaces, but the bar element at these places of entertainment, is fast converting them into merely huge public-houses. Later on a grand bazaar will be held in aid of the funds of a well-known hospital charity, also in the conservatory, when the most distinguished patronage will be dispensed by the fairest and most fashionable of the gentler sex.

—— During the past Ascot week thousands of persons must have passed along the most delightful road that leads from the Bagshot turnpike to Wokingham, yet out of that number few perhaps, much as they may have been struck with admiration for the grand wooded growth by which each side of the road is bordered, gave special attention to one particular tree out of the many noble SCOTCH FIRS that overhang and dispense a delightful shade. This one Fir tree has attained to a great height, and because of the crowded growth is somewhat thinly branched, but its habit is of the most gracefully drooping character, and stands out in marked contrast to all the rest of its kind. The several branches project for a moderate distance from the stem, and then droop down to a length of some 10 or 12 feet. It were to be deplored that this charming variety should be allowed to pay the debt of Nature, as it inevitably will in some way or other presently, without some attempt being made to perpetuate and distribute it.

—— A wish has been expressed by a number of friends of Mr. ROBERT FOULIS, gardener and forester to G. W. M. HENDERSON, Esq., Fordell, Fifeshire, to present him with some suitable token to mark their high esteem and deep respect for him, and to commemorate the rare event of the completion of his fiftieth year's service at Fordell. A strong committee has been appointed, with Mr. ANDREW HUNTER, Newhailes, Musselburgh, N.B., as secretary and treasurer, by whom subscriptions will be received. It has also been proposed to present a testimonial in money to Mr. W. GARDENER, on his retirement from the management of the gardens at Weston House, Shipston-on-Stour, where he had been for forty-nine years. Donations will be thankfully received by Mr. R. GREENFIELD, The Priory Gardens, Warwick.

—— From notes on the CULTIVATION OF HEMP IN various parts of ITALY, contained in recent reports from that country, we learn that while it is extending in some parts it remains without any change in others. Thus its cultivation has increased in the neighbourhood of Florence, especially in the districts of Forlì and Cesena. The maximum yield of the latter district alone has been calculated at 3,000,000 quintals. The quality of the fibre is said to be similar to that of the Bolognese kind, and perhaps only slightly inferior. In the Venetian provinces, except in that of Rovigo, and in the communes bordering on the River Po, Hemp is not extensively cultivated. The Italian districts where this cultivation is chiefly carried on for exportation are situated southward of the Po. Both that grown in the Venetian districts, as well as that on the other side of the Po, may be divided into three classes—the first or finer sort used in the manufacture of coarse cloth, canvas, and twine; the second, or middle class in respect of fineness, which is chiefly made into cordage; and the third or inferior kind, used for cables. The crops of Hemp this year are said to be very scarce, and the quality not equal to that of former years.

—— The present unsettled state of Europe seems to be making itself felt in the PRICE OF BREAD in other countries than England. It Italy it has greatly increased, and the price of Maize has also risen considerably, owing to the scarcity of the last crop, and to an experiment made by the Italian Government to feed cavalry horses with Maize in equal proportion to Oats, thus contributing to the dearness of Indian cornmeal, to the great indignation of the poor classes, who lived almost exclusively on polenta.

—— In the CULTIVATION OF THE VINE IN ITALY, particularly in the district of Cesena, three distinct systems are adopted. One is known as *aflone*, and consists in planting the Vines in single lines, and at intervals placing other plants, an Elm tree being generally planted at every six metres. In the second, known as *avigneto*, which prevails chiefly on the hills, a regular vineyard is formed. The third, *avignole*, is a gradual amplification of the first into the second, when the land between the rows of Vines is unsuited to cereals or forage plants, and this system is also in use in the hill districts. On the borders of the districts of Forlì and Rimini a fourth system, known as *ameglio*, prevails. In this the Vines are trained to the Elm trees, in alternation to which the Vines are planted, the spaces between the rows being occupied by other cultures.

—— Miss A. BUCKLEY, favourably known as the author of a short history of Natural Science, has lately published a new edition of Mrs. SOMERVILLE'S *Connection of the Physical Sciences* (Murray). It was no small task that was entered upon when the editor undertook to revise a book the last edition of which is already eighteen years old. Nevertheless, we are bound to say that on the whole the work has been well done, and that those who wish to obtain in small compass a brief general account of such subjects as astronomy, light, sound, heat, electricity, &c., will find this book adapted to their wants.

—— We have received the following communication from Dr. ENGELMANN in reference to ABIES MENZIESII and A. ENGELMANNI:—

"There seems to be a confusion in regard to them. In Colorado they occupy different altitudes—Menziesii the lower elevations, wet places, bogs, banks of mountain streams up to 8500 feet altitude. Hence, up to the timber line A. Engelmanni is found, often forming large forests, or mixed with A. lasiocarpa (the Abies grandis of the Colorado botanists), Pinus contorta, flexilis, and aristata. A. Menziesii has a grey rough bark, which reminds one of an Oak, A. Engelmanni a thin scaly cinnamon-brown bark. The leaves of the former are certainly very stiff, and, at least in Colorado, spinous, pointed, and oftened flattened; those of Engelmanni much softer, thinner on lower, thicker and shorter on

the female cones which take two years to mature are in the first season erect and apparently terminal to the shoots; we say apparently, because in reality the terminal bud is a small leaf-bud, quite overshadowed by the more rapid growth of the cone. The true relation of things is shown in the following season, when the cones turn downwards out of the way and the terminal bud, left free to develope itself, produces a shoot. These matters are worth attending to, because the shape of the tree depends in great measure upon them, while from a botanical point of view no detail, however minute, is unimportant. One result of DARWIN's teachings is the stress laid upon the significance of what appear to the careless and unobservant mere trifles.

—— The HOP BINE continues to make rapid progress, says the *Maidstone and Kentish Journal*, and although thin at places it presents a healthy appearance. Fly is to be met with, but not in sufficient quantities to cause serious alarm. The storm of last Monday evening has proved very beneficial, having imparted a healthy and bright aspect to the plant.

—— One might almost exclaim PALMS FOR THE MILLION, on reading the announcement of the sale, on July 3, at Mr. HERBST's Nursery, New Road, Richmond, Surrey. Mr. HERBST has an immense stock of young Palms, including many rare ones, such, for instance, as Cocos Weddelliana, of which he offers no less than 6000; and of Areca crinita 4000. We are glad to see a prospect of these handsome plants becoming reasonably cheap. About 20,000 plants will come under the hammer of Messrs. PROTHEROE & MORRIS next Tuesday week.

—— We are requested to state that in consequence of the dinner of the Gardeners' Royal Benevolent Institution and that of the National Rose Society taking place on July 4, the usual monthly dinner of the Horticultural Club, fixed for July 3, will not be held.

—— We hear that an International FRUIT SHOW is to be held at the ALEXANDRA PALACE this year on September 13, 14 and 15, when prizes amounting to upwards of £350 will be offered for all kinds of fruit, vegetables, table decorations, and some cut flowers. The schedule is now in course of preparation and will shortly be ready, when it may be obtained on application to JOHN A. MCKENZIE, 1 and 2, Great Winchester Street Buildings, London, E.C.

—— Messrs. JAMES CARTER & CO.'S EXHIBITION OF ornamental foliaged and flowering ANNUALS, grown in pots from seed, commenced on Wednesday last, in the corridor of the Royal Botanic Society's garden, Regent's Park. The exhibition will extend over fourteen days, during which time the exhibitors state that they will stage about 20,000 pots. We understand that the display is in fine order now, and, from its novel character, will be found well worthy of a visit.

—— M. MARC MICHELI, who has of late been in this country for the purpose of studying the Aliscaceæ of our herbaria, has just published in the *Bibliothèque Universelle de Genève* a review of the principal PUBLICATIONS RELATING TO VEGETABLE PHYSIOLOGY published in the various countries of Europe in 1876. We may find room hereafter for some extracts from this useful enumeration, in the meantime we may say that the subject-matter is arranged under the general heads of growth of plants, influence of gravity, movement of fluids, spontaneous movements, protoplasmic currents; influence of temperature, electricity and light on plants; respiration and transpiration, nutrition of plants, carnivorous plants, fecundation of flowers, &c.

—— Where the most is made of BOUGAINVILLEA GLABRA, either in a large or small state, it may be flowered two or three times a-year. Plants that have finished their first blooming should be well thinned out, removing the greater portion of the small growths not strong enough to flower, which this plant makes in quantity. The strong growths should be bent down round the stick or trellis to which it is trained. In a brisk heat it will quickly throw out numbers of strong shoots; and if the plant is well elevated close up to the glass without any shading, and the shoots supported in an upright position, these will flower freely in the course of about two months. It is a gross feeder, and should be well supplied with manure-water, as upon the number and strength of its shoots the quantity of flower depends. This Bougainvillea is so extremely useful for cutting that it is deserving of all the attention that can be given it.

—— The PHYSIOLOGY OF THE TULIP is a subject of considerable interest, and it is one that in many of its aspects completely baffles the practical florist, Mr. WILLIAM WHITTAKER, of Salford, one of the leading Tulip cultivators in the North, stated a few days ago that he had grown feathered bybloemen Rutley's Queen for the space of twenty years, and had never succeeded in all that long period in getting a second bulb. As is usual with Tulips, the old bulb decays every year and a new one is formed, but during that period Mr. WHITTAKER has never been rewarded with a second bulb. It appears to be resolutely opposed to anything in the shape of increase.

—— There are now about 500 blooms of CYPRIPEDIUM SPECTABILE in a bed 36 feet square in the Messrs. JAMES DICKSON & SON'S Newton Nurseries, Chester, where this beautiful North American Orchid is cultivated most successfully as a perfectly hardy plant. The bed is made up of a mixture of peat and leaf soil, and, with the exception of a slight top-dressing of broken peat in the autumn, the plants have been entirely unprotected.

—— Where the beautiful autumn-flowering LUCULIA GRATISSIMA is grown in pots, from its naturally strong habit it requires a good deal of room, and must have sufficient both root and head space, as the flowers produced will be proportionate in quantity to the size, strength, and matured condition the plants arrive at before the decline of summer. The ever-blooming Scutellaria Mociniana is deserving of special attention; the distinct appearance of its flowers, differing in both form and colour from most other things, make it particularly suitable for associating with the general flowering occupants of the stove during either summer or winter. It does not require a very great amount of pot-room, but likes liberal treatment in the quality of the soil: a moderate amount of rotten manure and leaf-mould added to the loam assists it much.

Home Correspondence.

Memorial Trees — Horse Shoes — Witches.

—The circumstance quoted at p. 726 of the *Gardeners' Chronicle* of Mr. Edward Peacock having learned that "several horse-shoes were found buried under the roots of Ash trees," may possibly be attributed to the custom which I know once prevailed in Lincolnshire of burying favourite horses and planting trees on their graves—the trees being regarded as memorials of the cherished animals. It, perhaps, may be well to give an instance or two of the practice as it has come under my immediate observation. In a gentleman's park in the Lindsey division of Lincolnshire, I have a particular recollection of having seen four old carriage horses shot and buried, and four trees planted on their graves, which trees are now splendid specimens—valued not more for their intrinsic beauty than for preserving the memory and marking the tombs of old friends and favourites. They are sepulchral memorial-trees. The animals have, doubtless, long since mouldered to dust, but their iron shoes possibly remain under the roots of the trees. Subsequently I became gardener to another gentleman in the same district, and a year has seldom passed when I have not had to superintend the planting of a tree on the grave of some animal which has been interred—a horse, or occasionally a favourite dog, which may have died natural deaths, or been "killed out of their punishment." The last tree of this nature that I planted was on the grave of an old "general purposes" horse—a most willing and industrious animal—equally "at home" when drawing a lady's carriage, a load of Turnips, or the mowing-machine. I was instructed to find an appropriate tree for this grave, and I selected a Service Tree, which is flourishing well, and is now an attractive specimen. When planted in contiguity to the Purple Beech the silvery leaves of the Service Tree have a fine effect in park scenery. I could point to at least fifty trees, under the roots of which, to my own knowledge, are horse-shoes, and could gain evidence of many other trees which have been similarly planted. I mention this custom not only because it may "throw light" on the circumstance alluded to by Mr. Peacock, but because it is preferable to shoot and bury animals which have been good servants rather than to turn them over to the tender mercies of the higgler, or the third-class cabman. By burying the animals, too, the parks become beautified, for were it not for the planting of these memorial trees, some demesnes would be scant of thriving young timber trees, which will one day take the places of the venerable monarchs planted by our forefathers. It may be, however, that this custom does not afford a sufficient explanation for the one shoe found under the Ash tree mentioned by Mr. Peacock. Horse-shoes were regarded by our grandfathers and grandmothers in Lincolnshire as possessing some occult and potent influence "against witches." Scarcely an old stable-door is to be found which has not one or more horse-shoes nailed on it; I mean the doors of old buildings which have existed for generations, and perhaps for centuries. Some newer buildings are more or less decorated with horse-shoes, which are either preserved as memorials of some favourite animal, or are mere imitations of the old custom which originated in the "dark ages," when witches abounded, and from which it was believed the horses could only be preserved by the affixing of one or more of their shoes on the doors of the stables, and so converting the buildings into fortresses and rendering them invulnerable to all ghostly enemies. I have heard, too, of a custom that was once prevalent of burying a horse-shoe and planting a tree of some kind over it, and I have a distinct recollection of having seen an old dame, an octogenarian, whom no one could convince that she was not bewitched; she knew the "hussey" who was the witch, and was jubilant in having "crossed" her, that is, of having rendered her powerless by the influence of a horse shoe, a small branch of "Wicken tree" (Mountain Ash) gathered before sunrise and never suffered to touch the ground, and sundry incantations. The horse-shoe I think she buried and planted something on it: of this I am not quite certain, but I am sure she gathered the "Wicken" branch before sunrise, because I watched the poor old dame, who hobbled more than a mile for it about three o'clock one summer morning. Whether the Ash tree referred to by Mr. Peacock was a memorial tree which had been planted over a horse and its shoes, or whether the shoe had been placed under the roots of a tree to "drive away the witches," will probably never be known, but I do know that such customs as those I have refered to were once common in that district of Lincolnshire where Kirton-in-Lindsey is situated. *East Anglian*.

Loquats: Eriobotrya japonica.—The Loquat

flourishes well in the department of the Eastern Pyrenees. I have a large tree grafted on a Quince, which has been loaded with fruit this year. The fruits ripened in the second fortnight of May. It has frequently occurred to me that this fruit has been very much neglected, and that it would be worth while trying to improve it, as all other fruit trees have been improved. On our Loquat trees the fruits are only as large as a moderate-sized Plum or a small Apricot, and the seeds are enormous, forming at least half the fruit, which is contrary to all the rules of fruit culture. Varieties are wanted without this defect, and having a less acid pulp. Such varieties must exist somewhere, in China, Japan, the Antilles, or elsewhere, and it would be very interesting if it could be proved. If in Covent Garden Market any one were at any time to see beautiful and perfect Loquats, large, fleshy, sweet, and with less seeds, it would be gratifying to us southern experimenters to receive seeds of them, and for my own part I should feel very much obliged to any readers of the *Gardeners' Chronicle* who would send me some. *C. Nardin*.

Euonymus radicans variegata.—I do not re-

member having seen or heard of this plant being used to cover walls. Its only fault is that it does not root to the wall, but it has a close-growing habit, and with the assistance of a nail and shred this is soon got over, and it deserves to be classed amongst the choicest of wall plants. I planted one against a wall here in April, 1875, and it has covered a space of 6 feet by 3 feet, and grows as close as any of our Ivies. I also use it as a winter bedding plant with good or equal effect in a small state, and as an edging to Rose beds, clipping it in the same as box edgings. *H. Hewsman, Palatines' House, Northwich.* [This and other species of a similar character do exceedingly well against a wall, and in panels on a terrace walk. EDS.]

Injurious Beetles.—During the recent bright

and hot weather the Asparagus beetle (Crioceris asparagi) and the green Rose chafer (Cetonia aurata) have appeared in sufficient numbers to suggest they need looking to. Both these beetles are conspicuous, and in the small extent of crop in villa gardens the red and black and white-spotted Asparagus beetle might soon be cleared from the expand-

ing shoots before the egg-deposit now commencing has laid the foundation of mischief through the summer. The large bright green Rose chafer is still more conspicuous, and though it escapes attack but too often from its great beauty as it glances to and fro like a living gem, the larvæ from the eggs that are now being deposited will ruin many a strawberry-bed by gnawing chambers in the thick part of the roots, and their destruction is exceedingly desirable. In either case, nothing more is requisite than just picking the beetles off, and crushing them with fingers or foot as they occur. *O.*

Helix pomatia.—This beautiful snail is common in the cool, damp woods in the north and centre of France, but is I believe wholly unknown in the Mediterranean districts where other smaller species abound. At Collioure, where the gardens are very badly treated by snails, the commonest species are, H. aspersa, H. nemoralis, H. vermiculata, H. conspurcata, H. lapicida, and several others, amongst which must be named the large Bulimus decollatus, which is carnivorous and devours the other snails. It is seven years since I tried to introduced Helix pomatia here. I brought some from Paris and put them in the garden, but they all disappeared without leaving a trace, having probably been destroyed by the heat and dryness of the summer, or devoured by the boulimes. I believe however that their acclimatisation would be possible in the mountainous districts of the department at the height of 1200—1500 m. I am of opinion that snails have been too much neglected by lovers of acclimatisation, and that it would be interesting (or at at least some scientific knowledge would be gained) if an attempt were made to introduce into the South of France and Europe some of those large and beautiful Helices of tropical countries whose shells now see in the cabinets of conchologists. This would be a pleasant experiment to make. *C. Naudin.*

Helleborus niger Seeding.—In the correspondence last year about the seeding of Helleborus niger, I think several persons said that they had seen such a thing. I now send you a ripe pod. The plant has seeded pretty freely here this year, but I find to-day that many pods have dried off and shed upon the ground. I also enclose a fresh flower, a not unfrequent occurrence here in June. *T. Smith, Newry.*

The Public Park at Gateshead.—In the *Gardeners' Chronicle* of this date, I find a paragraph on the new public park at Gateshead, copied from the *Builder*. It is there stated that "on either side of the promenade the ground has been laid out under the direction of Mr. Heath, of London, landscape gardener. Allow me to inform you that everything that has been done at this park has been done from my plans or directions, and that no such gentleman as is mentioned is known there. Mr. Bower, C.E., the Borough Engineer, has been good enough to take charge of the execution of my plans; and Mr. Lindsey, formerly gardener to Mr. Wailes, has continued the superintendence of the alterations and additions to the park. *Edwd. Kemp, The Park, Birkenhead, June* 16.

Abies Engelmanni.—My attention was called this morning, by our Mr. Syme, to your article on Conifers, which appears in your number of the 16th inst. Allow me to come to the rescue of one of our favourite trees, Abies Englemanni, from your unqualified condemnation—in comparison with A. Menziesii and A. Parryana. You say, "We found that the first of the trio to grow in spring—a fatal defect in our English climate—was Abies Engelmanni, which commenced to grow so early that all its young growth was completely killed by the May frosts; and this happens so constantly in the climate of Knap Hill that this plant is utterly worthless, either as an ornamental or useful tree, never growing beyond the state of a miserable scrub." This sweeping condemnation will no doubt be accepted by every reader of your article who is not practically acquainted with the tree. Fortunately, after reading it, I had just time to order a plant to be lifted out of a considerable number of most healthy plants, which have never once been injured by May frosts since we raised them from seed. This plant my son has taken to London with him, and will be shown at Kensington to-morrow; and, I doubt not, will fully redeem its character. It is only one out of many equally healthy. At the Royal Horticultural show at Birmingham in 1872 we obtained the Society's First-class Certificate for the same beautiful glaucous variety, and the green type is equally healthy. In the public park at Barnsley, in Yorkshire, where both soil and climate are most unfavourable, Abies Engelmanni stands better than any other Conifer—better than Pinus austriaca. Men of experience know that in light soils, with sheltered surroundings, where plants are early excited and are at the same time near water at the root, that late spring frosts are much more destructive than in localities differently circumstanced; and I think you will agree with me that a tree which will stand unscathed for ten years in the midland counties in open and exposed situations without protection of any kind in all weathers, must come out at last as a tree suited to the climate of England, and this Abies Engelmanni has done. Grand specimens of the well-known Silver Fir we find all over Great Britain, and yet in certain localities it suffers severely in the juvenile state from late spring frosts, notwithstanding it continues to be grown extensively. *William Barron, Elvaston Nurseries, Borrowash.* [We merely stated the facts of the case. We have received, too late for publication in the present issue, a second letter from M. André on this subject enclosing one from Mr. Roezl. EDS.]

The Cucumber and Melon Disease, and Salus and Sulphurous Acid.—When I last wrote in the *Gardeners' Chronicle* I was almost in despair about the ravages of this disease. I had little hope of the remedies proposed, and was also sceptical about Mr. Smith's worm theory, and the likelihood of any benefit from his prescription of Salus at the roots; still, as the Cucumbers were as bad as they well could be, and promised no eatable fruit as they were, I thought, here, at least, is a favourable opportunity for experiment, and so every time they wanted water, they had Salus broth instead of pure water or sewage. After a few trials there was a decided improvement, and now the plants are almost cured by the application of Salus to the roots alone. As the results have been most surprising to myself, I send vouchers of these statements for your inspection by to-day's train of the foliage and fruit of those identical plants that were more than half dead with disease about five or six weeks since. There was speck or two on one or two of the fruit, which may or may not be the result of disease [We think they are. EDS.], but on the whole fruit and foliage alike may, I think, be pronounced in good health; and yet these are the identical plants that the diseased leaves and fruit were sent off to Mr. Smith, and became so weak and sickly that, but for the opportunity they afforded for experiment, they would have been thrown away, as numbers of young plants were that did not suffer nearly so much from the disease. The cure may be said to have been brought about by Salus alone, for the leaves and stems have so badly affected, that it became impracticable to dress them with sulphurous acid, as so kindly recommended by some courteous correspondent. It was applied to the fruit in a few instances and seemed to make them worse—penetrating and appearing to bake the substance of the fruit. The Salus, therefore, of the roots has cured the Cucumber and Mr. Smith's charge, that I applied it at the wrong end by dressing them overhead with it, has been verified by the results. But if prevention is better than cure—and we all know how infinitely better it is in these diseases—the Salus may probably claim credit for the perfect freedom of our young Cucumber plants from any symptom of disease at the present time. By the courtesy of my kind friends I have been supplied from various quarters. But to make security doubly sure, all our young plants in pits or houses have been treated with Salus at the roots, and all are clean and remarkably healthy. Nor does this exhaust the merits of the Salus. The Cucumber disease of last year speedily infected the Melons—this, in fact, was its worst feature. The failure of the out-of-door fruit crop induced us to press every available yard of glass into the service of Melon growing. The whole of our plants, old and young, soon got infested with the disease. It was not, however, so virulent on the Melon as the Cucumber, neither were the plants so large. This enabled us to apply to the Melons the double remedy of Salus to the roots and sulphurous acid to the leaves. The latter acid was probably stronger than that used by "R." In many cases it ate the piece clean out of the leaves, as if they had been seared out with a hot iron; it seemed, however, to destroy the fungus, and prevent its spreading—at all events, the result of the sulphurous acid and Salus is that these Melons are now in robust health, without speck or spot, and are swelling off and ripening fine crops. All the young or successional crops are also clean. I feel it a public duty as well as a personal pleasure of the highest kind to be able to record this fact, and heartily congratulate Mr. Smith on the success of his Salus for eradicating the Cucumber and Melon disease, or at least holding it in check for the present. I shall also hold a reserve of sulphurous acid, and keep a watchful eye for the first spot of disease, should any return. I can also confirm Mr. Smith's statement that the Salus is an excellent stimulant to the roots of plants. One or two sets of our Melons had got into a weak state through the crippling effects of the disease: a few weeks of the Salus regimen has restored them to robust health and vigour. The effects here recorded are as gratifying as they were unexpected; and should the Salus prove as potent a remedy for the Potato disease as it has proved for the Cucumber and Melon disease here, at present, there is no honour too high for Mr. Smith to receive from the hands of a grateful nation. *D. T. Fish.* [The specimens forwarded by Mr. Fish fully bear out the statements made in this letter. With the exception of a few small specks on the fruit of the Cucumber, the specimens appear perfectly healthy. We shall revert to this important subject shortly, and in the meantime request information from those who may have had experience with the Salus. EDS.].

Aloe roseo-cincta, 'A. Hanburyana, Ndn. (in Kew Hort.).—The bloom of this beautiful Aloe, in the open air, has been splendid this year. Amongst the hundreds of flowers we only developed fruit, from which I intended to raise the plant from seed, as it does not, like most other Aloes, produce lateral shoots. Unfortunately a detestable Helix aspersa discovered this solitary fruit, and made one mouthful of it. *Sic transeunt omnia. C. Naudin.*

Phaius Marshalliæ.—In your report of the Royal Botanical and Horticultural Show at Manchester this plant is described as having a "crimson pencilled yellow lip," and your correspondent, Mr. Swan, says in his notes thereon at p. 719 "yellow and crimson lip." Thus it appears that the "crimson" is quite a feature in the flower, as exhibited at Manchester. Allow me to say this is quite a new feature in P. Marshalliæ, for the plant that I exhibited before the Floral Committee on June 21, 1871, and again June 19, 1872, had not the slightest trace of crimson in the flowers. They were large, pure white, with a lemon-tinted lip, spike rather loose, allowing each flower ample room for expansion, thus differing entirely from the comparatively dense spike of P. Bensoni. We have plants of the original stock here, and, although I have seen the flowers from the original stock (not plant, for there were several plants), every season since 1871, I have never yet seen a trace of crimson in any of them. As I have not seen the Manchester plant I am unable to form an opinion upon the comparative merits of the two varieties, but it is plainly evident that they are quite distinct in colour. *W. Wilson, Gr. to Mrs. Adams, Chase Park, Enfield.* [The markings in question were faint pencillings on the yellow disk of the lip. EDS.]

The Fruit Crop in Guernsey.—As far as can be seen at present, the season for fruit does not offer much encouragement. In sheltered spots the bloom has escaped the destructive effects of the cold winds and night frosts, but elsewhere much harm has certainly been made. It is at such times that hardy setters are seen to their advantage—Pears like our valuable Chaumontel hardly ever fail to set well. This quality is, however, possessed by other fruit-trees of inferior market value, so that, on the whole, the Pear, Plum, Cherry, and Peach crops will be below the general average. Apples have also suffered in places, as we hear. One great preservative against hurt from wind and frost is to have our trees as vigorous as possible, and to obtain this there is nothing that equals regular and good thinning. My own crop is very good indeed, with the exception of Peaches on the open wall, which, not being protected at all, have immensely suffered from blister. A few such years, and Peach trees in the open will be no more, *i.e.*, if not protected, and well, too. What have we done to the wind that it has assumed the "eastward position" so long? *T. C. Brethaut.*

The Endowment of Research.—Whether in distributing considerable sums of money to scientific men, to aid them in promoting in their several ways scientific inquiry, the Government have acted with discretion, or otherwise, it is not worth while now to discuss. The fact remains that about £4000 has been thus distributed amongst thirty-four gentlemen, whose researches have been directed to chemistry, geology, electricity, and other natural sciences. Your contemporary, *Nature*, announces, "That this inaugurates a new era in scientific activity," but, however this may be, it cannot be doubted that, without such assistance, scientific men have been marvellously and unselfishly active in the promotion of research in time past, and will prove to be as perseveringly earnest yet in time to come. The chief difficulty that will lie in the path of the Government will be the selection of fitting subjects for the dispersion of its bounty, and this can only be satisfactorily surmounted by making it conditional that all such research shall eventually lead to national advantage and usefulness. In looking over the list of recipients, I find that a very small portion of the grant goes to favour objects of a strictly horticultural character, and it was with a feeling of disappointment that I looked in vain for the name of our special fungoid scientist, Mr. W. G. Smith. The inquiries made by that gentleman into the nature and operation of the destructive Potato fungus have been so patient and so exhaustive, that none need now profess ignorance of the character of that disease, and how it is promoted. The Potato disease affects a vegetable product of

national importance, and, when specially destructive in its operation, becomes a national calamity. Next to Wheat the Potato presents the most important article of diet of general consumption, and its cultivation and distribution has developed into an extensive branch of national industry. Here we have at once a subject that should have attracted the attention of the Government, for the discovery of a means by which this terrible disease can be subjected to curative efforts would indeed prove a truly national blessing. No man in the promotion of scientific research stumbles over the philosopher's stone at the first onset, and Mr. Smith does not claim to have accomplished all that his heart is set upon; but in his complete analysis of the life history of the Peronospora he has cleared the way for action—as no curative efforts were fairly possible as long as the enemy to be contended with remained partially involved in mystery. That Mr. Smith's patient investigations have not received some tangible aid and recognition from the Government may not be due to any want of appreciation on its part; probably it is so far ignorant of what Mr. promotion of truth, without reference to consequence, are what the highest class of scientific men do, or should work for. Practical results are sure to follow, and it is a fact beyond dispute, that all, or an overwhelming majority of the great discoveries that have been so beneficial to mankind from a practical point of view have originated in researches made for purely scientific purposes, and while those made from the practical point of view have been relatively unimportant and always limited in their scope, not fertile in the elements of progress. The functions of the Royal Agricultural and Royal Horticultural Societies are different. They have to deal with applied science. Turning now to the particular instance of Mr. Smith, the Royal Horticultural Society has done all it could do; the Royal Agricultural Society, which, from circumstances we need not now recall, had a special duty to perform in this matter, has utterly ignored it, and suffers in reputation accordingly. Mr. Smith's work was done so unselfishly and patiently, and was ultimately carried to so successful an issue, that we quite agree, and have repeatedly urged, that some specimens of Dr. Pappe's L. Dalgairnsiæ accessible in this country, while Mr. Bull's plant, which is undoubtedly closely allied to L. Boryana (magellanica) and possibly a variety of it, has the less leathery fronds, glabrous on the surface, and with the upper pinnæ confluent, which are set down by Dr. Pappe as the peculiarity of the plant, which he named L. Dalgairnsiæ. Whatever its name may be, it is a very fine greenhouse Fern of arborescent character, with something the aspect of another arborescent form of the same species known to cultivators as L. zamifolia. It has a blackish trunk, which is shaggy at the apex, with long subulate dark brown scales. The fronds are but subcoriaceous in texture, pinnate in the lower part, and pinnatifid above; the pinnæ lanceolate, acute, the lower ones small, tapered to the base, but scarcely stalked, the upper ones adnate, and the uppermost decurrently confluent. Below the small basal pinnæ each edge of the stipes is set with a row of abortive ones reduced to wart-like excrescences, or callosities. The colour of the sterile fronds is a dark green on the upper surface, and a paler green beneath. No



FIG. 127.—LOMARIA DALGAIRNSIÆ.

Smith has done, and is still doing, and, if the case were properly represented, would perchance yet bestow a fitting reward. It may be that the gentlemen whose names appear on the list as recipients of the Government grants may have had no lack of friends at Court, and thus their good fortune. The Scientific Committee of the Royal Horticultural Society, with whose work so far, as a body, horticulturists have not yet been greatly impressed, might find this a fitting subject for their consideration, especially as Mr. Smith is a valuable member. Probably representations from that body would have their due weight with the Government, and horticulturists would then see with satisfaction a national acknowledgment of Mr. Smith's services. *A. D.* [Our correspondent is confusing affairs somewhat. The Government grant was administered by the Royal Society, and a committee of that body selected, with, on the whole, excellent judgment, from among the very numerous applications made to it those that seemed the most appropriate. We entirely demur that the Royal Society should make immediate practical advantage the aim to be sought. To our thinking, that is just what the Royal Society should not do. The advancement of pure science, and the recognition should be made to him. That Mr. Smith's name does not appear in the list referred to by our correspondent probably arises from the fact that Mr. Smith made no application to the Royal Society, and did not require to do so, having completed his investigations into the life history of the Potato fungus before such a thing as a Government grant in aid of scientific research was made. At the same time there can be no question that this would have been a very proper object for aid from the fund in question. EDS.]

Hardiness of Ceanothus.—We seldom find Ceanothus away from a wall, but it appears to be perfectly hardy when once established. My C. divaricata has been a splendid bush for the past month, with all the effect of a blue Rhododendron. I presume that C. Veitchii is merely a variety of the same species. *H. K.*

Lomaria Dalgairnsiæ.—We adopt this name for a plant now being distributed by Mr. Bull, and of which a figure from his catalogue (fig. 127) is here reproduced, though with some hesitation, because so far as we are aware, there are no authentic fertile fronds have yet been produced. The plants to which the above description applies have been recently imported from South Africa, and are, therefore, to be classed as greenhouse Ferns. As such they are a valuable acquisition, since they prove to be of free-growing habit, not indicating the tendency of other allied forms to dwindle away; but on the contrary, pushing their fronds with remarkable vigour in Mr. Bull's cool conservatory. *T. M.*

Crop of Peziza.—It may interest some of your readers to learn that a large crop of Peziza has made its appearance on the walls, ceilings, and floor of a house in Edinburgh, the roof of which was burnt off some time ago. The Peziza has appeared in immense numbers, and consists of two species, the least common one being Peziza tectoria, Cooke; the other, Peziza domiciliana, Cooke, has not hitherto been described, although I had a single specimen sent to me some years ago found growing in a garden at Hackney. This is really a beautiful addition to the Cochleata group, in size from 1 to 3 inches, and of all shades of colour between pure white and amethystine violet, here and there with a roseate specimen. In many cases the cups are quite regular, but in the

large-t decidedly cochleate and contorted. The flesh is thin and fragile, the asci cylindrical, and the sporidia elliptical, with two nuclei, and not exceeding .011 to .013 by .006 to .007 millemetre. I am indebted to Professor Balfour, of Edinburgh, for specimens of this "illustrious visitor," and for the particulars above enumerated. *M. C. Cooke.*

Fruit Prospects.—Some of your correspondents, notably Mr. Fish, seem to be at a loss to account for the failure of the fruit crops this season. As far as we are concerned here, I think I can safely state it arises from the frosts in May. Having a small plantation of between thirty and forty pyramid Pears, Cherry and Plum trees under a south-west wall—Pears on the Quince, and Cherries on the Mahaleb, which I protected overhead with a covering of Hessian common canvas during the blooming period, I find that those trees standing well under cover have a fine show for fruit, but those standing on the outside have failed to fruit, although they bloomed equally well. We had here from 7° to 8° of frost, and, if I mistake not, Mr. Rivers tells us 7° is fatal. My intelligent friend, Mr. Binnie, the gardener at The Wakes, entirely agrees with me as to the cause of failure. Apple trees here bloomed after the frosts, in consequence we have a full crop, and we are, as a rule, well off for Gooseberries and Currants. It is my opinion the Apple crop will be better than has been generally reported. *H. Maxwell, Selborne, Hants.*

The Fairy Rose, White Pet.—For the information of your correspondent, "D. C. V.," permit us to say that the Fairy Rose White Pet was raised at Todmorden in 1872 by an amateur of the name of Ingham, who is now a bookseller at Staleybridge. When he left Todmorden his stock of plants fell into our hands. We have sent several lots of the White Pet to various nurserymen. When well grown it is a beautiful little thing. *A. Stansfield & Son, Vale Nurseries, Todmorden.*

Ferns at The Mumbles.—For wild mountain scenery and rough rocky roads let me commend your readers, who may be in search of novelty in seaside places, to this west-end suburb of smoky Swansea. Within a mile of its centre occur the following eleven species of Ferns, all found during my first evening's stroll—probably there are others besides:—Polypodium vulgare, Lastrea Filix-mas, L. dilatata, Polystichun aculeatum, Athyrium Filix-femina (green-stemmed), Asplenium Adiantum-nigrum, A. Trichomanes, A. Ruta-muraria, Scolopendrium, Ceterach, and Pteris. The absence of Blechnum, with the occurrence here of those Ferns usually found with it in the south of England, strikes me as being noteworthy. *W. T. T.*

Reports of Societies.

Royal Horticultural: *June* 19.—Lord Alfred S. Churchill in the chair. The business transacted at the usual afternoon meeting consisted only of the confirmation of the minutes of the last meeting, and the election of twenty-two Fellows and four guinea members.

Scientific Committee.—Sir Joseph D. Hooker, K.C.S.I, Pres. R.S., in the chair. But few subjects were brought before the committee at this meeting, the greater number being mere inquiries as to the names of various common destructive insects.

Posoqueria formosa.—From the garden of Sir Geo. Macleay came flowers of this plant, in which his gardener, Mr. Green, had observed an elastic movement of the stamens when the pollen was ripe for the purpose of scattering it exactly as happens in the case of the common Berberis.

Poinciana pulcherrima.—Col. Puckle forwarded specimens of various flowers of this noble Leguminous tree, to show their great variation and georgeous beauty. The specimens sent were taken from seedlings raised or selected by himself and Mr. Cameron. The fact that our gardeners have not succeeded in flowering this noble plant in our stoves was commented on, and it was suggested that probably it might be due to the abolition of the old dry fuel heat.

The Great Summer Show, which had been organised at a very short notice, proved to be one of the finest and most interesting that has been held here for some years; and certainly, as far as the large marquee is concerned, we never saw it so perfectly filled and so tastefully arranged before — a measure of success for which the Council are almost entirely indebted to trade growers, but very few amateurs sending anything in the way of noteworthy contributions. But for the Covent Garden men too, contributing a few fine groups of brilliant flowering plants, the general effect would not have been anything like so striking, so great was the preponderance of fine-foliaged over flowering subjects in the nurserymens' groups—an undesirable result of encouraging collections rather than competitions with definite numbers of stated subjects. The fruit department was not so well represented as usual, whilst there was a fair display of cut flowers, table decorations, &c. The exhibition of the Pelargonium Society was also a great improvement on its predecessors—thanks more to the Show and Fancy than to the Zonal element, which had but few champions. The weather was all that could be desired, and there was a large and fashionable attendance of visitors in the grounds when the Prince and Princess of Wales, accompanied by their children, Princes Albert Victor and George and Princess Victoria, attended by Lord Colville of Culross, Lady Suffield, and Major Russell, arrived, at about a quarter past five. The Royal party were received and accompanied round the exhibition by the President, Lord Aberdare, and other members of the Council. Before leaving the gardens the Princess graciously presented the medals awarded at the May show (when her Majesty visited the gardens) to the successful exhibitors.

On entering the large marquee from the Council-room end the visitor was confronted with a refreshingly cool rustic grotto and waterfall, ornamented with dwarf Ferns and Palms, &c., erected by Messrs. Dick Radclyffe & Co., High Wycombe, Bucks, the moist appearance backed up by a half-circular row of handsome specimen Ivies in pots, which were shown by Messrs. Lane & Son, and received the award of a Silver-Gilt Flora medal. Turning to the right, and noting first the numerous subjects with which the irregular grassy slope which surrounded the base of the well filled, they at once alighted upon a very bright group of market plants, consisting of Show Pelargoniums, Hydrangeas, Heliotropes, and yellow shrubby Calceolarias, with a border in front of blue Lobelias, all in 48's, and splendidly grown and flowered. This came from Mr. Ingram, of Edmonton, and gained a Silver Flora medal. Then followed an extensive and remarkably handsome group of young Palms, &c., contributed by Mr. Herbst, of Richmond, which included many perfect young specimens of such subjects as Cocos Weddelliana, Areca lutescens, Rhapis flabelliformis, Latania borbonica, Areca Baueri, Cycas circinalis, &c., which were most effectively grouped. A Small Gold Banksian medal was Mr. Herbst's reward. Next came a somewhat novel group of market plants from Messrs. Pounce & Son, of Westbourne Park, which consisted of lines of plants commencing from the back with one of Fuchsias, followed by others of Rhodanthe Manglesii, thoroughly well done, show Pelargoniums, Spiræa japonica, or Astilbe barbata, as it should be called, Florence Nightingale Heliotrope, Eragrostis pulchella, Bijou, and Tom Thumb, and a light coloured Fuchsia; in front of which was a broad band of the feathery little Eragrostis pulchella, with the word "Welcome" picked out in blue Lobelia, the whole being margined with the silvery variegated Ivy-leaved Pelargonium L'Elegante. This was succeeded by a large triangular group of large and admirably-grown specimens of various handsome-leaved subjects, such as Palms and Cycads, Pandanads, Caladiums, and Crotons, together with two fine examples of Phormium tenax variegata, both bearing large and singular-looking spikes of flowers. This collection came from Messrs. Osborn & Sons, of Fulham, who were awarded a Silver Gilt Flora medal. Next in order came a small group of a mixed character from Messrs. Standish & Co., of Ascot, and which included several fine Japanese Acers, and some choice Conifers, together with very fine specimen plants of twelve Hymenophyllums, Trichomanes, Todeas, and other Ferns, and a nice batch of flowering plants of the delicately fleshtinted Carnation Miss Jolliffe. Mr. G. Wheeler, gr. to Sir F. Goldsmid, Bart., St. John's Lodge, Regent's Park, showed the next collection of twelve stove and greenhouse plants in flower, and which, consisting of good and fresh specimens of various Azaleas and Heaths, Clerodendron Balfourianum, and Darwinia tulipifera, &c., gained a Large Silver Banksian medal. To Mr. Wheeler succeeded Mr. John Wills, Onslow Crescent, South Kensington, who received a Silver-Gilt Flora medal for a bold and very effective group of fine-foliaged plants only, the most noteworthy among which were admirable examples of the new Curmeria picturata, Cupania filicifolia—a very elegant old plant; Stevensonia grandifolia, various Crotons and Dracænas, Cuculigo recurvata, &c. Messrs. Charles Lee & Son, Hammersmith, came next with a nice group of stove and greenhouse flowering and fine-foliaged plants, in the centre of which stood a large and well-flowered specimen of the showy Medinilla magnifica. This was backed by the same group of nice bits of the richly spotted Sonerila margaritacea, and the pleasing little Sibthorpia europæa variegata. The same firm also showed several young plants of the prettily variegated new hardy shrub Cornus mascula aurea elegantissima. Then followed two collections of "Pelargoniums of any or all classes," the finest of which included half-a-dozen grand specimens of the popular Fancy varieties East Lynn, Mrs. Graham, Madame Sainton Dolby, Mrs. Alfred Wigan, Lucy and Morella; and a dozen plants of the large flowered varieties, especially good, being the representatives of such brilliantly coloured sorts as Victory, Pompey, Countess, and King Charles. This fine lot of plants came from Mr. James, gr. to W. F. Watson, Esq., Isleworth, and was awarded a Silver-Gilt Flora medal. Mr. W. Lacey, gr. to C. S. Mortimer, Esq., Wigmore Park, near Dorking, sent the other group, to which a Large Silver Banksian was voted, and which consisted of eleven very nice specimens of the show varieties. These were succeeded by a handsome group of young Palms, from Messrs. Hooper & Co., of Covent Garden, which gained a Small Silver Banksian medal, and included representatives of most of the best known forms grown for decorative purposes. This brings us to the end near the Fish Museum, in the centre of which Mr. John Wills again arranged a magnificent group, which won him a Small Gold Banksian medal. The rearmost portion was composed mainly of very large and striking Palms, and Tree Ferns of gigantic proportions, the front being filled in with smaller specimens, lightened up with suitable masses of flowering subjects, such as Fuchsias, Hydrangeas, and Rhodanthe Manglesii, &c., and in front of all a wide margin of Lycopodium dichotomum, Dracænas, small Caladiums, flowering plants of Pancratium illyricum, and cut blossoms of the white Water Lily, &c., with here and there, overhanging above, fine examples of various Nepenthes. Mr. Wills had arranged the group in his usual effective style, and it gained great praise. Still proceeding towards the entrance from whence we started we have to note the grandest and most extensive group of Dracænas ever shown at one time in this or perhaps any other country, and which was also a contribution to the exhibition from Mr. John Wills. Nearly the whole, if not all of the varieties shown were selections from the large batch of seedlings raised by Mr. Bausé, and as most of them have already been noticed by us we need say no more now, than that each sort was shown in groups of three, by which means the peculiar merits of each were amply illustrated. A Small Gold Banksian Medal was also awarded—and never more worthily—to Mr. Wills for this collection. Next in order came several groups of new and rare plants, sent out at some time or other by Mr. William Bull, and now in competition for various handsome silver cups offered by the introducer. These are more fully alluded to elsewhere, but the first in point of merit was a splendid group of twelve fine-foliaged plants sent up from Preston, by a member of the Council, T. M. Shuttleworth, Esq., and which were accorded the honorary award of a Large Gold Banksian medal. The collection, which was a very remarkable one for the great size of the specimens and their admirable condition, consisted of Gleichenia semivestita, Croton undulatus, Dracæna indivisa, Cycas circinalis and C. revoluta, Dion edule, Croton angustifolus, Dasylirion gracile, Phormium Colensoi variegatum, &c. Messrs. W. & A. Brown, of Hendon, came next with very fine batches of market Pelargoniums and Fuchsias; followed by Mr. Wills with a fine group of Palms and Cycads, which in turn was succeeded by a large charmingly arranged group of decorative plants shown by Mr. John Reeves, of Acton, which came in for the award of a Small Gold Banksian medal. Mr. Reeves cultivates perhaps more subjects than any other market grower, and on this occasion staged representatives of twenty-one different genera, and all turned out in the very best Covent Garden style. We have not space to enumerate all, but must add a special word of praise to the fine Tuberoses, Lilium auratums, Hydrangeas, Mignonette, Kalosanthes, and Pelargoniums.

Next to come under notice is the large raised mound facing the one occupied by Mr. Wills, and which, with the exception of collections from Messrs. John Laing & Co. and Messrs. W. Cutbush & Son, on either flank, was entirely filled by a grand collection from Mr. B. S. Williams, which gained a Small Gold Banksian medal. The most conspicuous subjects which Mr. Williams contributed were large specimens of various popular stove and greenhouse plants, including one of Dipladenia amœna, the delicately-coloured flowers of which were much admired by the Princess of Wales; a good specimen of Nepenthes Sedeni, remarkable for its long narrow pitchers; and a choice group of Orchids, which included fine masses of Cypripedium niveum, biflorum, and barbatum superbum; Oncidium leucochilum, with a grand spike; Odontoglossum citrosmum, and O. vexillarium, with forty-four flowers on six spikes; Dendrobium clavatum, Masdevallia Harryana, Orchis foliosa, and Cattleya Mossiæ superba, &c. The group from Messrs. John Laing & Co., which was awarded a Silver Flora medal, included a fine lot of ornamental-leaved plants, including the new Eulalia japonica; and that from Messrs. W. Cutbush & Son, which received asimilar award, consisted mainly of stove and greenhouse flowering and fine-foliaged subjects. Taking next the large sloping bank on the right, we found collections of twelve Orchids from Mr. Heims, gr. to F. A. Philbrick, Esq., Avenue Road, Regent's Park, and Mr

Perry, gr. to J. W. Miles, Esq., Shirehampton, Bristol. The former was awarded a Small Silver-Gilt Flora medal, and showed, amongst others, the striking Oncidium macranthum, Epidendrum prismatocarpum, and several other choice subjects. Mr. Perry's award was a Silver Flora medal. He had a nice lot of plants, including Odontoglossum hastilabium with two fine spikes, and O. Pescatorea with four. Messrs. Jackson & Son, Kingston, showed a fine lot of stove and greenhouse plants, which came in for a Small Gold Banksian medal; and half a dozen fine Heaths, which have been noted before, which gained a Silver-Gilt Flora medal. Another exhibitor in the same group consisted of a fine lot of Japanese Acers, and examples of new Zonal Pelargoniums from Messrs. James Veitch & Sons. The next large group was filled by Messrs. James Veitch & Sons and Messrs. James Carter & Co. The collection from the first-named firm was a magnificent one, and included Anthurium Brownei, with very bold heart-shaped leaves; and A. Veitchii, having remarkable tongue-shaped leaves, with close veins and bullate surfaces; Nepenthes ampullacea, a nice little specimen; Anthurium Warocqueanum, a species with long, narrow, cordate, lanceolate leaves, with light coloured and rather distant veins on a deep green velvet-like surface; Lapageria alba, various Japanese Maples, the new Hydrangea Thomas Hogg, a number of small flowering plants of Orchids, and notably many showy Masdevallias, Odontoglossum nævium, Dendrobium Jamesianum, Phalænopsis Luddemanniana, a nice mass of Utricularia montana; a small table 2 feet over, containing the following nineteen distinct Orchids in flower—a most interesting collection of orchidic prettiness:—Phalænopsis Parishii, Masdevallia triaristella, M. ionocharis, M. Harryana, M. amabilis, M. octhodes, Dendrochilum filiforme, Odontoglossum vexillarium, Broughtonia sanguinea, Vanda coerulescens var. Boxallii, Oncidium Jamesianum Alexandræ, Falumbina candida, Oncidium cucullatum, Pleurothallis antennifera aurea, R. cornuta, Dayana, Epidendrum vitellinum, Stelia Brückmulleri, Angræcum falcatum, and Dendrobium rhodostoma; Lapageria alba, many rare Crotons and Palms, and a choice group of insectivorous plants, and grand specimens of Nepenthes amongst them. A Large Gold Flora medal was awarded to Messrs. Veitch for the group, and an extra Gold medal for Nepenthes sanguinea. The collection of fine-foliaged plants from Messrs. James Carter & Co. was a most admirable one, and was all the more distinct from others by reason of a large round the fingers of the pretty little Ionopsidium acaule. Opposite to the last-named group was another large one, which contained a very choice assortment of hardy herbaceous plants from Mr. Parker, of Tooting, including various Funkias, Erigerons, Spiræas, Pyrethrums, Pœonies, Lupins, and a very fine plant of Onopordon acanthium, &c.; a fine lot of Ivies from Mr. Turner, to which a Silver Flora medal was awarded; exotic and hardy Ferns from Mr. Stone, gr. to C. Walton, Esq., Manor House, East Acton; a nice group of flowering plants from Messrs. Smith, of Fulwich; and a very choice collection of plants from Messrs. Rollisson & Sons, Tooting, which gained a Silver Flora medal, and included amongst other interesting subjects Brassavola Digbyana, with its remarkably deeply fringed lip; the pretty Veronica amethystina, and the bright rose-coloured Phlox Lichtoni rubra, a showy border flower. The next group was furnished by Mr. William Bull—a group of plants of first-class importance and of great extent, occupying, as it did, nearly a sixth of the entire central space. The centre of the group was occupied with fine specimen Cycads, not so crowded as to prevent their being well seen. Amongst these we may enumerate Cycas media latissima, a splendid form; Encephalartos cycadæfolius, in fruit; E. Ghellinckii, E. caffer, E. Vroomii, and Dion edule. Around this central mass were numerous Crotons, Phyllotæniums, Dracænas, and Pandanus, and with close white veins on a green ground; Aralia ornata, a form with palmately-divided leaves, the lobes lanceolate and coarsely serrate; Dracæna Goldieana, with its beautifully spotted leaves; Bomarea Carderi, which seems very closely allied to B. Jacquesiana; and a plant of Macgregoria pauciflora, growing flat against a piece of board, attracted much attention, and will be even more noticeable when it can be made to produce its flowers; Erythroxylon Coca, the plant of which so much has been written of late with reference to its power of sustaining the system against fatigue, was shown in flower and in fruit; the flowers are inconspicuous, the fruit is a small red drupe. A leaf of the extraordinary Godwinia gigas was also shown, together with various Crotons and Dieffenbachias, &c., the whole constituting one of the finest groups of new and rare plants ever exhibited. A Large Gold Banksian medal was awarded to it.

MR. BULL'S SPECIAL PRIZES.—The competition for Mr. Bull's cups produced an interesting display on the part of both amateurs and nurserymen. In the amateur's class T. M. Shuttleworth, Esq. (gr., Mr. H. Thornber) was deservedly 1st, his specimens excelling those of all competitors, whether amateurs or nurserymen. Among the more noticeable of his plants (twelve) were Sadleria cyatheoides, the Fern described in our columns, p. 760; a noble plant of Encephalartos villosus var. ampliatus, Lomaria Dalgairnsiæ described at p. 763, Astrocaryum filare, an elegant pinnate-leaved Palm, with densely spiny petioles; a fine plant of the now well-known Camptidium filicifolium, trained on a balloon shaped trellis; Macrozamia plumosa, an elegant pinnate-leaved Cycad, with narrow linear twisted segments. The 2d prize was awarded to J. Warren, Esq., Crawley (gr., Mr. C. Rann). In this collection were fine specimens of Acalypha marginata, Martinezia grenatensis, a *Pritchardia* looking prickly palm, with unusually foliage, the terminal pinna larger and broader than the rest; Artocarpus Cannoni, grown as a trailing plant trained to a wire trellis; Cycas Normanbyana; Spathiphyllum pictum, a species with broad, long-stalked, oblong acute green leaves, marbled with yellow blotches; Pritchardia filamentosa, a Fan Palm with the margins of the segments splitting off in the form of whitish threads; various forms of Croton, &c. In the nurserymen's class the 1st prize went to Mr. B. S. Williams, but his plants were somewhat below those of the amateurs who came to. In this collection were Panax laciniatus, Sadleria cyatheoides, Curmeria Wallisii, a pretty foliage plan, with ovate acute leaves, variegated with yellow spotss and described in these columns last year; Cycas media, Goniophlebium argutum, a fine form of the trailing rhizome and lanceolate fronds of a silver-grey colour. Two or three Crotons were shown in this group, including C. majesticus, a form with narrow lanceolaty leaves, with a central orange stripe on a dark bronzd ground. Messrs. Thynne's group, which obtained the 2n prize, also contained a number of the gems of nature, which they had brought their plants from the metropolis of Western Scotland to London. Among their set of twelve were a good example of Macrozamia Mackenzii, a Cycad with very dark green pinnate foliage, the segments linear with a white base; Encephalartos villosus ampliatus, Cycas media, with very broad pinnules; Medinilla amabilis, the new species described in our columns by Professor Dyer; Maranta leopardina, &c. Mr. Wills took a 1st prize in the class for exhibitors who have not previously competed at Shows. He showed some excellent and handsome Encephalartos under the name of Hildebrandti, apparently a form of villosus; Cycas media, Aralia filicifolia and elegantissima, Sadleria cyathoides, &c. The plants in this competition were especially noteworthy, inasmuch as they enabled the visitor to note the great improvement which, as a rule, is rarely seen, are usually small and undeveloped in character.

FRUIT AND VEGETABLES.—Though by no means so largely represented as on former occasions, the show of fruit and vegetables was on the whole a fairly representative one, and, as usual, was a very attractive feature. The first class for a collection of fruits without any restriction as to numbers, the 1st prize, a Silver Gilt Flora medal, went to Mr. Miles, gr. to Lord Carington, Wycombe Abbey, who staged an admirable lot of fruit, which included very good samples indeed of Hairy Peaches, Black Hamburgh and Trentham Grapes, four nice Queen Pines, five Melons—Strathfieldsaye, The Shah, Reid's Scarlet-flesh, and Cox's Golden Gem—large and beautifully coloured Violette Hative and Stirling Castle Peaches, Elruge and Violette Hâtive Nectarines, fine Sir Charles Napier Strawberries, Elton Pine Strawberries, Black Circassian Cherries, and Brown Turkey Figs. The 2d prize, a Large Silver Banksian medal, was won by Mr. Cox, gr. to Earl Beauchamp, Madresfield Court, who had two dishes of Black Hamburgh, two Queens, and two smooth Cayenne Pine-apples, Victory of Bath and Turnford Hill Green Gem Melons, British Queen and Sir Charles Napier Strawberries, Elruge Nectarines, and Royal George Peaches, all good samples. The third award, a Small Silver Banksian medal, fell to Mr. Goodacre, gr. to the Earl of Harrington, Elvaston Castle. The next class, which was for "single dishes of Grapes, Pine-apples, Strawberries, Peaches, and Nectarines, or collections of any of these fruits," gave the judges a great deal of trouble, and it was quite out of the question to give anything like perfect satisfaction with such a class. The awards made were a 1st prize to Mr. Cannell, gr. to Earl Somers, Eastnor Castle, who sent half-a-dozen fine fruits of the Victory of Bath Melon, a handsome Black Jamaica Pine, weighing 8 lb., and two splendid dishes each of Alnwick Peaches and Violette Nectarines; the 2d to Mr. W. Bates, gr. to Foulett Lodge, Twickenham, for two very fine dishes of Black Hamburgh and Foster's Seedling Grapes, and three very fine Queen Pines; and the 3d to Mr. P. Edwards, gr. to Mrs. Tristram, Fowley, Liphook, for three bunches each of Black Hamburgh and Muscat of Alexandria Grapes, weighing about 4 lb. each, perfect in bunch and size of berries, but a trifle wanting in colour. Amongst several other contributions to the same class we noted a fine Queen Pine from Mr. Chamberlain, gr., The Warren, Bushey Heath; a splendid dish of Rivers' Golden Orange Nectarines, and a grand sample of Oscar Strawberries from Mr. Hinds, gr. to Sir Thomas Edwards-Moss, Bart., Otterspool, near Liverpool; a fine sample of British Queen Strawberries from Mr. Waters, gr. to Sir W. Bagge, Stradsett Hall, Norfolk; a beautifully finished dish of Black Hamburgh Grapes from Mr. Akehurst, gr. to S. Copestake, Esq., The Grove, Kentish Town; and nice fruits of the Charlotte Rothschild and Smooth Cayenne Pines from Mr. Johnstone, gr. to the Earl of Strathmore, Glamis Castle. In the class for a collection of fruit confined to growers for market a Silver-Gilt Flora medal was awarded to Mr. R. Farrance, florist, Chadwell Heath, for a basket containing 15 lb. weight of very good Black Hamburgh Grapes; and in a miscellaneous class a 1st prize was awarded to Mr. R. Sowerby, gr. to the Earl of Macclesfield, for a handsome fruit of Reid's Scarlet-flesh Melon.

There were only three collections of vegetables, but these were each of undeniable quality. The best came from Mr. Mills, who took a Large Silver Flora medal. Fine in size, and very cleanly and evenly grown were his examples of Asparagus, Green Globe Artichokes, Hedsor Prolific Cucumbers, Ashleaf Potatos, Seville Longpod Beans, Laxton's No. 1 and Sangster's No. 1 Peas, Intermediate Carrots, Queen and Early White Naples Onions, Early London Cauliflowers, Strap-leaf Turnips, the large red Capsicum "Paprika," and Stamfordian Tomatos. Next in order of merit came Mr. W. G. Pragnell, gr. to G. D. W. Digby, Esq., Sherborne Castle, Dorset, who was awarded a Silver Banksian medal; and Mr. W. Iggulden, gr. to R. B. W. Baker, Esq., Orsett Hall, Essex, who took a Large Bronze Banksian. Mr. Pragnell had, of course, some very fine samples, amongst the best being his Globe Artichokes, a grand dish; also exceedingly good Early London Cauliflowers, Wheeler's Imperial Cabbage, Excelsior Potatos, Early White Naples Onions, Canadian Wonder Beans, Telegraph Cucumbers, William I. Peas, &c.

CUT FLOWERS were represented by Roses as one of the leading features, Mr. Turner, of Slough, staging twelve boxes, among which Miss Hassard was particularly noticeable. He was the only exhibitor in the nurserymen's class, while in that for amateurs J. Hollingworth, Esq., Turkey Mills, Maidstone, and Mr. Chard, gr. to Sir J. Bathurst, Clarendon Park, Salisbury, were the only exhibitors. Roses largely shown by Messrs. Barr & Sugden, Covent Garden, and Mr. R. Parker, Tooting. The collections were extremely varied, and comprised many fine forms. Messrs. Barr & Sugden also had Lilies in a cut state. Mr. Henry Hogg, Bath, had a remarkable collection of cut Pyrethrums; both double and single flowers were of the finest quality; white Ranunculus, Pansies, and Pœonies divided the popular interest. Pœonies and Pyrethrums also came from Mr. Parker, and cut herbaceous flowers from Messrs. Barr & Sugden. Mr. J. Bruce, gr. to Mrs. Ellis, Leicester, came a large group of cut flowers of an extremely interesting character, which included rare species of Iris, Lilies, and Cypripedium spectabile, Richardia hastata with creamy yellow spathes, and R. alba maculata, Cyclobothra pulchella, Brodiæa coccinea, Ipheion caudatum, Cladiolus communis, Littonia modesta, Hemerocallis flava, the rarely seen Serapias longipetala and Xiphion lusitanica. G. F. Wilson, Esq., Weybridge, had a Large Bronze Banksian medal for the following examples of Lilies among others—Krameri, elegans, Parkmanni, elegans Alice Wilson, pyrenacium, Szovitzianum, parvum, and Hansoni. Mr. Roberts, gr. to W. Terry, Esq., Fulham, had cut examples of Iris, and Mr. R. Dean, Ealing, some fine spotted Foxgloves.

Special mention must be made of the bouquets of everlastings, ornamental grasses, &c., staged by Messrs. Hooper & Co., which were of a very charming character; and some bouquets of feather and other grasses from Messrs. James Veitch & Sons excited considerable interest.

MISCELLANEOUS.—Most of the subjects alluded to under this heading were shown in the same tent as the fruit, cut-flowers, &c. For extent the principal contribution was one of a large group of well-grown British Ferns, from Messrs. Ivery & Son, Dorking, to which a Large Silver Banksian medal was awarded. Mr. W. P. Roberts, gr. to W. Terry, Esq., received a Small Silver Banksian medal for a nice collection of hardy herbaceous plants, and a Small Bronze Banksian for a group of Iris, including Xiphion. Messrs. William Barron & Son, Elvaston Nurseries, Borowash, sent a plant of Abies Engelmanni, lifted from the open ground, and showing no trace of injury from spring frosts; small plants of the bright golden variegated Cupressus Lawsoniana elegantissima, and Retinospora tetragona aurea, a pretty little Conifer with golden-tinted foliage. Mr. R. Dean, Ealing, showed fine groups of bedding and hardy herbaceous plants, the first-named being shown in pans—and a very good assortment of useful subjects for the purpose intended. The display of hardy herbaceous plants made by Mr. Dean was also a very neat one, and included many choice plants not commonly met with, including flowers of a hybrid Foxglove raised between Digitalis purpurea and D. lutea—a similar cross to which was effected many years ago by the Rev. Professor Henslow, and which forms the subject of a well-known

paper by him. Mr. Dean was awarded two Large Bronze Banksian medals.

FLORAL COMMITTEE.—W. B. Kellock, Esq., in the chair. A First-class Certificate was awarded to Messrs. Veitch & Son's Anthurium Veitchii, a handsome form, described and figured in our columns last year. A First-class Certificate was awarded to Messrs. John Laing & Co., for Begonia Oriflamme, a variety with stout stem, female flowers of the florist's circular type, and of great substance. The male flowers are larger and the segments of an oblong form, but equally firm. The same exhibitor also received a Cultural Commended variety of an orange-scarlet colour called Lemoinei, but it was not sufficiently developed to pronounce an opinion upon. Tom Thumb Scarlet Clove Carnation, a dwarf free-flowering form, with flowers of an orange colour, was shown by Messrs. James Veitch & Sons, who also sent Gymnogramma Mauritii, a low growing pinnately-lobed grey-green Fern, covered with shaggy linear scales; Acalypha Macafeeana, a very striking form, with leaves variegated with coppery bronze and oranged-red. Some of the leaves become incurved at the margin, so as to become pitcher-shaped. Acer polymorphum tricolor, a variegated Japanese Maple; Croton hybridus, a narrow lanceolate-leaved form whose foliage is yellow and variously spotted. Croton regina, with oblong orange veined leaves. Pavonia Wioti received a Botanical Commendation, which it certainly deserved, but it might well have received more attention on the part of the florists. It is a low-growing Malvaceous plant, with the lobes of the epicalyx numerous, linear, rose-pink in colour, and very long, curving over the flower as a cage does over its contents; and Anthurium Warocqueianum, which received a First-class Certificate. The same plant formed part of Messrs. Veitch's group in the exhibition, where it is more fully described. Pelargonium Drapeau National, a singular variety, with three of the five petals scarlet and two white was shown by Messrs. Smith, of Dulwich. If a *drapeau national*, where is the blue? When we get a blue Pelargonium we may expect to see the tricolor completed. The leaves of this curious variety are white-edged with a green centre. Mr. O. O. Wrigley received a Cultural Commendation for Odontoglossum vexillarium, a good variety, with deep coloured flowers. The plant had three spikes, one with eight, and two with six flowers each. Messrs. Fisher, Holmes & Co., of Sheffield, sent a beautiful little Juniper, Juniperus virginianus albospicatus, the ends of the shoots tipped with very clear white. If it retains its character it amply merits the award it got of a First-Class Certificate. Mr. Rose of Byfleet, showed a flowering plant of Hæmanthus terniflorus, for which a vote of thanks was awarded. A fine patch of Campanula medium calycanthema was shown by Mr. Appleby of Dorking. Mr. B. S. Williams showed Croton Prince of Wales, a long, narrow, twisted leaved form, the colours orange and green, edged with a thin line of red; Thrinax gracillima, a slender, low-growing Palm, with foliage whose shape and disposition are exactly those of the common Cyperus, which is used to decorate dinner-tables; he also showed Pteris lanceolata, Acalypha musaica, Croton camptophyllus, a narrow twisted leaved form; Eranthemum El Dorado, Croton Queen Victoria, a form with oblong leaves of an orange-scarlet 'colour; and Pelargoninium Dr. Masters.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair. The labours of the committee on this occasion were reduced to a minimum. Mr. Gilbert, Burghley, sent a seedling Melon named Excelsior, a cross between The Shah and Scarlet Gem, which proved to be a good scarlet-fleshed variety, but no better than Reid's and others already in cultivation. A green or white-fleshed Melon named Great Eastern was shown by Mr. B. S. Williams; a dish of Royal George Peaches came from Mr. Grieve, gr., Culford Hall, Bury St. Edmunds; and a coarse black-spined Cucumber from Messrs. Drover, of Fareham, &c.

The Pelargonium Society, whose exhibition was held in connection with that of the Royal Horticultural Society, must be congratulated upon a success so marked as to give it a new lease of life, and fill its friends with fuller hope in the future. The display far transcended that of previous years, and that notwithstanding the season had proved of a character likely to materially detract such an exhibition. But it was otherwise; and the representatives of the various classes of Pelargoniums were on the whole creditably to the fore. The Society is, on the whole, well supported by growers, it is directed with energy, and has ample funds at its disposal, and as long as it exists let us hope its annual exhibition will be worthy of its endeavours.

The large-flowered section found a place in the schedule on this occasion, thus illustrating the comprehensiveness of the Society's work. The best six came from Mr. C. Turner, Royal Nursery, Slough—fresh and bright plants of Prince Leopold, Corsair, Prince of Prussia, Highland Lassie, Juno, very bright, and Archduches. Mr. Weir, gr. to Mrs. Hodgson, The Elms, Hampstead, was 2d with rather stale plants, showing the effects of the excessive heat of the past few days; the best were Roi Leopold, the old Rose Celestial, and Lady of the Lake. The class for four large flowering Pelargoniums, not in commerce, was a very interesting one, the best coming from E. B. Foster, Esq., Clewer Manor, who had Illuminator, brilliant orange-carmine, with white throat; Evelyn, delicate fleshy carmine, with bold white throat; Artist, a somewhat distinct variety, the lower petals pointed with orange-red and dark top petals; and Despot, pale orange-red dark top petals, very bright. The foregoing are all of Mr. Foster's raising. 2d, Mr. C. Turner with much smaller examples of Virgin Queen, white, with bright rose spot on the upper petals; Silire, bright red, with dark blotch on top petals, very showy and striking; Toby, orange-red, shaded with maroon, and margined with bright red; and Purity, pale orange-carmine lower and dark top petals.

With six Fancy Pelargoniums Mr. Weir was 1st, and the only two exhibited the effect of the bad weather. His plants were Lucy, Lady Carrington, Princess Teck, Juliet, Mrs. Stewart Hodgson, and Fanny Gair. 2d, Mr. C. Turner, with Mrs. Hart, Evening Star, Marionette, Duchess of Edinburgh, a pretty delicate variety; Countess of Dudley, and Nelly Fordham, all of a pretty light kind. There is a batch of six exceedingly good exhibition varieties.

The decorative Pelargoniums also made a very interesting feature in the show, as it enabled visitors to gather some information respecting the best varieties for house decoration and market work. The class is in danger of leading to some confusion, as while it encourages a certain type of Pelargonium, on account of its free-flowering and attractive character, it is yet in danger of repudiation on the exhibition stage, where form is considered essential to success. Mr. Turner had the best group of eighteen, the leading varieties being Charles Outram, Triomphe de St. Maude, Leopold I., Mabel, Mad. Maudrot, Mad. Alphonse Duval, Mrs. Bradshaw Improved, Velleda, Venus, Kingston Beauty, Duchess of Edinburgh, and Beauty of Oxton, a bright and effective lot, in 32 and 24-sized pots. 2d, Messrs. J. & J. Hayes, Lower Edmonton, with Murmurous (what a name!), bright reddish rose, very free; La Paix, Princess Hortense, very bright; The Shah, Queen Victoria, and Lady of the Lake—smaller in size than Mr. Turner's, but well grown, the plants mainly in 48 and 32-sized pots. It may be interesting to many to know that the "Regal" Pelargoniums, as they are termed, come into the decorative class. In the class for twelve examples of this type there was no entry; but the exhibitors in the previous class could not compete in this also.

Class 6 was for nine Zonal Pelargoniums of the florist's class, and here we were treated to those monstrous zones of scarlet, salmon, &c., that present such overdone examples of the general skill of J. Catlin, gr. to Mrs. Lermitte, Finchley, was 1st, with Mrs. Catlin and Corsair, the enormous plants having some 120 trusses of bloom on each; Hebe (dwarf), very fine; Æone, very bright; Lizzie Sayer, Remus, Laura, and Pearson's Ellen, a fine salmon-coloured variety. Mr. C. Turner, Slough, was 2d with Beethoven, Polyphemia, Paradise Beauty, Squire of Weald, Prince Bismarck and Remus, as his best, but they fell far short of the preceding. In the class for four Zonal Pelargoniums of the florist's class, not yet in commerce, Mr. C. Turner, Brentwood, was 1st, with the following four varieties of Mr. Postan's raising—R. B. Postans, fine scarlet; Negro, orange-crimson; Silvio, very bright scarlet, fine; and Freedom, scarlet. 2d, Mr. J. Catlin, with Mars, Marmion, very fine; Actæon and Titania, all remarkably good, raised by Mr. Burley, a clearly meritorious lot. The plants were better grown and flowered than those shown by Mr. Burley. 3d, Mr. J. George, Putney Heath, with Emperor, a bright orange-scarlet; Silvio, bright deep scarlet; General Grant, and Placida, a pretty pink. But how very like Cæsar Pompey was in several instances!

Then came Zonal Pelargoniums of the decorative or nosegay class. Mr. Catlin had the best group, which comprised the following fine varieties raised by the late Mr. J. R. Pearson—Mrs. Huish, John Gibbons, Miss Saunders, Colonel Wright, Thomas Adams, the late T. W. Atkinson, crimson and scarlet; and Mrs. Turner, Matilda, and Lucy Bosworth, pink. 2d, Mr. W. Birse, gr. to J. H. Lermitte, Esq., Finchley, with John Gibbon, John Fellows, Rev. F. M. Atkinson, Corsair, Ethel, a lovely pink; and Lucy Bosworth—all Pearson's. 3d, Mr. Weir—Corsair and Mrs. Turner being his best plants. In the class for eighteen Zonal Pelargoniums of all sections Mr. Catlin had some fine varieties raised by Dr. Denny, such as Irene, Verona, Niobe, Hebe, Ettie, Zuleika, and Cybele, all crimson and scarlet; Heather Bell and Rose of Allendale, pink, the latter remarkably good. 2d, Mr. C. Burley, with the following varieties raised by Mr. Postans:—Silvio, Squire of Weald, Blue Beard, Best of All, Tom Bowling, Thomas Hood, Cassandra, and Mars, all crimson and scarlet; Leveson Gower, salmon; and Purity, white. In the class for twelve Pelargoniums, shown under the same condition, Mr. W. Birse was 1st with the Rev. F. M. Atkinson, Colonel Wright, Laura, John Gibbons, Dora Charlton, Charles Barrows, and Corsair, all crimson and scarlet, raised by Pearson; Ethel (Pearson), and Mrs. W. Birse (Birse), fine deep pink; and Lady Byron and Lucy Bosworth, both Pearson's, also pink. There was but one exhibitor in this class.

The variegated-leaved Pelargoniums were poorly represented, having that starved appearance which some growers attribute to be necessary to produce colour. Mr. W. Meadmore, Romford, was the only exhibitor of twelve golden Tricolors, and six silver Tricolors, in the following class. In the former the best were Miss Goring, Mr. H. Little, Prince of Wales, Sir R. Napier, Jetty Lacy, and Achievement. Of silver Tricolors, the best were Countess of Tasker, Dolly Varden (Morri-), one of the best, Proteus, and Madame Laing. In class B, for nine bronze Bicolors, the representatives were so bad as to fail to do credit to the exhibitor or the judges who awarded a 1st prize in the class to such a sorry lot.

Coming now to the double varieties, the best six came from Mr. Catlin, who had Eugène Baudouin, dark rose and violet, one of the very best, the trusses large, the flowers fully double: Illuminator, Naomie, Sylploide, Ada Gray, and Louis Buchner, salmon, flushed and margined with rosy carmine. 2d, Messrs. E. G. Henderson & Son, Tunes-zopole Place, with Wonderful as the best among a group of poor plants; 3d, Mr. C. Turner.

The only exhibitor of four hybrid Ivy-leaf Pelargoniums was Mr. J. George, who had St. George, rosy pink, very pretty; Nemesis, carmine-red; Gem, white, spotted with rosy, and Queen, with pink; and Progress, pink. In the class for Cape species there were no entries.

In the class for a hybrid Pelargonium of a distinctly novel and ornamental character no award was made. Mr. George had his Ivy-leaf Nemesis, and Messrs. E. G. Henderson & Son, Glaucum, a fleshy-coloured form of the intermedium type. In that for one Zonal Pelargonium, with flowers of a distinctly novel character, Mr. C. Burley and Mr. H. Cannell, Swanley, were placed equal 1st, the former with Postan's Silvio, a very fine, bright, pale orange-scarlet, of great refinement of character; the latter with his new striped variety New Life, which certainly marks a great advance among the striped varieties.

The class for one variegated Zonal Pelargonium of a distinctly novel character brought no entry; and in that for a new double-flowered Zonal the best was Bridal Bouquet, from Mr. C. Burley, the flowers remarkably fine in colour, but small and thin. 2d, Messrs. E. G. Henderson & Son had Mont Blanc, with green tinted flowers. The best double-flowered Zonal of a distinctly novel character was Eugene Baudouin, from Mr. J. Catlin, which is both novel and fine. Mr. Meadmore was 2d with Mons. Thibaut, white, tinted with apple-blosson. The best double-flowered Ivy-leaf Pelargonium was King Albert, lilac-pink, the flowers of a good double character, from Messrs. E. G. Henderson & Son.

Pelargoniums in cut flowers were remarkably well shown, and especially by Mr. C. Burley, who was first in the class for twelve varieties, three trusses of each. The best were Tom Bowling, Gen. Outram, Silvio, Galileo, Charm, Maid of Honour, Star of the East, William Munster, Cassandra, and Magic Beauty: 2d, Mr. H. Cannell; Mr. J. F. Whitwell was 3d, with some very fine varieties that had sadly suffered on the journey. Mrs. Newdegate, Mrs. Whiteley, Lady Sheffield, General Havelock, Earl Manvers, and Mary Mabel are very fine. In the class for twelve varieties, Mr. Taylor, gr. to J. M'Intosh, Esq., Oatlands Park, Weybridge, was 1st with Mrs. Huish, Frederick William, Wordsworth, Lord Zetland, Captain Holden, Lady Sheffield, and Mrs. Lancaster, as his best sorts. Mr. H. Cannell also had a nice lot of cut blooms of his new Pelargonium New Life.

Lee and Blackheath Horticultural: *June* 20 *and* 21.—This flourishing Society held its annual summer show on the above days in the pleasantly situated grounds of John Penn, Esq., The Cedars, Lee. The show this year, taken as a whole, was much superior to any that have preceded it, notably in the increased size and better cultivation of the more important subjects.

The special prize for a group of plants arranged for effect brought out a spirited competition among some half-dozen exhibitors, the 1st prize being well won by Mr. Robertson, gr. to J. Penn, Esq., who had a nicely arranged lot; Mr. Osborne, gr. to J. N. Mappin, Esq., Blackheath Park, was a good 2d; 3d, Mr. Herd, gr. to H. Bayley, Esq., Lee Road.

Eight stove and greenhouse plants in flower.—1st, Mr. Smith, gr. to C. W. Bourne, Esq., Eagle House, Eltham, with a remarkably good group, conspicuous in which was Erica Shannoni and E. ventricosa

magnifica, both large and fine; Pimelea mirabilis, and Diplademia amabilis; Mr. T. Maryon, nurseryman, Lewisham Road, 2d, showing smaller plants.

Six stove and greenhouse plants in flower.—Here Mr. Smith was again 1st. In his half-dozen was a well-flowered Bougainvillea, a nice Anthurium Scherzeranum, Erica ferruginea superba, and E. Candolleana, in beautiful condition; Mr. Osborne, 2d, having Erica Candolleana, E. tricolor Wilsonii, the seldom-seen Kalosanthes alba, and a good Dracophyllum. 3d, Mr. Bristow, gr. to J. Campbell, Esq., Wood Hall, Dulwich, showing amongst others Franciscea calycina major, with finely-coloured flowers.

Eight stove and greenhouse flowering and foliage plants.—Mr. Robertson, 1st, having in a good group Diplademia, Jamaikia, Clerodendron Balfourianum, Kalosanthes coccinea and Azalea Iveryana; 2d, Mr. Smith.

Six fine-foliage plants.—1st, Mr. Smith, with, amongst others, the handsome Croton majesticum and Alocasia metallica; Mr. Robertson, 2d, his best being a variegated Pine, well done, and Dieffenbachia Bausei.

Six Palms.—Mr. Robertson, 1st, showing a well grown moderate-sized group; Mr. Lambert, gr. to H. W. Segelcke, Esq., Herne Hill, Dulwich, 2d, with smaller but nicely grown plants.

Six Exotic Ferns.—1st, Mr. Osborne, who staged a very beautiful lot, in which Davallia Mooreana was well done, some 6 feet through; Mr. Robertson, 2d.

Group of plants arranged for floral effect.—1st, Mr. R. Chappell; 2d, Mr. Robertson. The wording here is a mistake, as it in a measure compels the judges to give the preference to the group with the greatest quantity of bloom, which may not, as in the present competition, be collectively so deserving.

Twenty-four miscellaneous plants.—1st, Mr. Beck; gr. to J. H. Young, Esq., Old Road, Lee, who had a nicely grown lot of soft-wooded flowering subjects; Mr. R. Biggs, nurseryman, Lewisham, 2d.

Six Achimenes.—1st, Mr. Osborne. Four ditto.—1st, Mr. Jeffrey, gr. to J. F. Smith, Esq., Fairby House, Eltham Road.

Four Exotic Ferns.—1st, Mr. Lambert, whose exhibit contained a beautiful example of Adiantum gracillimum and Davallia Mooreana; 2d, Mr. Shaldice, gr. to R. P. Burrow, Esq., Blackheath.

Gloxinias were well represented. Mr. W. Steward, gr. to H. Paine, Esq., 1st, with all erect varieties, bearing very large flowers; 2d, Mr. Osborne.

Eight Draccenas Colchicinas.—Mr. Beck took 1st with good, but not over-large plants, covered with plenty of flowers and healthy foliage; Mr. Steward 2d.

Four Draccenas.—1st and 2d, Mr. Jeffrey and Mr. Osborn.

Pelargoniums.—1st, Mr. Biggs, with a moderately-flowered half-dozen; Mr. Martin, gr. to — English, Esq., Lee Road, 2d. Four ditto.—Mr. Osborne 1st; Mr. Harpin, gr. to J. Radcliffe, Esq., 2d. Six Zonals.—Mr. Martin 1st; Mr. Hiscox, gr. to Mrs. Witherby, 2d.

Four fine-foliaged plants.—1st, Mr. Lambert, in whose group was the old Croton pictum, beautifully coloured (when well done it is superior to many of the new ones); Mr. Bristow 2d.

Cut flowers.—Roses showed the effect of the untoward season, being small. For forty-eight Mr. Coppin, Rose Nursery, Shirley, was the only exhibitor, and took 1st. Twenty-four: Mr. Todman 1st. Twelve: Mr. J. Smith 1st.

Single stand of cut flowers for table.—Mr. Lambert 1st, Mr. Shadcliffe 2d.

Three stands of cut flowers.—1st, Mr. W. Herd; 2d, Mr. D. Hull.

Three table plants (open).—1st, Mr. Smith; 2d, Mr. Martin. Three ditto (amateurs).—Mr. Lambert and Mr. Smith took prizes in the order their names stand in; the 2d prize plants were too large for the purpose.

Fruit: Three bunches of black Grapes.—1st, Mr. Jeffrey; 2d, Mr. Shaldice. Three bunches of white Grapes.—1st, Mr. Bristow; 2d, Mr. Shaldice. One bunch.—1st, Mr. Jeffrey; 2d, Mr. Shaldice.

Nectines.—1st, Mr. Robertson.

Melon.—1st, Mr. Osborne; 2d, Mr. Shrubb, gr. to J. Smith, Esq. An extra prize was awarded to Mr. Bateman, gr. to J. G. Rollins, Esq., Manor Park, Lee, for a box of nine good Heckfield Hybrid Melons.

Collection of vegetables and salad combined.—1st, Mr. Robertson, very good; 2d, Mr. Deville, gr. to — Freeman, Esq., Lewisham; 3d, Mr. Smith.

Collection of vegetables.—1st, Mr. Smith; 2d, Mr. Osborne. All very good.

Mr. Salter, gr. to W. Lobb, Esq., staged a miscellaneous group of twelve Orchids, in which was a good Masdevallia Harryana, with twenty-four flowers; Phalænopsis Luddemanniana, Odontoglossum Pescatorei, O. citrosmum, the lovely Ionopsis paniculata, with four spikes; Oncidium verrucosum, and O. crispum; these received an extra prize, which they well deserved.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JUNE 20, 1877.

MONTH AND DAY.	BAROMETER. Mean Reading at 32° Fahr.	Departure from Mean of 18 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean of Day.	Departure of Mean from Mean of 60 Years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point.	Degree of Saturation.	WIND. Average. Direction.	RAINFALL.
June	In.	In.	°	°	°	°	°	°			In.
14	29.94	+ 0.16	72.1	48.7	27.4	58.0	— 0.9	46.6	66	E.N.E.	0.00
15	29.99	+ 0.21	76.3	50.2	26.3	61.5	+ 2.5	50.4	64	E.S.E. N.E.	0.00
16	29.95	+ 0.17	79.6	48.5	31.1	62.2	+ 3.1	51.8	69	E.N.E. N.E.	0.00
17	29.87	+ 0.09	80.0	54.6	25.4	65.7	+ 6.4	51.7	60	E.N.E. E.	0.00
18	29.89	+ 0.10	84.5	53.9	30.6	67.3	+ 7.8	50.1	54	E.N.E. E.	0.00
19	29.92	+ 0.13	84.7	56.2	28.5	67.8	+ 8.1	53.5	60	E.N.E. E.	0.00
20	29.86	+ 0.07	80.2	53.0	27.2	63.5	— 3.6	50.0	77	E.N.E.	0.00
Mean	29.92	+ 0.13	79.5	52.1	27.4	63.7	+ 4.4	51.4	64	E.N.E.	sum 0.00

June 14.—A very fine clear day. Cool breeze.
— 15.—A very fine clear warm day. Windy.
— 16.—A brilliantly fine warm day. Clear. Windy.
— 17.—Very fine, warm, and cloudless throughout.
— 18.—A very fine hot day. Light clouds. Highest reading of thermometer placed in sun's rays = 153° F.
— 19.—A fine bright hot day. Partially cloudy. Max. for the day = 84·7, being higher than the max. of any day since August 17, 1876.
— 20.—Dull and very cloudy till 10 A.M. Fine and cloudless after. Warm day.

LONDON: *Barometer.*—During the week ending Saturday, June 16, in the vicinity of London the reading of the barometer at the level of the sea increased from 30.12 inches at the beginning of the week to 30.15 inches by the morning of the 10th, decreased to 29.86 inches by the afternoon of the 12th, increased to 30.18 inches by the morning of the 15th, and decreased to 30.10 inches by the end of the week. The mean reading for the week at sea level was 30.08 inches, being 0.09 inch above that of the preceding week, and 0.11 inch above the average.

Temperature.—The highest temperatures of the air observed by day ranged between 84° on the 11th, and 65½° on the 13th; the mean value for the week was 75¼°. The lowest temperatures of the air observed by night varied from 48½° on the 16th to 55½° on the 18th; the mean for the week was 52°. The mean daily range of temperature in the week was 23½°, the greatest range in the day being 31°, both on the 11th and 16th, and the least 13°, on the 13th.

The mean daily temperatures of the air and the departures from the respective averages were as follows:—10th, 64°·7, × 6°.6; 11th, 66°.2, × 7°.9; 12th, 64°.3, × 5.8°; 13th, 56°.8, —1°.9; 14th, 58°, —0°.9; 15th, 61°.5, × 2°.5; 16th, 62°.2, × 3°.1. The mean temperature of the air for the week was 63°, being 3°.3 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 149° on the 16th, 146½° on the 15th, and 140° both on the 10th and 14th; on the 13th 119½° was the highest reading. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 39½° on the 16th, and 44½° on the 14th; the mean of the seven low readings was 47°.

Wind.—The direction of the wind was E. and E.N.E., and its strength moderate. The weather during the week was fine and warm. *Thunderstorms* occurred on the night of the 11th and early morning of the 12th.

Rain fell on two days during the week, the amount collected was 0.33 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 84° at Blackheath, 84½° at Cambridge, and 80° at Manchester, at Portsmouth 79½° was the highest temperature in the week. The mean value from all stations was 75½°. The lowest temperatures of the air observed by night was 40° at Hull and 41° at Cambridge; at Truro 54° was the lowest temperature in the week. The mean value from all stations was 46°. The range of temperature in the week was the least at Plymouth, 18½°, and the greatest at Cambridge, 40½. The mean range of temperature from all stations was 29½°.

The mean of the seven high day temperatures was the highest at Cambridge, 76½°, and the lowest at Hull, 64½°; the general mean from all stations was 69½°. The mean of the seven low night temperatures was the lowest at Hull, 46½°, and the highest at Truro, 57°; the mean value from all stations was 51°. The mean daily range of temperature in the week was the greatest at Cambridge, 27½°, and the least at Plymouth, 11°; the mean daily range of temperature from all stations was 18½°.

The mean temperature of the air for the week from all stations was 58½°, being 3° higher than the value for the corresponding week in 1876. The highest was 62°, at both Truro and Blackheath; and the lowest 53½°, at Hull.

Rain fell on one or two days in the week at most places. The amount measured at Hull was 1 inch, at Brighton and Sheffield eight-tenths of an inch fell, but at Leicester and Cambridge only five-hundredths of an inch fell, and at Manchester no rain was measured. The average fall over the country was three-tenths of an inch.

The weather during the week was generally fine and warm. *Thunderstorms*, accompanied with rain, were general over the country on the 11th inst.

SCOTLAND: *Temperature.*—The highest temperatures of the air observed by day ranged from 75° at Paisley to 66° at Leith; the mean value from all stations was 71°. The lowest temperatures of the air observed by night varied from 41° at Paisley to 44½° at Glasgow; and the general mean from all stations was 43°. The mean range of temperature in the week from all stations was 28°.

The mean temperature of the air for the week from all stations was 54½°, being 3° higher than the value for the corresponding week in 1876. The highest occurred at Glasgow, 58½°, and the lowest at Dundee, Aberdeen, Leith, and Perth, all about 56½°.

Rain.—The amount of rain measured at Greenock was 0.14 inch, at Aberdeen was 0.13 inch, at Glasgow was 0.03 inch, and at Perth was 0.02 inch. At Edinburgh, Dundee, Paisley, and Leith no rain was measured; the average fall over the country was 0.04 inch.

DUBLIN.—The highest temperature of the air was 75°, the lowest 40°, the range, 35°, the mean 58°, and there was no rain.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—BACON.

102. HOW TO PREVENT THE SIDES OF A SAND-PIT FALLING IN.—Will you be so good as to tell me the best way of preventing the sides of a sand-pit falling in? The object to be attained is to make a fernery of hardy outdoor ferns in a sand-pit, and to keep the sides of the sand-pit uncovered, *i.e.*, not built-up with earth, or anything which will prevent the rich yellow colour of the sand from showing. As it is now, pieces from the upper part of the sides frequently fall down. The sand-pit is in what was formerly a common, and the ground round it is still covered with Heather, and a few small Scotch Firs. *M. D. R.*

Answers to Correspondents.

ASPARAGUS BEETLE: *J. W.* The very common beetle, Crioceris asparagi, often figured in our columns. We are sorry to add that there is no remedy that can be profitably employed.

BOTANICAL DRYING PAPER: *R.* The best is Newman's, 32, Botolph Lane, E.C.

HEATING VINERY: *H. C.* We cannot recommend a stove for heating your vinery. If you economise your heat you may get very good Grapes without artificial heat; but if you wish to force your Vines at all you had better use hot-water, which may be heated by any stove you prefer—gas, or petroleum, as it can be placed outside the structure, or so that all fumes are carried off.

NAMES OF PLANTS: *G. C.* You should address such questions to the Editors, not to the publisher. 1, Fraxinus Ornus, the Manna Ash; 2, probably Crataegus coccinea, scarlet-fruited Thorn, but we cannot tell it from your specimen; 3, Pavia flavescens; 4, Euonymus europeus, Spindle Tree; 5, Pyrus Aria, White Beam; 6, Liriodendron tulipifera, Tulip Tree.—*H. Putteridge.* Pyrus torminalis.—*B., Sevenoaks.* Chrysanthus fleus, Carolina Allspice.—*W. P.* The tree is Pyrus torminalis. You also enclosed a specimen of Cotyledon Umbilicus. *E. Straker.* Dendrobium moschatum.—*J. A. S.* Cologyne speciosa.—*F. W.* Linum flavum.—*T. B. W.* Habenaria bifolia; 2, Ranunculus, one of the many forms of aquatilis; 3, Melampyrum pratense; 4, Polygonum Bistorta.—*X., Montreal.* 1, Cheilodonium majus; 2, Thalictrum minus; 3, Dentaria diphylla.—*A. Devonian.* Staphylea pinnata.—*J. W. R.* We have not been able to identify it.—*Erratum.* At p. 766 of our last week's issue, for *Acacia* read *Acer.*

PEACHES: *H. C. D.* Next week.

VINE BORDER: *Subscriber.* If the crop is doing well let the covering alone. It will serve as a mulching.

COMMUNICATIONS RECEIVED.—J. D.—C. S. Co. (many thanks).—B. F.—W. G. S.—W. E.—A. D.—W. D. (we should be glad to see a photograph).—R. G.—W. A.—H. E.—A. F.—H. C. D.

Markets.

COVENT GARDEN, June 21.

Business has been brisk during the past week, with a good demand for all classes of goods. Hothouse Strawberries, owing to the backward season, are making as good prices as at any time. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d.	s. d.
Apricots, per box	2 0	3 0
Apples, per ½-sieve	3 0	8 0
Cherries, per box	2 0	3 6
Grapes, per lb.	3 0	8 0
Lemons, per 100	8 0	10 0
Melons, each	4 0	10 0
Oranges, per 100	8 0	16 0
Peaches, per doz.	6 0	23 0
Pears, per doz.		
Pine-apples, per lb.	2 0	6 0
Strawberries, p. lb.	2 0	10 0
Figs, green, each	0 9	1 6

VEGETABLES.

	s. d.	s. d.
Artichokes, per bush.	4 0	—
— Eng. Globe, doz.	2 0	4 0
Asparagus, French, Giant, per bunch	8 0	20 0
— English, p. bun.	3 0	6 0
— Sprue, per bun.	1 6	—
Beans, French (new), per 100	1 3	2 6
Beet, per doz.	1 0	2 0
Cabbages, per doz.	1 0	2 0
Carrots, per bunch	0 7	0 10
— New French, per bunch	1 6	—
Cauliflowers, per doz.	3 0	6 0
Celery, per bundle	1 6	2 0
Chilis, per sieve	3 0	—
Cucumbers, each	0 6	1 6
Endive, per doz.	1 0	2 0
— Batavian, p. doz.	2 0	3 0
Garlic, per lb.	0 6	—
Gooseberries, green, per quart	0 6	—
Herbs, per bunch	0 2	0 4
Horse Radish, p. bun.	4 0	—
Leeks, per bunch	0 2	0 4
Lettuces, per score	2 0	—
Mint, green, bunch	0 6	—
Mushrooms, per pott.	1 0	2 0
Onions, per bush.	10	2 3 0
— young, per bun.	0 6	—
Parsley, per bunch	0 9	—
Peas, green, p. bushel	0 12	0
— shelled, per qt.	4 0	—
Radishes, per bunch	0 1	0 3
— Spanish, doz.	1 0	—
— New Jersey, doz.	1 0	—
Rhubarb, per bundle	0 6	0 8
Salsafy, per bundle	1 0	—
Shallots, per lb.	0 6	—
Spinach, per bushel	1 6	—
Tomatos, per doz.	3 0	—
Turnips, per bundle	4 0	6
— new, per bundle	1 0	1 6
Vegetable Marrows, each	0 9	1 c
Rounds, 14s. to 20s. cwt.		

CUT FLOWERS.

	s. d.	s. d.
Bouvardias, per bun.	1 0	4 0
Calceolaria, p. bun.	1 0	—
Carnations, per dozen	0 6	2 0
— 12 bunches	6 0	12 0
Cornflower, 12 bun.	3 0	9 0
Daisies, 12 bunches	1 6	6 0
Eschscholtzia, 12 bun.	2 0	6 0
Eucharis, per doz.	6 0	12 0
Gardenia, per doz.	2 0	9 0
Heartsease, 12 bun.	1 6	6 0
Heliotropes, 12 sprs	0 6	1 0
Iris, 12 bunches	6 0	12 0
Lilies (in var.), sp.	0 6	2 0
Lily of Val., 12 bun.	6 0	18 0
Mignonette, 12 bun.	4 0	9 0
Myosotis, 12 bunch.	3 0	12 0
Pelargoniums, 12 sp.	9 0	2 0
— zonal, 12 sprays	2 0	4 6
Pinks (white and coloured), 12 bun.	3 0	6 0
Primula, double, per bunch	1 0	2 0
Ranunculus, 12 bun.	4 0	9 0
Rhododendr., 12 bun.	2 0	12 0
Rocket, 12 bunches	3 0	6 0
Roses (outdoor), bun.	0 6	2 0
— (indoor), per doz.	1 6	12 0
— moss, 12 bunches	3 0	6 0
Rose de Meaux, 12 bunches	2 0	6 0
Spiræa, 12 sprays	1 6	4 0
Stephanotis, 12 spr.	2 0	9 0
Stocks, 12 bunches	4 0	8 0
Sweet Peas, 12 bun.	3 0	9 0
Tropæolum, 12 bun.	1 0	4 0

PLANTS IN POTS.

	s. d.	s. d.
Balsams, per dozen	4 0	12 0
Bedding-out plants, per doz.	1 6	3 0
— in boxes, each	1 6	2 6
Begonias, per doz.	6 0	12 0
Bouvardias, do.	12 0	24 0
Calceolaria	9 0	24 0
Clematis	9 0	12 0
Cockscombs, per doz.	6 0	12 0
Coleus, per dozen	3 0	9 0
Cyperus, do.	9 0	12 0
Dracæna terminalis	30 0	60 0
— viridis, per doz.	18 0	24 0
Ferns, in var., p. doz.	6 0	30 0
Ficus elastica, each	2 6	15 0
Fuchsias, per dozen	4 0	18 0
Heaths, variety, doz.	9 0	60 0
Heliotrope, per doz.	6 0	18 0
Hydrangea, per doz.	12 0	30 0
Liliums in var., each	3 0	6 0
Mignonette, per doz.	3 0	9 0
Myosotis, per dozen	4 0	12 0
Myrtles, do.	4 0	9 0
Palms in variety, each	3 6	21 0
Pelargoniums, p. doz.	9 0	36 0
— scarlet, per doz.	4 0	9 0
Petunias, per doz.	9 0	24 0
Rhodandite, per doz.	6 0	12 0
Richardia æthiopica, per doz.	9 0	18 0
Roses, per dozen	18 0	60 0
— fairy, per dozen	9 0	18 0
Spiræa, per doz.	12 0	30 0
Vahlota purpur., doz.	12 0	24 0

CORN.

At Mark Lane on Monday the supply of English Wheat was small, but there were liberal importations of foreign, and factors could only effect sales at a reduction of from 2*s.* to 3*s.* per qr. as compared with the rates of that day week. Barley was cheaper to sell, especially grinding qualities; while as regards Oats, a fall of from 6*d.* to 1*s.* per qr. was submitted to. Malt was much the same in price; Maize was weaker, although no decided fall was reported; and a heavy market prevailed for Beans, Peas, and flour.—Trade on Wednesday was extremely dull. Very few transactions occurred in Wheat, and though no decided fall was reported, the rates of Monday were not supported. Other kinds of produce were cheaper when pressed for sale, but as a rule holders were not very anxious sellers. —Average prices of corn for the week ending June 16: —Wheat, 64*s.* 1*d.*; Barley, 34*s.* 7*d.*; Oats, 26*s.* 1*d.* For the corresponding period last year:—Wheat, 47*s.* 11*d.*; Barley, 34*s.*; Oats, 28*s.* 3*d.*

POTATOS.

The Borough and Spitalfields markets reports for June 18 state that there was not much trade, and the following were the prices:—Kent Regents, 90*s.* to 120*s.* per ton; Essex do., 80*s.* to 110*s.*; reds, 100*s.* to 120*s.*; flukes, 150*s.* to 175*s.*; Victorias, 150*s.* to 170*s.*—Trade on Thursday was quiet, at previous rates.—The Potatos received in London last week from the Continent comprised 2041 packages 1657 bags and 150 baskets from Malta, 2526 bags Hamburgh, 2354 Antwerp, 7040 Stettin, 1671 packages Huelva, 789 packages 100 boxes Lisbon, 874 sacks Dunkirk, 290 Boulogne, 606 bags Ghent, 300 Harlingen, and 136 packages Taganrog.

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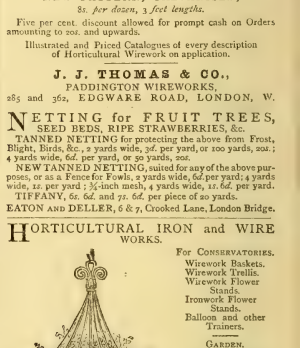
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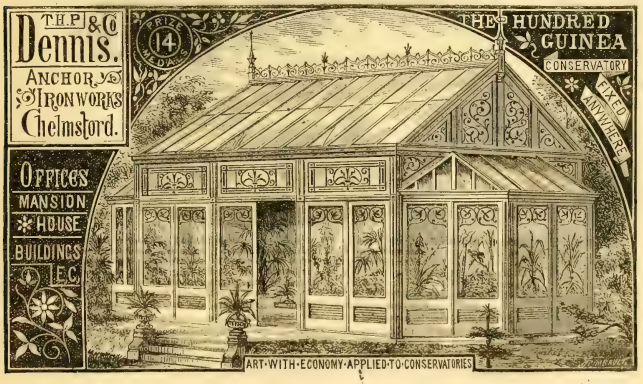
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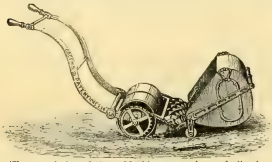
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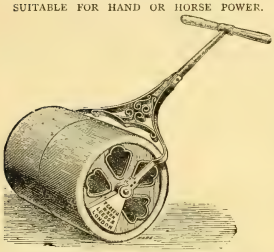
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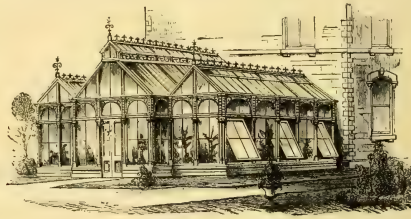
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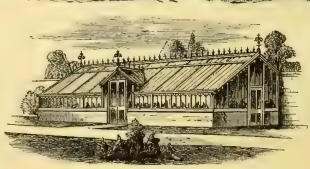
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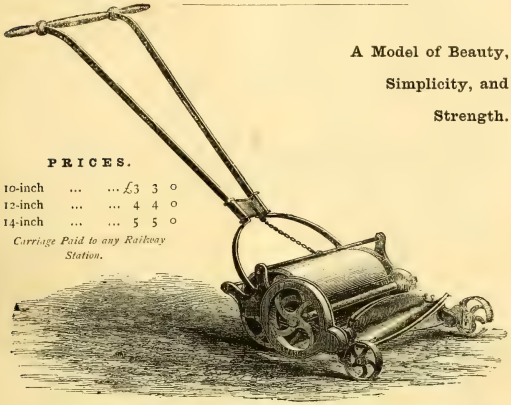
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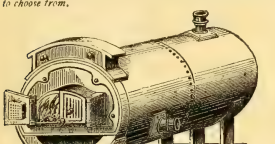
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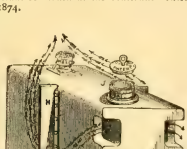
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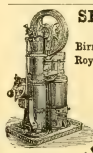
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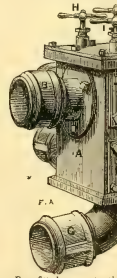
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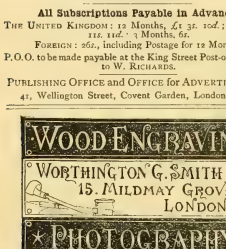
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PROPAGATOR (Under, Soft-wooded).—Good experience and character.—W. J., 3, Mosselle Place, High Road, Tottenham, N.

To Nurserymen.

IMPROVER, under Glass.—Age 18. Five years' experience in last place.—For references, &c., apply to Mr. BARRATT, Nursery, Grange Road, Ealing, Middlesex.

TO NURSERYMEN.—Wanted, by a young Man, age 27, a situation under Glass in a good Establishment ; fourteen years' experience. Good character.—GEORGE CASHFORD, Wellington Road Nursery, St. John's Wood, London, N.W.

To Head Gardeners or Nurserymen.

ASSISTANT, where experience can be gained. Salary not an object.—E. A., Post-office, Sheepy, near Atherstone, Leicester.

MANAGER, or BOOK-KEEPER, in a Nursery or Seed Business. — Age 32. First-class references.—K. W., 2, Burrell Street, Ipswich.

To Florists

SHOPMAN or MANAGER.—Wanted, an engagement as above. Seven years' experience. First-class reference.—A. B., 127, Cowley Road, Brixton, S.W.

TRAVELLER, CLERK, or SHOPMAN.—Age 33 ; permanent engagement required. Fifteen years' experience in first-class London Houses. References unexceptionable.—A. B. C., Mr. Colwill, 10, Dynevor Place, Swansea, South Wales.

SHOPMAN (Assistant). — Three years' experience. Good reference.—W. H. D., Post-office, Hereford.

CLERK, with four years' experience in the Seed Trade, is open for a re-engagement. Good reference. —G. D., Box 21, Leith.

FARM BAILIFF.—Age 38, married ; twenty years' experience ; thoroughly practical ; well up in Rearing and Fatting Stock, Working Light and Heavy Soils, Draining, &c. First-class references as to ability, &c.—F. JEFFERY, Henfield, Sussex.

DINNEFORD'S FLUID MAGNESIA.

The best remedy for ACIDITY of the STOMACH, HEARTBURN, HEADACHE, GOUT, and INDIGESTION ; and the safest aperient for delicate Constitutions, Ladies, Children, and Infants.
DINNEFORD AND CO.,
172, New Bond Street, London, and all Chemists.

HOLLOWAY'S PILLS.—The Chiefest Wonder of Modern Times.—This incomparable Medicine Increases the Appetite, Strengthens the Stomach, Cleanses the Liver, Corrects Biliousness, Prevents Flatulency, Purifies the System, Invigorates the Nerves, and Reinstates Sound Health. The enormous demand for these Pills throughout the globe astonishes everybody, and a single trial convinces the most sceptical that no Medicine equals Holloway's Pills in its ability to remove all complaints incidental to the human race. They are a blessing to the afflicted, and a boon to all that labour under internal or external disease. The Purification of the Blood, Removal of all Resistant From the Secretive Organs, and Gentle Aperitive Action are the prolific sources of the extensive Curative Range of Holloway's Pills.

ROSES, ROSES, ROSES.

SPECIAL NOTICE.

THE GARDENERS' CHRONICLE

For JULY 7 will contain a SPECIAL REPORT of the

GREAT ROSE SHOW AT ST. JAMES'S HALL ON JULY 4,

ALSO A

TWELVE-PAGE SUPPLEMENT

DEVOTED TO

THE ROSE,

And a Double-Page (18 inches by 13 inches)

BEAUTIFULLY COLOURED PLATE

Of a GROUP of ROSES, by FITCH, entitled

"OUR BOUQUET."

PRICE FIVEPENCE, POST-FREE FIVEPENCE-HALFPENNY.

NOTICE TO ADVERTISERS.

As a very large EXTRA CIRCULATION of the above Number is anticipated, Advertisers are particularly requested to send in application for space as early as possible.

W. RICHARDS, 41, WELLINGTON STREET, STRAND, W.C.

Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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With the Number for next Saturday (July 7) will be presented a Special Twelve-page ROSE SUPPLEMENT, and a beautifully COLOURED PLATE of a GROUP of ROSES.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE. — SCIENTIFIC, FRUIT, and FLORAL COMMITTEES' MEETINGS, and EXHIBITION of NEW and RARE PLANTS, on TUESDAY next, July 3, at 11 o'Clock. GENERAL MEETING for ELECTION of FELLOWS, at 3 o'Clock. Band of the Royal Horse Guards from 4 to 6 o'Clock p.m.

N.B.—The FRUIT and FLORAL COMMITTEES on this occasion will meet in the CONSERVATORY.

ROYAL HORTICULTURAL SOCIETY, GREAT SUMMER SHOW, June 19.

LIST OF AWARDS.

Mr. B. S. Williams, The Nurseries, Upper Holloway, N., for Group of Plants, Large Gold Banksian Medal.

Mr. J. Wills, Royal Exotic Nursery, South Kensington, S.W., for Group of Plants, Large Gold Banksian Medal.

Mr. E. Sawyer, Hyde Nursery, Edmonton, for Group of Decorative Plants, Silver Flora Medal.

Mrs. M. Hodgkins, 35, Hyde Grove, Manchester, for Skeleton Leaves, Flowers, and Ferns, Large Silver Banksian Medal.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

EVENING FETE and SPECIAL EXHIBITION of FLORAL TABLE and other DECORATIONS, BOUQUETS, &c., WEDNESDAY, July 4. Gates open 8 to 12 o'Clock. Tickets to be obtained at the Gardens only by vouchers from Fellows of the Society, price 10s., or on the day or evening of the Fête, 15s. each.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

EXHIBITION of ANNUALS grown in Pots by Messrs. Carter, of Holborn, now on view daily. Admission as on ordinary days, or by Tickets, 2s. 6d. each.

LEICESTER GRAND ROSE SHOW, July 3, 1877.—FIFTY-TWO POUNDS offered for CUT ROSES. Open to all England. Further information on application to the Secretary,

Mr. W. C. MARRIS, 8, New Street, Leicester.

THE OUNDLE FLOWER and POULTRY SHOW will be held on WEDNESDAY, July 11. PRIZES, upwards of ONE HUNDRED and EIGHTY POUNDS, including Cups or Money, for Stove and Greenhouse Plants and Ferns, and TWENTY POUNDS for Roses. All ENTRIES CLOSE July 4. Schedules of

Oundle. ALFRED KING, Secretary.

WIMBLEDON and DISTRICT HORTICULTURAL and COTTAGE GARDEN SOCIETY. Under Royal and Distinguished Patronage.

The FIFTH ANNUAL EXHIBITION of PLANTS, FLOWERS and FRUITS, will be held on THURSDAY, July 5, in the Grounds of Park House, Wimbledon. Band of the Victoria Rifles in attendance.

P. APPLEBY, Secretary.

WEST of ENGLAND ROSE SHOW, Hereford, FRIDAY, July 6. TWO HUNDRED POUNDS in Prizes. ENTRIES CLOSE Tuesday, July 3.

HIGHGATE HORTICULTURAL SOCIETY.

The ANNUAL SUMMER EXHIBITION of this Society will be held (by permission of E. Brooke, Esq., J.P.) in the Grounds of Caen-Wood Towers, Highgate, N., on THURSDAY, July 12. Admission from 1 till 3 o'Clock, 2s. 6d.; from 3 till 5 o'Clock, 1s.; from 5 till 8 o'Clock, 6d. Bands in attendance. Refreshments on the Grounds. W. M. BURCK, Sec.

NATIONAL CARNATION and PICOTEE SOCIETY, and CUT ROSE SHOW, will be held at the Royal Aquarium, Westminster, WEDNESDAY and THURSDAY, July 18 and 19. Schedules and full particulars may be obtained on application to

Mr. E. S. DODWELL, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W.; or Mr. E. BENNETT, Rabley Nurseries, Barnet, Herts; or Mr. W. ROBERTSON, Royal Aquarium, Westminster, S.W.

SELBY HORTICULTURAL ASSOCIATION.—Open to all England.

The SEVENTH FLOWER SHOW, GALA and GRAND ATHLETIC FESTIVAL of the above Society, will be held on JULY 24. For Schedules of Flower Show and Athletic Sports Prizes, apply to FRED. F. SMITH, Hon. Sec.

Market Place, Selby.

KENDAL FLOWER SHOW, JULY 26. Open Prizes of THIRTY POUNDS for COLLECTION of STOVE and GREENHOUSE PLANTS, and TWELVE POUNDS for COLLECTIONS of FRUIT. ENTRIES CLOSE July 19. Schedules and Forms from the SECRETARIES, Kendal.

COVENTRY and WARWICKSHIRE FLORAL and HORTICULTURAL SOCIETY.

The SECOND SHOW of the Season will be held at Combe Abbey, AUGUST 21. Special Prizes open to all England for best collection of Fruit, six dishes, £5, £3, £2: for three bunches of Black Grapes, £2, £1: for three bunches of White Grapes, £2, £1. Schedules and every information may be had on application to THOS. WIGSTON, Sec.

32, Bishop Street, Coventry.

Sutton's Choice Strains of

FLORISTS' FLOWERS.

SUTTON'S CALCEOLARIA "PERFECTION," 2s. 6d. per packet.

SUTTON'S PRIZE PRIMULA, 2s. 6d. per packet.

SUTTON'S SUPERB CINERARIA, 2s. 6d. per packet.

SUTTON'S PRIZE CYCLAMEN, 2s. 6d. per packet.

Post-free.

The Queen's Seedsmen, Reading.

PAUL and SONS, Old Nurseries, Cheshunt.

—The ROSES, including their new ones of the year, Emily Lawton and Marchioness of Exeter, and those for last and also for next year, are now finely in bloom. Frequent trains from Liverpool Street to Cheshunt Station.

PRICKLY COMFREY.—The most productive Forage Plant, permanent, very early; weeds are kept under by its rapid growth. Ten Tons per acre have been produced in one season: cut Five times a year. Strong plants, £4 per 1000; sets, 6s.; carriage paid. The present is a good time for forming permanent plantings of it, also for propagation.

FREEMAN, Economic Seedsman, Norwich.

COLLARDS for SALE.—Several millions of strong plants, at 2s. per 1000, for cash only.

R. BATH, Wansunt Farm, Crayford.

BRUSSELS SPROUTS, 1,000,000 for Sale. Price, 8s., address to

T. BORROWDALE, Swanley, Kent.

Clearance Sale.

CHOICE AMERICAN and OTHER POTATOS.—Price 1s. per peck, or 8s. per cwt., free on rail, Norwich. Early Rose, Champion Regents, Red-skin Flourball, Bresee's Peerless, Brownell's Beauty, Yorkshire Hero, Scotch Blue Regents, Wood's Scarlet Prolific, Alpha, &c. Orders will be sent out in succession till all are cleared.

DANIELS BROS., Seedsmen to the Queen, Norwich.

To the Trade—Turnip Seeds.

H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.

Seed Growing Establishment, Wisbech.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Mushroom Spawn.

OSBORN AND SONS beg to announce that their new supply of the above is now ready for use. As they are so constantly receiving assurances of the excellent qualities of their Spawn, they can recommend it with the greatest confidence. Price 5s. per bushel. Trade Price on application. Fulham Nurseries, London, S.W.

Gentlemen's Gardeners, Amateurs, and Others

REQUIRING

GARDEN POTS of best quality, are requested to send their orders to

J. MATTHEWS, Royal Pottery, Weston-super-Mare.

Price List on application.

Pandanus utilis.

SPECIAL OFFER TO THE TRADE.—Fresh Seed, just arrived, of good germinating quality, price 10s. per 100.

Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, S.W.

Royal Botanic Society of London.

JAMES CARTER AND CO. announce their GREAT EXHIBITION of ORNAMENTAL-FOLIAGED and FLOWERING ANNUALS and other PLANTS Grown in Pots from Thirty Varieties of Seed, and for each variety. These Seeds are of the same strain as that supplied to Battersea Park, which has been much admired.

THOMAS METHVEN AND SONS, 13, Princes Street, Edinburgh.

JEAN VERSCHAFFELT'S NURSERIES, 134, Faubourg de Bruxelles, Ledeberg, Ghent, Belgium. CATALOGUES free on application.

Agents in London: Messrs. A. SILBERRAD AND SON, 3, Harp Lane, Great Tower Street, London, E.C.

Harrison's Musk

H. CANNELL begs to assure the Public generally that the above has proved better than expected, in fact it is a most acquisitory (a real everybody's plant). H. C. will send two plants post-free for 1s., 20s. per 100. Swanley, Kent.

Surplus Budding Plants.

J. LEWENTON AND SON have to offer fine Plants of ECHEVERIA SECUNDA GLAUCA, and dwarf AGERATUM, at 8s. per 100; strong LETTUCE PLANTS. 4s. per 1000.

Hillehurst, Reading.

LOBELIA BLUE BEAUTY without doubt has proved the finest Blue Lobelia, also one of the very best Bedding and Decorative plants in cultivation. Strong plants, in flower, 6s. per dozen, 40s. per 100. Three plants, free by post, for 2s. Usual Trade discount.

FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

Pansies and Violas.

MESSRS. DOWNIE AND LAIRD, Royal Winter Gardens, Edinburgh, beg to intimate that their Collection of Show and Fancy PANSIES, also VIOLAS, embracing all the finest in cultivation, are now in fine flower at their Nurseries, Inverleith Row, and daily (Sunday excepted). Over fifty varieties of bedding Pansies and Violas have been planted out in rows 30 feet long to test their merits.

The Finest New Bedding Plant of the Season.

AGERATUM "LADY JANE."—For medium-sized beds or ribbon lines this is *par excellence*—compact habit of growth, dense green foliage, and good constitution, growing from 12 to 14 inches high. The flowers when fully expanded are a bright blue, produced in abundance throughout the season.

Price 30s. per dozen. Special price per 100 and 1000.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

CHARLES TURNER'S New Spring CATALOGUE contains choice selections, with full descriptions, of Chrysanthemums, Pansies, Calceolarias, Pelargoniums, including Show, French, Fancy, Zonal, and Tricolor; New Roses, and all the new and popular Bedding Plants; which may be had, post-free, on application.

The Royal Nurseries, Slough.

New and Choice Orchids, &c.

THE NEW PLANT AND BULB COMPANY beg to call attention to their NEW LIST (No. 34), just published, and to respectfully invite all intending Purchasers to send for a copy before giving their Orders. Post-free on application. Lion Walk, Colchester.

Primulas, Primulas, Primulas.

WILLIAMS' superb strain, 1s. 6d. per dozen, 10s. per 100; package and carriage free. CINERARIAS, choicest assortment, same size and price. The above are quite equal to those I have sent out in previous years. Cash with order.

JOHN STEVENS, The Nurseries, Coventry.

NEW REGAL PELARGONIUM, "PRINCE OF WALES"

Much brighter in colour, larger in truss, and very superior in every way to Pelargonium "Captain Raikes."

Price One Guinea each.

WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

PROTHEROE AND MORRIS, HORTICULTURAL MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

SALES BY AUCTION.

Kew Nursery, Kew Road, Richmond, Surrey.

SPECIAL and HIGHLY IMPORTANT SALE to the TRADE of 20,000 choice, RARE and NEW PALMS, consisting of 6000 Cocos Weddelliana, 2000 Areca purpurea, quite new; 4000 Areca concinna, 1000 Areca Hookeriana (not yet sent out, and being the entire stock of this great novelty); also the following well-known and approved varieties, viz.:—1000 Areca alba, 1000 Phœnix reclinata, 1000 Areca rubra, 2000 Corypha australis, 1000 Geonoma species, 1000 Latania borbonica and others; also some SPECIMEN PALMS, admirably adapted for Exhibition and Indoor Decoration, together with 2000 AMARYLLIS (an important choice collection), 500 PRIMULA JAPONENSIS, 500 CHAIA SIEBOLDII, 1000 PIERIS, of sorts; 500 ANTHURIUM SCHERZERIANUM, 500 MYRTLES, 300 SARRACENIA PSITTACINA, 300 beautifully-grown YUCCA ALOIFOLIA VARIEGATA, &c., &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. H. Herbst to SELL the above by AUCTION, without reserve, on the Premises, on TUESDAY, July 3, at 10 for 11 o'Clock precisely, in consequence of the number of Lots.

May be viewed one week prior to the Sale. Catalogues had on the Premises, and of the Auctioneers, Estate Agents, and Valuers, 45, Gracechurch Street, E.C., and 3, Richmond, E.

The Collection of Established Orchids

of W. H. Michael, Esq., of Cholmeley Park, Highgate.

MR. J. C. STEVENS begs to announce that he has received instructions from W. H. Michael, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, THURSDAY and FRIDAY, July 4, 5 and 6, at half-past 12 o'Clock precisely each day, without the reserve, the valuable COLLECTION of ORCHIDS, made and exhibited by that gentleman, who is now removing from Highgate, consisting of some of the choicest varieties. Amongst other good things will be found the following:—Aerides Fieldingii, Lobbii, &c.; Angræcum, Chysis bractescens, Cymbidium Mastersii and eburneum; Cattleyas in great variety, including Mendelli, gigas, and Dowiana; Lælia elegans, Turneri, Schilleriana, purpurata, and a grand specimen of superbiens; Odontoglossum Alexandræ, all the principal kinds, including Alexandræ, Pescatorei, cirrhosum, Andersonianum, a magnificent variety; nebulosum, luteo-purpureum, Hallii, hystrix, cirrhosum, Roezlii, and vexillarium; Dendrobiums Falconeri, Wardianum, Devonianum, albo-sanguineum, lituiflorum, M'Carthiæ, &c.; Oncidiums splendidum, varicosum, Lanceanum, Weltoni, macranthum, &c.; Phalænopsis grandiflora, Schilleriana, amabilis, Luddemanniana, and rosea; Sacanthus caudatum, Zygopetalum Mackaii, &c.; Vandas Bensoniæ, Denisoni, cœrulea, coerulescens, Batemanni, suavis Veitchii; Cypripedium Veitchii, Dayanum, Lawrenceanum, Stonei, Sedeni, caudatum, and many more eburneum, superbum, and sesquipedale; Burlingtonias, Brassias, Pescatoreas, &c.

On view the morning of Sale, and Catalogues had.

Houghton Estate.

ANNUAL TIMBER SALE.—Twelve miles from Lynn, ten from Fakenham, and seven from Snettisham Railway Stations.

WILLIAM C. HOPKING is favoured with instructions from the Most Noble the Marquis of Cholmondeley, to SELL by AUCTION, on WEDNESDAY, July 25, 200 splendid OAK TIMBERS, many of which are from 30 to 40 feet in length, of great girth and very clean. 130 ASH TIMBERS, and 3 ELM TIMBERS, many of which are 40 feet in length. A large quantity of OAK WRONGS, about 20,000 HARDWOOD FAGGOTS, and two large STACKS of BARK, the produce of the entire fell for this season of 268 Oak Timber. The Park is secured in very good order, and is of the best quality.

The Auctioneer has particular pleasure in calling the attention of Timber Merchants and the purchasers of Bark to the above-described Sale, it being the finest fell of timber ever offered for Public Competition on the Estate.

Sale to commence at 10.30 punctually, in the Park, close by the road leading from Bircham to Rushham.

A Conveyance will leave the Globe Hotel, King's Lynn, and Fakenham Station at 8.30 o'Clock for the convenience of Purchasers.

Catalogues may be had a fortnight previous to the Sale on application to W. FREUER, Esq., Estate Agent, West Rudham, Brandon; or to the Auctioneer, Great Bircham, Lynn, Norfolk.

TO LET, a FARM of 52 ACRES, great tithe free, partly drained. Three-quarters of a mile north of Crawley Station, well situate, and fronting on the main road from London to Brighton, in Ifield Parish, Sussex, called Martyr's Farm. Well adapted for a London Milk Business, one-fourth of it being excellent Meadow, and more could be laid down. Old-fashioned House, capital Barn, Stables and the usual Out-buildings. Good liberal terms from Michaelmas next, and every covenants to an enterprising tenant. To be viewed by permission of the present occupier.

Mr. HILLWORTH, and full particulars of Mr. A. WELLS, Stoke Hill Farm, Guildford.

TO BE LET, on Lease or Otherwise, LARGE PREMISES, on the West Side of Catherine Street, and near Covent Garden, Strand, W.C. Apply to

Messrs. CLARKSON, Architects, Ormond Chambers, 36, Great Ormond Street, W.C.

TO BE SOLD, on easy terms, a FLORIST and SEEDSMAN'S BUSINESS, with SMALL NURSERY. Good Jobbing connection. Excellent Shop and Premises. Long Lease.

2, Swiss Terrace, South Hampstead, N.W.

TO BE DISPOSED OF, in consequence of death in the family, a NURSERY, 7 miles from London. Four large Greenhouses, heated with hot-water, all Modern appliances; range of Pits: Water laid on to all parts; Modern Brick Dwelling, seven rooms, gas, and water. Price £500; portion can remain at interest. Lease seventeen years. Low rental of £25 per annum.

Mr. ALCOCK, 35, Great James Street, Bedford Row, Holborn, W.C.

TO be SOLD, a HOUSE, 8 ACRES of excellent ARABLE LAND, and 2 ACRES of GRASS LAND, suitable for Seed Growers and Nurserymen, 4 miles from Spalding, Lincolnshire, and close to a railway station. For particulars apply to

W. HALL, Morton, Bourn.

Joseph Smith, deceased.

Pursuant to the Act of Parliament of the 22d and 23d Vic., cap. 35, intituled "An Act to Further Amend the Law of Property and to Relieve Trustees."

NOTICE IS HEREBY GIVEN, that all Creditors and other Persons having any CLAIMS or DEMANDS upon or against the Estate of JOSEPH SMITH, late of Tansley, near Matlock, in the county of Derby, Nurseryman, deceased, who died on the 1st day of June, 1876, and whose Will was proved on the 11th day of July, 1876, in the District Registry at Derby, attached to the Probate Division of Her Majesty's High Court of Justice, by Samuel Smith and James Smith, both of Tansley aforesaid, Nurserymen, the Executors named in the said Will, are hereby required to send particulars of their CLAIMS or DEMANDS to the said EXECUTORS on or before the 1st day of AUGUST next; and Notice is Hereby also Given that after that day the said Executors will proceed to distribute the assets of the said Joseph Smith, deceased, among the parties entitled thereto, having regard only to the claims of which the said Executors shall then have had notice, and that they will not be liable for the assets, or any part thereof, so distributed to any person of whose claim or demand they shall not then have had notice—Dated this 16th day of June, 1877.

ARTHUR HARWARD, Wicksworth,
Solicitor to the said Executors.

NEWCASTLE-ON-TYNE FLOWER SHOW and CONCERTS.

LEADING PRIZES at 1877 Exhibitions of the Botanical and Horticultural Society of Durham, Northumberland and Newcastle-upon-Tyne. The oldest in England—established in 1824.

	£	s.	d.
Stove, Greenhouse and Ornamental Plants .	125	0	0
Table Decorations (Ladies only)	90	0	0
Ferns, £25; Pelargoniums, £40	65	0	0
Azaleas, Camellias, Fuchsias and Erices . .	50	0	0
Roses, £44; Dahlias, £36; Hollyhocks, £10	80	0	0
Liliums and Gladioli, £15; Fruit, £25 . .	40	0	0
Spring Plants, &c.	80	0	0
	£510	0	0

SUMMER SHOW, Leazes Park, JULY 12 and 13. 2600 New Members Entitled. Apply for Schedules to

WM. J. TAYLOR or J. H. FRENCH, Hon. Secs. Quayside, Newcastle.

WILSON TESTIMONIAL FUND.

DURING the past quarter of a century Mr. Wilson, by his genial disposition, obliging manners, and thoroughly zealous efforts to promote and successfully carry out the various interesting exhibitions of fruit and other blooms held at the Crystal Palace, has earned the respect alike of his colleagues and a wide circle of friends amongst the general public.

The following is a list of subscriptions up to present date received and promised :—

	£	s.	d.		£	s.	d.
Harrison Weir, Esq.	5	5	0	J. C. Fox, Esq. . .	1	1	0
H. James Weir, Esq.	5	5	0	Mr. Hugh Dickson . .	1	1	0
John Douglas, Esq., . .	5	5	0	J. Doel, Esq. . . .	1	1	0
— Reilly, Esq. . . .	5	5	0	— Norris, Esq. . .	1	1	0
Mr. Robert Parker . .	5	5	0	G. Hibbert, Esq. . .	1	1	0
Dr. Hogg	5	5	0	Henry Lee, Esq. . .	1	1	0
J. Groom, Esq. . . .	2	2	0	F. E. Hunt, Esq., . .	1	1	0
R. Thomson, Esq. . .	2	2	0	M. D.	1	1	0
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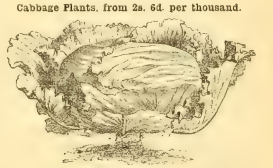
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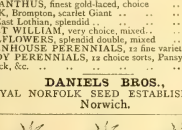
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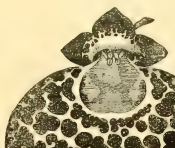
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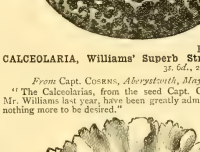
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From Capt. COSENS, *Aberystwith, May 13, 1877.*

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From Mr. F. DENNIS, *Gardener to* J. Fenton, Esq., *Yardsley, February 26, 1877.*

"Dear Sir,—I may inform you that at the Birmingham Chrysanthemum Flower Show, held last November, I took the 1st prize, with twelve Primulas, six red and six white, in the Gentlemen's Gardeners' Class, with seeds supplied by you."



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From Mr. J. WEST, *Gardener, Cheadon Park, May 21, 1877*

"Sir,—Your strain of Cinerarias, which have now been in bloom some time, have been and are now the admiration of all that have seen them, and are considered by gardeners to be the best ever seen in this neighbourhood. Habit very dwarf and compact, quite equal to the drawing in your catalogue."

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SATURDAY, JUNE 30, 1877.

FURZE, GORSE, WHINS.

THE Whins of our day, and of the days that are long gone by, have never been propagated, sowed, or planted by mortal hands; they are purely the gift of God. There were Whins on the commons of Barnes and of Battersea when our good king was student at the University of Gottingen. The robbers on the great North Road owed much to the shelter of the Whins on Finchley Common, as did those gentlemen of the highway westward to those on Hounslow Heath; and when Macaulay's artist from the antipodes sketches the ruins of London in the latter days, he will no doubt find the Whins of Surrey rank in growth and sharp in spine, the lineal descendants of the yellow bush now browsed by the half-starved "moke."

My acquaintance with this plant is of long standing. The Whin linnet made its nest in the Whin bush on the common, and long before I became acquainted with the nature of the plant, I knew where to look for the linnet's nest in the prickly bosom of the Whin bush; and as there were some 50 acres of common uncultivated, on which we could delve the earth or dam the brook without let or hindrance, it is easy to see that the Gorse on the common was an item of the highest importance to schoolboys.

When patches of Gorse or Whin bushes have been burnt, the roots do not always die in the ground, but frequently break out from the collar forming what botanists call adventitious buds. I mention this to show that this truly native shrub is prepared to hold its own against fearful odds. The seeds ripen in the autumn of the same year in which the flowers appear, but the pods do not open until the following year, when they do so with a crack, and scatter the seeds to some distance, thereby sowing the future Whins.

The common Heather (Calluna vulgaris), and the Whin (Ulex europæus), may be regarded as the scrub of our heaths and moors, and where the Whin has once got full possession it is no easy matter to dislodge it. The poets seem to have despised this homely bush. Burns hitches it into rhyme to hide a corpse—which it seems well adapted to do, being an evergreen and thickly set with thorns; for in the adventures of the inimitable "Tam o' Shanter" we read:—

> "By this time he had passed the ford
> Where in the snow the chapman snored,
> And up the Whins and by the cairn
> Where hunters found the murdered bairn."

It would have been strange if Byron had been silent on this subject seeing that he was of the "north countrie," but in order to suit the metre he calls the plant the yellow Thorn. This is of course a poetical licence, as there are no true Thorns of the Crataegus family of a yellow colour. It is therefore clear that he means the yellow flower of the thorny Whin when he says,

> "The blooming Heath, the yellow Thorn,
> The spreading Yew, the waving corn—
> All these bring back before my view
> My native hills—the hills of blue.

The double flowered Gorse is at present (middle of June) a sheet of gold, with scarcely a sprig of green to relieve the grand display and act as a foil to this bush of gold, not given sparingly but with heaped-up mea-

sure. Linnæus—an excellent judge—admired, nay worshipped our Whins on a Surrey common—the symmetry of the bush feathered to the ground, and the gushing grandeur of the flower; and he seemed amazed to see that such a shrub was so neglected. I for one took the hint from such a high quarter, and planted double Gorse in long lines and in large clumps, and the effect was beyond our most sanguine expectations.

The foxhunters of Leicestershire have long been aware of the importance of Whins for cover, and many years ago they sent to Aberdeenshire for seed to fill up vacancies in the Furze coverts of Melton Mowbray. This genuine English sport of foxhunting is never known to flag in interest however high the rate of exchange may be; so that we may look with some consolation on the thought that as long as the fox-hunting fraternity enjoy their sport so long will the "yellow Thorn" of the poet be respected.

This is not the place to speak of Whins grown for profit. I only name the important fact that green Gorse well bruised is very good winter fodder for the horse, as well as for the costermonger's ass.

In places where game is preserved, and hares and rabbits bark all kinds of trees and shrubs in hard winters, the Whin is little the worse for a ring of bark taken off all round, for it will sprout from adventitious buds and thus renew itself. Wherever there is a rabbit warren all kinds of brushwood and prunings should be utilised by carting them into the enclosure, thereby giving the rabbits not only food but medicine. The farmer at Farley, near Alton Towers, Staffordshire, had a rabbit warren, and no one complained of his stock doing any damage, for he kept them to himself; but that was the spot to learn what rabbits enclosed within stone walls would eat, for if the article had green leaves or a grey bark it was reckoned serviceable for the inmates of the warren.

Gorse sown for cover in early summer makes very little way the first season, and it is well to sow a small portion of Broom in the same plot, as it will attain a useful height long before the Whins; but when the Whin is drawn up by being thickly sown it will rise to 5 or 6 feet, and can only be entered by the best dogs—mankind, of course, being totally excluded. This, then, is the cover that defends the fox, for he is but a small animal, clever to creep through small openings, and lithe of limb and swift of foot, and will cunningly double back to regain the good Gorse cover that he had left.

Of other cover plants the Bramble in a gorge may be as good as any, so long as it is green, but although it retains its sharp hooks, it casts its leaves, and thereby loses its value as cover. The tall Bracken, again, is an excellent under-growth, filling up the blanks in thin plantations, but it does not grow till fine weather sets in, and although a native herb, it is often damaged by frost, and thus for half the year this excellent cropper is useless for cover, but it will be hard weather indeed when the Whin bush cannot hold its own.

I need scarcely remark in this periodical that the double-flowered Gorse is got by cuttings, and not from seed; but the single succeeds well in common soil, what our French neighbours would call *pleine terre*. The clumps of double Gorse now in bloom have no parallel. The Laburnum waves its ringlets in the wind, but it does not carry the weight of gold in which the Gorse comes forth. The May Thorns of many hues, elegantly mounted on their tiny twigs, are truly fair to see, but they are flattered; and we constantly hear of the double Scarlet Thorn, though I have never seen one, and we have to be contented with "Mays" of white and "Mays" of various shades of purple, but the purple is never named, and as there is nothing in that name we buy and pay for Scarlet Thorn; and who knows but we may get one some time—

"But this the gods in later times perform."

Lastly, the early blossoms of the Furze are of the highest value to the beekeeper, just as the Heather is to the supply of honey later on; and hundreds of acres of broken ground might grow Gorse with little trouble—stony ground, rocky ground, moor and fell. If we only confined rabbits to their warrens, as depredators are imprisoned, instead of keeping them as robbers at large, that would mend matters; and a field walled in as a warren, and planted with trees more or less, and with Gorse for underwood shelter and cover would go far to keep the rabbit to his burrow, no more to consort with hares, the only animals worthy of the appellation of ground game.

Before leaving this subject let me point out to amateurs and young gardeners that Gorse is very impatient of transplanting, and it should therefore be done when young, say at the height of 1 foot or 18 inches; and when taken up out of the nursery it should have its roots dipped into mud to prevent the feeders from damage in transit. It will be labour well bestowed to puddle each plant as it is planted; this will secure the success of the plantation, whereas the rough and ready way may result in having to pay for the plants, with only angry words and withered Whins by way of reward.—*Alex. Forsyth.*

New Garden Plants.

FRITILLARIA (NOTHOLIRION) HOOKERI, *Baker, in Journ. Linn. Soc.* xiv. 269; LILIUM HOOKERI, *Baker, in Gard. Chron.* 1871, p. 201.

I have described this so fully in the *Gardeners' Chronicle* already that I need do no more than say that it is fairly established in European gardens. I have received a specimen in flower from Herr Leichtlin, and Mr. Elwes tells me he also has flowered it at Cirencester. The fresh flowers are just the colour of those of F. macrophylla, Don, as figured under the name of Lilium roseum in *Bot. Mag.*, t. 4725. It is a native of the temperate zone in Sikkim, and it is to Mr. Elwes we owe its introduction.

CATTLEYA SKINNERI (*Bat.*) ALBA.

This is an exceedingly rare plant, as I was told both by Mr. Sell and the late Mr. Endres. The flowers are of the purest white, with some purplish markings and some sulphur-yellow on the lip. Mr. Endres brought it as an extra rarity from Costa Rica to Messrs. Veitch, where it has lately flowered, and was exhibited at a recent meeting of the Royal Horticultural Society. *H. G. Rchb. f.*

PONERA KIENASTII, *n. sp.*

A creeping stem, bearing small pseudobulbs, with single ligulate or linear (both?) blunt acute, exceedingly thick glaucous leaves. A capillary racème has its 1—2 flowers. Bracts triangular, blunt, shorter than the stalked ovary. The flower has a well-developed chin. Sepals ligulate, acute, greenish, with a brown hue. Tepals linear, acute. Lip forming a *gibbe* at base, oblong, blunt acute, with a transverse callus at base. It forms quite a new, very curious section of the Poneras for its fleshy leaves. It was discovered near Comascaltepec, Sultepec, Arcos, in cold places, forming dense masses and patches on trees, and, descending to the soil, where it grows between moss. I have great pleasure in dedicating it to its discoverer, Consul Kienast, of Zurich, who is an enthusiastic lover of Orchids, which he for a long time observed in Mexico. *H. G. Rchb. f.*

RESTREPIA PROREPENS, *n. sp.*†

This is one of "the lovely little gems" forming large masses of creeping rhizomes with very small, narrow, fleshy leaves, which are emarginate at their top and have a small blunt apiculus between. The flowers are solitary, standing on a long capillary peduncle and nodding, bending the two straight linear petals forward and having both sepals widely clasping. The inferior one is connate from its two elements, boat-shaped and much narrower towards the top. The lip is unusually small, scarcely equal to the column, pandurate, blunt acute, with a small angle before each base and a lamella on each middle side. The whole of the flower is yellow. It is one of the Costa Rican discoveries of the late M. Endres. It has flowered several times in the Hamburg Botanic Garden. It is of some interest in having a good deal of similarity to the obscure and only once seen Pinelia hypolepta, in habit and appearance. This plant, however, had better be named Epidendrum hypoleptum. *H. G. Rchb. f.*

STANHOPEA PULLA, *n. sp.**

This is an extremely interesting novelty, and with Stanhopea Calceolus, Rchb. f. (still a rather obscure species), no doubt one of the smallest flowered species. We have now seen it six times in bloom, and found it quite congruent with wild-grown specimens. The pseudobulbs are short, conical, ribbed, dark; leaves dark, of the shape of those of the Stanhopea Wardii. A strong, short peduncle, covered with sheaths bears—as it appears constantly—two flowers, one usually looking at the other, as if they would like to bite each other. "*Comme deux chiens de feyence*" say our French friends. The ground colour of the bloom is apricot-yellow. The lateral oblong acute sepals are reflexed, the upper sepal narrower, the ligulate acute, narrower, and shorter petals of a very bright yellow. The lip is very shining, as if covered with varnish—much like a very plump shoe, such as is used by the Dutch peasants—with a roundish knob at its top, and with sharp semi-oblong side borders. Inside stands a nearly square body with four keels, two and two, converging like the letter V. Between it and the apicular knob is a transverse inconspicuous slit. The knob is white, the other parts apricot coloured, the side borders and the two V-like keels nicely brownish-purple. It is near the old Stanhopea ecornuta, Lem. (now scarce in gardens, and as it appears, very difficult to keep, when Mexican and Brazilian and New Grenadian Stanhopeas are nearly grower-proof Orchids), but the flowers are only two-fifths the size of those of that species. This is a chief charm in the species, which flowered very freely at Hamburg Botanic Garden. We obtained it from our friend, the late M. Endres, who discovered it in Costa Rica. *H. G. Rchb. f.*

A GIGANTIC ANNUAL GARDEN.

SUCH a garden meets the eyes of the passengers by the Great Eastern Railway as they journey up or down the line between Ardleigh and Manningtree Station. This garden is a field of 15 acres, known as the Pond Field, and is a part of the extensive seed farms of Messrs. James Carter, Dunnett & Beale, at Dedham. The field is of peculiar shape, but it slopes downwards from the high ground close by Stour House, the residence of Mr. W. H. Dunnett, to the railway, and travellers can take in almost the whole extent of it at a glance. Shortly before reaching the field the line changes from a cutting to an embankment, and passes into a cutting again after attaining the centre of the Pond Field.

The annuals are all planted in what is termed stretches, that is, beds running right athwart the field; each stretch has generally five lines of plants, in some instances only four, in others six or seven. In the case of annuals in large demand, such as Virginian Stock, Candytuft, &c., one and even several stretches are occupied by them, while others only in partial demand require only a portion of a stretch. Each stretch is slightly raised in the centre, with a very

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Ponera Kienastii, n. sp.—Rhizomate repenti, pseudobulbis ligulatis monophyllis; foliis linearibus seu ligulatis carnosis crassis, pedunculo capillari racemoso; bracteis triangulis brevibus, mento bene evoluto; sepalis ligulatis acutis, tepalis linearibus, labello basi adnato ventricoso oblongo obtuso, basi callo linear transverso, medio incrassato.—Parvaflores virduli. In Mexico, 20 mil. ab urbe Mexici det. dom. Kienast. *Rchb. f.*

† *Restrepia prorepens*, n. sp. (Prorepentes). — Rhizomate repenti dense caulifero, caulibus brevissimis monophyllis, a vagina ampla apice acuta vestitis; foliis carnosis linearibus apice emarginato bilobis cum apiculo; pedunculo capillari longo exserto distanter bi—trivaginato, bracteis cucullatis acuto triangulis ovario pedicellato subæquali; sepalo summo linear obtusiusculo; sepalis lateralibus connatis basi amplonavicularibus antrorsum attenuatis bidentatis (raro bifidis), tepalis multo angustioribus, brevioribus, linearibus, labello pandurato, ante basin utrinque minute angulato, carina insiliente utrinque, columna trigona crassa, curva, utroque angulo antico emarginata. *H. G. Rchb. f.*

* *Stanhopea pulla*, n. sp. (Stanhopeastrum).—Labello calceiformi antice superiori parte pulvinari inferiori parte insidente; corpore calloso solido inferne libero utrinque angulato bicarinato insiliente semi-oblongo; columna exalata prope lidera.—Stanhopea pulla, Rchb. f., Xen. Orchidaceæ, in., tab. 209, adhuc ined, juxta vivam.—Pseudobulbi conici costati; folia evoluta solitaria petiolata cuneato oblonga acuta. Pedunculi pendula validi bifori brevissimis vaginis scariosis nervosis punctulatis maculatis increscentibus. Bracteæ oblongo navicularesacutæ ventricosæ ovaria punctulata pr æ pe æquantes. Sepala oblongo triangula acuta; lateralia multo majora, reflexa, margine extreme involuta, omnia pallide armeniaca. Tepala ligulata, acuta, breviora, angustiora, reflexa, bene flava. Labellum bene immobile, nitidissimum, ventricosum, crassum, calceiforme; apice tuberiforme, tubere (pulvinari) altero alteri insidente; utrinque angulato argutum, tumore in fovea retrorso, inferne libero; utrinque divergenti bicarinato, incisura inter pulvinar atque hunc tumorem, tuber album, reliquum labellum pallide armeniacum, atropurpureo marginatum; lineis geminis convergentibus utroque latere tumoris introrsi (sellæ turcicæ) atropurpureis. Columna ancipiti marginata utrinque obtusangula.—*H. G. Rchb. f.*

gentle falling away to the sides, which is formed of narrow furrows to carry off heavy rains, and to enable the workmen to freely move about among the beds for the purposes of weeding, roguing, &c.

At the eastern extremity is a very large breadth of red Virginian Stock, which opening of a bright rosy red changes to purple with age. But what a glorious mass of colour is then presented to view. Then came Dunnett's dark crimson Candytuft, only just beginning to show its colour, and which will be grand in expression three weeks hence; white Virginian Stock, Convolvulus minor, blue, very fine *en masse;* Malope grandiflora, Convolvulus minor, dark purple; Clarkia pulchella, Iberis odorata, a pretty dwarf early white fragrant Candytuft; Erysimum Perofskianum, with a fine glow of orange; Convolvulus minor, striped, very prettily striped with blue on a white ground—a selection from the blue variety, as the earlier flowers will Clary, purple tipped; Cyanus minor, striped; Godetia insignis, rose and white, very pretty; small blue Lupines, a capital hardy annual, a good blue in colour, with a nice branching habit of growth; sulphur Lupines, very good; Clarkia elegans, white Hawkweed, Leptosiphon androsaceus lilacina, very good lilac and exceedingly pretty; Nemophila maculata, scarlet Tom Thumb Nasturtium, and Nemophila insignis. Of the two last there were great breadths, and they appropriately formed the west wing of this vast floral army. Only a good rain is required to make this vast garden of annuals one of the most imposing floral sights that can be looked upon in any part of the United Kingdom during the summer.

A body of six men, with occasional assistance from others, are constantly at work here. Hoeing, and especially roguing, *i.e.*, pulling out plants from stray seeds, occupies their time, and if during their progress over the various beds any approach to a new sport is detected, the attention of Mr. Dunnett is called to it, and it is invariably marked and the seed saved for trial another year. Many of the newer forms of annuals have been obtained in this way, among them some charming variations of a particularly pleasing character, and a few of the newest among them are under cultivation every year till their character becomes sufficiently fixed to admit of their being distributed. *R. D.*

DOUBLE PYRETHRUMS.

Among hardy herbaceous plants now in bloom there are none so showy or more generally useful than double Pyrethrums, the blooms of the best varieties of which are as full and well formed as Asters or Chrysanthemums, and coming in as they do by the end of May, or early in June, when there are so few really good flowers outdoors, they are doubly valuable on that account. I was not aware they would force till this season, but find they do so almost as readily as Spiræa japonica; when this fact becomes known I have no doubt they will be largely grown for the purpose, as under glass they are even more delicate in their rich tints of colouring than in the open borders, where just now they are making a brilliant display. Fortunately they may be increased with the greatest facility by division, and therefore a stock of plants can soon be got up in that way. The best time to do this is early in spring, just as they begin to grow, whey they should be dug up and have the soil shaken from amongst their roots, so that each separate crown may be traced out and severed without loss or injury to those adjoining.

In this way one large tuft will afford a good many plants, and if these are put out in nursery rows, in deep rich soil, and kept duly watered and cared for, they will be strong enough to force the following winter, when they can be taken up with fair sized balls of earth, and started in gentle heat near the glass. For very early work I have no doubt that the best way would be to grow them in pots, so as to get them well rooted and thoroughly established, although, from their gross-feeding habit, it is a question if they would be so strong and floriferous as those favoured with a more extended larder; but if they could be obtained a week or two sooner that would amply compensate for any little deficiency in the above



Fig. 128.—ODONTOGLOSSUM OERSTEDII.

ODONTOGLOSSUM OERSTEDII.

We have now the opportunity of figuring this remarkable Odontoglossum — described by Prof. Reichenbach at p. 302 of the present volume. The flowers are white, with the disc of the lip yellow, with a few red spots. Our illustration (fig. 128) was taken from a plant grown by the Messrs. Veitch, of Chelsea, and exhibited by them at a recent meeting of the Royal Horticultural Society. It is a native of Costa Rica, whence it was introduced by the late M. Endres.

often come self-coloured, like those of the Petunia, and be succeeded by blossoms true to character; dark purple Candytuft, white Convolvulus minor, Clarkia pulchella, double; Godetia The Bride; Hawkweed, red, an extremely pretty annual about 15 inches in height, and of a charming fleshy rose colour, very free, and excellent for cutting from at this season of the year; red Lavatera; Convolvulus minor subcœrulea, pale mauve, a selection from the blue; Virginian Stock, dwarf rose, low in growth, and compact and branching in habit; Collinsia grandiflora, a pretty hue of purple; Clarkia pulcherrima, a dark variety of C. pulchella; Lupinus albo-cœruleus, blue, scarlet, and white, a charming hardy annual; Godetia rosea alba Tom Thumb, Dianthus chinensis, Cyanus minor, blue; Godetia rosea alba; Gilia rosea splendens, pale rose, very good indeed; Viscaria oculata; yellow Hawkweed; Centranthus macrosiphon albus, Schizanthus pinnatus; Cyanus minor, pink; Clary, white tipped, growing about 15 inches in height; Cyanus minor, pink; Leptosiphon androsaceus albus, particularly neat in appearance and pleasing to the eye;

respect, so valuable are flowers during the early spring months, and especially such as double Pyrethrums, that last fresh for such a great length of time in a cut state. With us they are much prized on this account, as well as for their great beauty. That you may see how grand they are in this respect, I send a few flowers, and as each plant we have now in the borders is bearing from twenty to fifty, or more, nearly as fine, you can form some idea of the splendid display they are making.

It is only within the last few years that such an improvement has taken place amongst Pyrethrums, and as yet they appear to be little known or cultivated, but why this should be the case I cannot imagine, unless it is that, being hardy and not serviceable to take part in fashionable bedding arrangements, there has been no demand for them on that account. Those, however, who are fond of border flowers cannot possibly have anything more showy or serviceable, or that give so little trouble for the return they make, as all they require is a few neat sticks and a strand of matting run round to prevent the blooms being dashed to the ground by wind or heavy rain, and even this slight attention some of them are independent of, as they have stems sufficiently strong to stand erect without any artificial support.

To do them well they require a good depth of soil, rather inclined to light than otherwise, as when it is stiff and cold they are apt to go off in the winter after the manner of their congener, the popular Golden Feather, now so much used. They are, however, so dissimilar in habit and character to this that one would hardly suppose they belong to the same family; indeed those who have only seen the weedy looking flowers of this useful edging plant, can have no conception of the size and great beauty of the double varieties. I have on several occasions had packets of seeds to endeavour to raise them in that way, but they have always turned out most disappointingly, as I have never had anything much better in form than the old Ox-eye Daisy, although the colours of many were all that could be desired. Those therefore who may like to embark in their cultivation should buy a dozen or so of the best and most distinct kinds that can be obtained, and as the nurserymen generally supply them in pots it will be a saving of time to get them at once and plant them out where they are to grow. Before doing this, however, the ground should be broken up to a good depth, and have some thoroughly decomposed manure worked in, keeping the same low down so as not to come in immediate contact with the roots of the plants. So treated, their growth will be strong and vigorous, without any after attention beyond the ordinary removal of dead flowers, stems, &c., to give them a tidy appearance. *S. W.*

WORKERS IN HOTHOUSES.

SINCE the repeal of the duty on glass it would be difficult to point to a single pursuit in which people are engaged, for either pleasure or profit, that has advanced so much as gardening under glass, not alone in the immense increase in the growth of exotic fruits, but in the almost unlimited extent to which tender plants for all purposes for which they can be used are now grown. Nor is it difficult to account for this; for the unprecedented increase in trade and attendant prosperity have enabled great numbers of those engaged in manufacturing and mercantile pursuits to amass large fortunes; but, although wealth has thus accumulated, there could be no possible increase in the superficial area of the country, and numbers of individuals throughout the length and breadth of the kingdom, possessing the means and also the inclination to purchase large estates, had such been obtainable, have been obliged to be content with a very moderate portion of land on which to build a villa or a mansion, often out of all proportion in importance to the limited extent of the grounds attached. The natural result of this has been, that as the owners could not ride for miles across their own broad acres, the space at command has been made the most of, often converted almost wholly into gardens in which the glass erections form a conspicuous part, filled with the most rare and costly plants brought from every part of the world, remarkable for either the beauty of their flowers or foliage.

And it is not alone in the extent to which this gardening under glass has been carried, but also the very great improvements that have been made in the character of the houses, with a view to render them better adapted to the health and general requirements of the things grown in them; so much so that, so far as the adaptability of the best modern plant as well as fruit houses, &c., there may be said to be little left to be desired. But whilst the inventive powers of the garden architect and ingenuity of the builder have been employed in planning and erecting houses in every way suited to the well-being of the plants they are destined to grow, it may be said that, with few exceptions, scarcely a thought would seem to ever have been given to the health or comfort of the men who in many cases now spend almost all, or a great portion of their time in the hot humid atmosphere necessary to be kept up for plants that require a high or moderately high temperature for their successful cultivation, and through which the health of the men cannot fail to be seriously affected, and in many cases permanently undermined. Any one who has ever been engaged in working in hothouses even so far as where Grape forcing is carried out to a considerable extent, well knows the chills and severe colds resulting from damp clothing after being shut up for even the short time required for syringing in the afternoons during the early stages of growth, and the rheumatic affections following the plunging of Pines or thinning of Grapes.

The above causes, as large numbers of gardeners to their cost can testify, are sufficient to introduce in the system the germs of permanent suffering in after-life; yet they are as nothing compared with what those who are shut up almost all their time undergo in the hot damp atmosphere of houses devoted to the growth of stove plants or Orchids, the cultivation of the latter of which has so much increased and is still increasing that they seem ere long destined to become a prominent feature in most gardens where gardening under glass is carried out to any considerable extent. Gardening has hitherto been looked upon as a healthy occupation, and no doubt it is, so far as the greater portion of outdoor operations are concerned; but when those engaged in it are shut up in hot, or even moderately warm houses, the baneful influences of which are so unmistakably apparent in those who are so employed, it becomes one of the most unhealthy callings that a man can follow, and calculated to ruin even the strongest constitution. And yet there is no reason why the plants that require a warm, humid atmosphere for their well-being cannot be grown to any extent, and the health of those engaged in their cultivation be cared for as well.

In a few private establishments, and some of the nurseries, there has been erected a small glass compartment immediately adjoining, and connected with the houses in which the plants are grown, into which they can be taken, without exposure to the open air, when potting or insect-cleaning operations have to be carried out, the latter of which, especially in the case of Orchids, occupies so much time. Where provision of this kind is made there is no necessity for those engaged to remain longer in the damp, confined atmosphere than the time occupied in giving water and syringing. As a matter of course, it is necessary that the small compartment in which the work is done should be provided with a hot-water pipe, so that it can be kept at a temperature of 45° or 50° in cold weather; and the more it consists of glass the better, so as to afford a maximum of light. Most of the ordinary potting sheds are so dark as to be of little use in winter; even on the score of economy the little cost of a place such as above described wherein to do the work would be money well spent, as a man will get through much more work, and do it better in a healthy atmosphere than when under the relaxing influences of combined heat and moisture.

Of late much has been said about better accommodation for the men in private gardens than the wretched bothies that in many places still exist; but it is quite as necessary to provide means for carrying out the work of the garden, so that their health may not suffer. Not only should those who, either for pleasure or profit, grow plants extensively that require considerable heat for their existence, thus provide suitable places wherein the work can be done without injuring the health of those engaged in it, but it is equally incumbent on gardeners who have charge of young men to see that they do not needlessly endanger their health by doing work amongst plants in the houses in which they are grown that could just as well be carried out in a cooler atmosphere. Many young men are extremely heedless in these matters, and need to be continually cautioned as to the danger they incur. *T. Baines.*

THE CRESSAGE OAK.

ONE of the oldest and most interesting Oaks in England stands in an arable field, formerly a wood, half a mile from the village of Cressage in Shropshire. A few fields off the Severn passes in its southern course, and on the opposite bank the conical Wrekin rises above that beautiful and fertile district which lies, in Shropshire phrase, "all round the Wrekin."

The Cressage Oak was probably a sapling when Schobbesburgh — the old name for Shrewsbury — stood in the scrub or bush which gave the town its name. In that eventful year, 577, when the advancing Saxons seized this district, a frightened squirrel may have trembled among its branches at the destruction by fire of the Roman city of Uriconium, situated 4 miles distant, where the village of Wroxeter now stands. The British poet, singing the death-song of Uriconium, spoke of it as "the white town in the valley," whose chieftain's hall was left without fire, without light, without songs, in the midst of vast and silent woods. Of all the Oaks that flourished in those woods at that early period, this decrepit dotard alone remains. Before a stone had been laid of any of the cathedrals or other churches in Mercia dedicated to St. Chad or some other saint, the tree grew in a heathen land preparing a shade for the congregations of the first Christian missionaries. The reign of Offa extended from 758 to 796, and supposing the Cressage Oak to have been then approaching its maturity of growth at 300 or 400 years, its present age must be about fourteen centuries. It can hardly be less.

Those who have given attention to the subject of the longevity of Oaks could not fail to assign to the Cressage Oak a greater antiquity than that of the Venison Tree in Bagot's Park, which is known to have been standing at the Conquest. One half only of the Cressage Oak remains, consisting of a massive "skin" of timber 18 inches thick. The circumference of the tree, above the projecting base, would be about 30 feet, if it were complete, the measurement of the remaining half being 14 feet. Part of the standing portion of the shell was so much injured by a fire mischievously lighted many years ago in the hollow trunk, that its envelope of bark is now dead, as well as the crown above it. In the remainder of the crown life still remains, and a crop of small branches is still fed by the bark below. The tree is in fact a natural pollard with an overhanging rugged crown.

The shape of the outer shell, when complete, was that of a dice-box, the overhanging of the upper part being due to the deposit of new material with each successive crop of branches. The crown was originally divided into five parts, each forming a matrix of branches—if that be the proper term—such as repeated lopping or pruning produces. It now carries only fifteen living branches, each from 15 feet to 20 feet long. The living portion of the tree is on the south side, where a breadth of 6 feet of living bark and timber now supports the slender remains of the once magnificent head. At the present time a new growth of wood is taking place in the fragment of the trunk, and the thick bark covering this part is now bursting and splitting in deep cracks from the expansion of young wood beneath. A similar growth of a former century has tied and strengthened a portion of the shell which had split, from the crown downwards, and would have parted but for the new wood, which has the appearance of having run into the seam like molten metal, soldering the two parts together.

It would be a bold task to estimate the age of this ancient tree within a few centuries. It obviously belongs to a longer-lived type than the Venison tree, which is known to have been coeval with the Conquest. The latter may have been assisted in its decay by the sportsmen who have emptied their guns and rifles in its trunk—an outrage which may have robbed it of a few years. Its duration, however, would have been many centuries greater if its trunk had been short, instead of long. Sixty years ago the Venison tree was well branched—it was an old, not a decrepit tree, but within the memory of persons who are yet living the trunk broke at 12 feet or 15 feet from the ground, and the tree is already a wreck, dying fast from the effects of a shock too severe for the constitutional powers to withstand.

The repair of wounds, even in very old trees, is a common phenomenon. By means of a new growth the stump of a broken limb is sometimes healed over, a gaping hole in a hollow trunk reduced or closed, and a parting shell neatly tied by new wood. A large

deposit of new wood is in progress within the hollow trunk of the Swilcar Lawn Oak at the present time, and the huge structure is being strengthened and its duration prolonged. The largest limb on the west side of that tree fell twenty years since, measuring 90 cubic feet. There is a limb extending 46 feet from the trunk on the south side, at a height of about 8 feet from the ground, and skilfully supported by an iron rod. The corresponding limb on the opposite side has fallen: seven great trunk limbs yet remain. The loss of limbs kills a tree by cutting off the supply of elaborated sap and destroying the bark beneath them; and the result of the natural pollarding of the long-lived type of Oaks, is that their life is renewed with their limbs.

In the case of the Venison tree, the remaining portion of the broken trunk has put forth a feeble spray, but the renewal of the foliage is probably insufficient to sustain the life of this patriarch of Bagot's Park for many more years.

The form of growth most favourable to longevity consists of a head of several branches springing from the crown of a comparatively short trunk. The loss of one or more of these branches—which never go all together—proves but the beginning of a new epoch in the existence of the parent tree. As fast as they fall they are followed by a growth of smaller branches, and thus a green old age of extreme length is secured. Oaks are said by Dryden to enjoy three centuries of growth and three centuries of maturity, and to suffer three centuries of age, dotage, and slow sinking into earth. In the case, however, of Oaks of the long-lived type the last period is protracted far beyond the three centuries.

There were very few acorns on the Cressage Oak in the sterile season of 1876, and they were of the stalked variety. The name of Lady Oak was given to this tree, probably in the twelfth century, at the period of the institution of the rosary, when certain forms of devotion were introduced which have since received the designation of Mariolatry. The original Saxon name was Criste-ache (Christ's Oak), and hence the name of the adjoining village. *H. Evershed.*

GERANIUM PLATYPETALUM.

AMONG the many varieties of hardy Geraniums the above is one of the best and most showy, and is a plant deserving a much more extended cultivation than it has hitherto met with, as it is alike suitable for the herbaceous border, wild garden, or rockery, in either of which positions, from its strong growing spreading habit, it soon forms a fine mass of elegantly divided foliage, and flowers from May to July in the most profuse manner possible. The individual blooms are about the size of half-a-crown, and of a deep blue colour, pendent while in the bud state, but as they expand they stand erect, and show themselves and the rich veining of the petals to great advantage. In fully exposed positions the habit of the plant is somewhat close and compact, while under partial shade it is more procumbent, and therefore well adapted for trailing over rockwork, as indeed most of the species are, and look more at home there than anywhere else. We have many in use in that way here, as well as in clumps in the borders; but there are none amongst them that will compare with G. platypetalum for the size and beauty of its flowers, or the display they make when fully expanded.

This fine Geranium is a native of the Caucasus, and has been in cultivation some years; but although that is the case it is as yet very seldom met with except in botanical collections, which is to be regretted, as it is quite worthy of being introduced in any herbaceous border or choice bit of rockery, however select they may be. One great advantage in growing plants of this hardy character is, that with ordinary attention there is no fear of losing them; as once they become established they will take care of themselves, and from the ready way the above may be propagated either by division or seed, there is no difficulty in increasing it to any extent desired. The seed ripens towards the end of August, and should either be sown at that time or kept till the following April, when it will be found to germinate readily in any warm border under the protection of a handglass. The best time for dividing the plants is just as they are starting into growth, when, by examining the crowns to see where they can be separated, they may be cut through by using a sharp spade without risk of destroying or damaging, to any serious extent, the main part left in the ground.

After repeated trials in using the pollen of the above-named Geranium to fertilise different varieties of Pelargoniums, including several sections of that numerous family, I have not as yet succeeded in getting them to breed together; and as I believe the same thing has been used by hybridisers much more skilled than myself, it would appear that the thing is impossible of accomplishment; but there may, perhaps, be some among the Cape kinds, or others of trailing habit having a closer affinity, with which success may yet be achieved; or, if not, we shall probably have to wait long before we get any decided new colours, and particularly anything approaching a blue, which would be a small fortune to its possessor. *J. S.*

PLANT PORTRAITS.

PELARGONIUM CAPTAIN RAIKES, *Flore des Serres*, t. 2271-72.

PRITCHARDIA PACIFICA, *Flore des Serres*, t. 2262-3—A noble Fan Palm, from the Fiji Islands, which has on more than one occasion come under notice.

RHODODENDRON HIPPOLYTE VAN DE WOESTYNE, *Flore des Serres*, t. 2280.—A new hybrid obtained in M. Van Houtte's establishment, with large trusses of lilac flowers of good form and substance apparently, and densely spotted with dark spots. The plant is described as hardy and of robust habit.

ROMNEYA COULTERI, *Floral Magazine*, t. 352—A very handsome white-flowered Papaveraceous plant, native of California. The plant is nearly if not quite hardy, and if it can be made to bloom as freely as in its native country it will be sure to attract great attention. The figure fails to do justice to this very striking plant.

ROSE, H.P., SÉNATEUR RÉVEIL, *Flore des Serres*, t. 2283.—A very dark crimson Rose, of good form but small size. It is said to be very hardy and a free bloomer.

SOLANUM ACANTHODES, Hook.f., *Botanical Magazine*, t. 6283.—A very handsome stove plant, which would probably also serve as a "subtropical plant." It is covered with rusty down, and beset with straight or curved spines, the leaves are obovate, and deeply pinnately cut. The flowers are large, rotate, fully 2 inches in diameter, and of a pale violet colour, with a central white stripe on each petal. The plant is an old inhabitant of the Palm-house at Kew, but little is known as to its origin.

SONERILA MARGARITACEA *var.* HENDERSONI, *Gartenflora*, t. 897.—The original species was first described by Dr. Lindley in these pages in 1854. The variety Hendersoni is distinguished by its leaves, spotted with silvery markings.

STENANDRIUM IGNEUM, Ed. André, *Illustration Horticole*, t. 266.—This is the plant known in gardens as Eranthemum igneum, but which, having now flowered, is discovered to belong to the genus Stenandrium.

SYNELEISIS ACONITIFOLIA, *Gartenflora*, t. 887.—A handsome shrub about 4 feet high, with deeply palmately divided leaves, like those of Aconitum Napellus, and with heads of flesh-coloured flowers, surrounded by bracts of the same colour. It is a Composite plant, from the Amur River, and probably hardy. It is the same as Senecio aconitifolius of Turczaninow and Cacalia aconitifolia of Bunge.

TIGRIDIA LUTEA, *Botanical Magazine*, t. 6295.—A small flowered species, with creamy yellow flowers, the base of the segments marked with a pale blue eye-spot, and sprinkled with fine dots. It is a native of Chiloe, and flowered with Mr. H. J. Elwes.

TORENIA EXAPPENDICULATA, *Gartenflora*, t. 892.—A stove plant of somewhat straggling habit, with stalked ovate serrate leaves, and terminal tufts of irregular white flowers, two of the rounded lobes of which are of a violet colour. It belongs to the Scrophularia family, and is supposed to be a native of Southern China.

TULIPA HAGERI, Heldreich, *Belgique Horticole*, 1874, t. 2.—A handsome species, quite recently figured in the *Botanical Magazine*.

TUPISTRA MACROSTIGMA, *Botanical Magazine*, t. 6280.—A species originally combined by Mr. Baker with the better known T. squalida, from which it differs in its narrower leaves, looser spikes, and larger stigmas. The plant is a native of the Khasia Mountains, and is mainly of botanic interest.

XANTHORRHŒA MINOR, *Botanical Magazine*, t. 6297.—A very interesting plant, native of South Australia and Tasmania, where it covers large tracts of ground. The plant is of tufted habit, with numerous long whiplash-like leaves, from amid which it sends up a dense spike of whitish flowers. The country is described as in some seasons white with the flowers of this and allied species of so-called Grass-tree.

THE MANUFACTURE OF PALM OIL IN WESTERN AFRICA.

AT p. 372 of the present volume of the *Gardeners' Chronicle* we gave a figure and a short description of the Oil Palm (Elais guineensis). A very full and detailed account of the cultivation and produce of this most useful Palm on the West Coast of Africa has recently been received at Kew from the Colonial Office. From this report we gather the following. Referring first to cultivation, we are told that the ground is first well raked, and the ripe nuts which have been selected for sowing are scattered broadcast over the prepared ground, and lightly covered with earth, or a number of nuts ranging from six to ten is deposited in one spot, at various distances, and covered with earth. The planting must be during the rainy season, as it requires a good quantity of water. When the young shoots have grown to about 1 foot in height they are carefully removed in the evening and transplanted at distances of at least 15 feet from each other, and if planted during one season it is better to allow them to remain until the next before they are transplanted.

The Palm grows luxuriantly and bears more abundantly at the height of from 10 to 12 feet in a damp semi-marshy soil, but where water does not, however, stand. In arid dry soil it becomes stumpy, and grows very slowly, and sometimes bears at 4 feet; but to cultivate the plant so as to ensure a proper growth, a development of a good number of spadices, large in size, with nuts or fruits well supplied with flesh, or what is technically called "fat nuts," the trees must be at a distance of at least 20 feet from one another, and well supplied with water. The supply of nuts fit for use is biennial, but the most abundant supply of commercial oil is obtained from nuts gathered during the rainy season.

For the production of commercial Palm-oil, that is, oil for exportation, we are told that the spadices are cut down from the trees, and put in a heap out-side in the air where they are allowed to remain for a week or ten days, which causes the joints of the nuts to be weakened by the process of decomposition, and they are easily detached by simply beating them. The nuts or fruits are gathered together, and the husks that adhere to their base are removed either by the hand or by rubbing them together, and separated by throwing them in the air, and allowing a strong breeze to blow them away. A hole about 4 feet deep is dug in the earth, which is lined with Plantain leaves, into which the nuts with the hard unyielding pulp are put and covered over, first with Plantain leaves, and then with Palm leaves and earth. The nuts are allowed to remain for various periods—from three weeks to three months—until more or less decomposition has taken place, so that when removed the pulp is soft, and appears as if it had been thoroughly boiled. They are now put into a trough made by digging a hole 4 feet deep in the earth, and paving it below and around with rough stones. In some cases a portion of the nuts is boiled in iron or earthenware pots and then mixed with the unboiled portion before putting into the trough. They are now pounded with wooden pestles by several persons standing round the trough until the pulp is quite removed from the surface of the hard nut; the whole is removed from the trough, put into a heap, and the stones taken out, leaving the oily fibrous pulp, which is put into a pot with a small quantity of water under a good fire, and well stirred until the oil begins to melt out. The pulp is then removed, and put into a rough net open at both ends, to which are attached two or three short sticks, by turning which in opposite directions the oil is squeezed out from the nets: it runs into a receiver or tub, leaving the fibre behind. The longer the oil-nuts remain underground the thicker the oil will be when made, the quality will also be inferior and the smell bad. On the other hand the shorter time, within certain limits, the nuts are underground the more superior will be the quality of the oil made from them. This in a great measure will account for the difference in the quality of the oil shipped from different parts of the coast.

The following is given as the method of manufacture of the oil for internal consumption. The spadices are kept in a hot place for three or four days, and the nuts are then taken out. A small quantity—from 3 lb. to 4 lb.—is made at a time. They are boiled in iron pots, then put into a wooden mortar and pounded with wooden pestles. The pulpy mass is then mixed with tepid water with the hand. The chaff is first removed, and afterwards the stones. The oil remains mixed with the water, which is passed through a sieve to remove the remaining chaff into a pot placed on the fire, and heated up to boiling point, and allowed to continue in that state whilst the oil floats up as a bright red substance. The water at this stage is being continually stirred, and the oil removed as it floats up until the whole is removed. The oil is now put into a pot and heated, to drive out any water that may remain. The nuts which have been subjected to the process already described in making oil are deprived of their external pulp, or old nuts picked up from under the Palm trees are put in the sun for days, and even months, until they are perfectly dry. They are then broken between two stones, and the kernels obtained whole or in perfect condition and fit for exportation, and so form the commercial Palm kernels. If they have not been perfectly dried the kernels break into pieces. The oil obtained from these kernels by the following process is called white kernel oil. They are put into wooden mortars, and pounded very finely, then removed to a grinding-stone and ground into a homogeneous mass, which is put into cold water and stirred with the hand. The oil rises in white lumps on the surface of the water, which is collected and boiled. It is of a very light straw colour, and, when exposed to the sun and dew, becomes, after a time, perfectly white.

Brown or black oil is thus obtained. The kernels are put into a pan and fried, the oil oozes out and is strained, the fried nuts are put into wooden mortars, pounded, and afterwards finely ground on a grinding stone. The mass is thrown into a small quantity of boiling water and stirred continually, the oil rises, and is continually removed until it ceases to rise. The pulpy mass is removed from the fire and spread out in a large bowl and allowed to cool, after which it is again ground and put by until the cool of the day, when it is mixed with a little water to soften it. It is now beaten with the hand for some time until the oil comes out in white pellets. As soon as this is observed a large quantity of water is put into it, and the oil in some fatty substance floats on the top, which is skimmed off and boiled, and the pure oil obtained. As pointed out in the report, under the circumstances here detailed the exported kernels could not possibly retain their germinating powers, so that it would be impossible to raise plants from them.

A SHOW OF ANNUALS.

To Messrs. James Carter & Co. credit is due for having originated and practically carried out to a successful issue an entirely new idea in the way of special exhibitions. We have had special shows of almost everything before now, but it was left to the Holborn firm to make a show of annuals, and judging by the results it could not have been entrusted to better hands, for the exhibition which has been on view in the long corridor in the Royal Botanic Society's garden at Regent's Park during the week has been at once interesting and eminently instructive, and as artistically effective in its arrangement as the nature of its situation would permit.

We cannot pretend to name all the sorts shown, nor indeed would they all be worth it, but we may note a few of the best as they came under our notice. First of all, because in the greatest numbers, comes that pretty innocent little flower Ionopsidium acaule, which formed a continuous line in front of all for the entire length of staging. Next comes the showy and useful Rhodanthes, Manglesi, maculata, a fine crimson colour, atrosanguinea, dark scarlet, and maculata alba, a fine white; Clarkia elegans, and its varieties Purple King and Salmon Queen, both appropriately named; Clarkia integripetala, white, and Tom Thumb, bright rose, and very showy; the new carmine Candytuft, free in habit and chaste in colour; a pretty assortment of the attractive Lupines, all good, and which need not be individually particularised; the white, rose, and dark violet coloured varieties of the neat habited and free-flowering Kaulfussia amelloides; a double white and extremely effective Chrysanthemum for the mixed border, also double yellow and double yellow quilled varieties of the same useful but much neglected plant; Silene pendula compacta, extremely showy, and admirably adapted for pot culture, as witness the specimens here shown and the numbers sent to Covent Garden. The style and character of this plant, as grown in pots, is well shown in the accompanying illustration (fig 129). Then come various varieties of the brilliant Nasturtiums of the Tom Thumb section—as for instance, Pearl, pure lemon-yellow, Crimson, a fine dark colour, and Brilliant, a bright scarlet; and Nasturtium King Theodore, very dark, almost black; Tropæolum canariense, admirably grown and flowered; Convolvulus minor, dark purple, and wonderfully brilliant; the sweet white Alyssum maritimum; Sphenogyne speciosa, a remarkably showy Composite, with long straw-coloured petals, and a striking, almost black disc; Waitzia acuminata, a very double golden-yellow everlasting; the invaluable Limnanthes Douglasii, the pretty blue Cyanus minor, red and white Hawkweed, various Sweet Peas and Leptosiphons, Collinsia bicolor and C. bartsiæfolia, fine in the size of its spike, and distinct and bright in colour.

There could scarcely have been less than 10,000 pots of annuals in full bloom at any time during the week, and as many of them had to be frequently re-



FIG. 129.—SILENE PENDULA COMPACTA.

placed as they went out of condition, it speaks well for Messrs. Carter's resources that the display should have been kept bright and gay for so long a time.

OUTDOOR GRAPES.

"FORSYTH ON FRUIT TREES" was published by order of Government in the year of grace 1810, and dedicated to the King (George III.). At this date William Forsyth had been gardener to his Majesty at Kensington and St. James's seventeen years, and it is stated that 1500 copies of this work in quarto were sold in eight months. A royal commission, composed of noblemen and gentlemen, was issued, and they reported favourably on the state of the garden, and particularly on the composition for coating the wounds and bark of fruit trees, and on their recommendation, aided no doubt by royal favour, a grant of money was awarded for the discovery. Now there is at Cardiff an experiment going on to try if Grapes can be ripened in the open air in England, with a profit to the grower; and here let me introduce a paragraph from Forsyth's book, where he speaks of putting the bunches of Grapes, grown on the open wall in Kensington Gardens, into bags, to keep the wasps, birds, &c. from them; and in this way five men were employed three weeks—no trifling experiment; and speaking elsewhere of training the Vine in a serpentine form, instead of training it in straight lines, he states that in the year 1793 he sent for the use of his Majesty and the royal family 378 punnets of Grapes, each weighing about 3 lb. The whole of the Thames Valley is notorious for its fruit growing, but where do we see now anything approaching to this wholesale vintage. On the score of Pear trees we are told how to take the bull by the horns; for where an old standard Pear tree had been nearly devoured by canker it was headed down on June 20 to near the place where it was grafted, and next year it was loaded with fruit and had to be propped up. We are further advised to look in the nurseries, not for the young trees to plant, but for strong ones that will bear to be headed down. Few will dare to follow this doctrine, but the splendid shoots that rise from stools in a coppice where crate-wood is grown, proves the high importance of heading down. I think it was Charles Lawrence, Esq., of Cirencester, that told me of a tree he had coddled, and for its greater safety he had it planted not far from his house door, and it lived a miserable life, but one night a cabman blundered and drove right over it, and so it was broken off only a little above the ground, and had to be headed back, when instead of dying it shot up vigorously. But Forsyth laid great stress upon coating the wounds of trees with his celebrated composition, which he averred was compounded of the following materials:—1 bush. cowdung, ½ bush. lime rubbish, as plaster of rooms, &c., ½ bush. wood-ashes, ½ bush. sand. The old plaster, the wood-ashes, and the sand had to be sifted through a fine sieve, and all the materials worked up until the stuff was smooth, like fine plaster for the ceilings of rooms.

This was laid on over the wounds about an eighth of an inch thick; wood-ashes, and ashes of burnt bones being used outside the plaster by a dredger, until the surface was smooth and dry.

It was further stated that the best way of using the composition was found by experience to be in a liquid state, so that it had to be reduced to the consistency of a pretty thick paint by mixing it up with urine and soap suds, and laid on with a painter's brush. The wood-ashes and burnt bones to be applied as before directed, patting it down with the hand. The bark that had been coated with the composition was said to be refreshed, just as we see a meadow that has been mulched. Our American cousins, who are, as all the world knows, a go-a-head people, when they receive fruit trees that have been carried across the Atlantic, and are consequently dried a good deal, bury them bodily in earth until the sap begins to show signs of moving, when they rear them on end; after the refresher they have had it is certain that they have had something between them and the drought, and are in the way to be kept moist without being under water. In grafting, the scion and the stock are both wounded, and either grafting-wax or puddle must be used to keep the weather from drying the edges of the wounds, and in the London nurseries, when the "Rose Acacia" was in fashion, the stocks were headed down, and the grafts were so near the ground that they were ridged up with earth at both sides to keep the clay daubing moist. Some years ago there was a statement in the periodicals on horticulture, of loam being washed to get the fine creamy parts separated from other substances, and this was used for propagating Gloxinias and the like, as it covered the wound and excluded the air, and was more manageable than silver-sand. When I have had to propagate such herbaceous plants as Verbenas, instead of inserting every cutting into silver-sand and fastening it there, as a labourer would dibble in Cabbage plants, I got a saucer of puddle made of washed loam with a dash of cow-dung in it, and by dipping each cutting into the creamy puddle there was formed a knob, or head, to every one, so that a stranger, seeing them, would have thought that each was a perfect plant, with a ball of earth attached; and great saving of valuable time was effected, as the cuttings wanted only insertion in a little loose sand, as they had each got their wounds dressed before entering the propagating pit. From all this it is evident that wounds in botany should be bound up as well as wounds in surgery, and if there be any virtue in W. Forsyth's specific mixture, we may as well have the benefit of it. I saw the Black Esperione Grape ripen on a wall in the kitchen garden, Kensington, and the foreman in Malcolm's Nursery (the elder Mr. Holland) knew W. Forsyth, and had seen his work; and after giving him credit for getting great crops of fruit, hinted that, being a king's man, his success in those early days was favoured by his backers. In looking over the columns of the *Banffshire Journal* I find a Mr. Thomas Edwards, who is described as a shoemaker, and also a naturalist and Curator of the Museum, Academy Buildings, Banff, has been highly honoured, and handsomely rewarded by the Queen, for his researches in natural history. An age before aquariums had been established in our towns, Edwards had collected specimens of marine vegetation, and also of rare crustacea—weird-like crabs of monstrous shapes and markings walking with a "gaffer long-legs" kind of gait, but yet with equal ease and grace

forward, backward, or on the starboard or larboard tack, showing what gems

"The dark unfathom'd caves of ocean bear."

We see them in perfection for a small fee in our aquariums, but Edwards had no such aid in his task, for the north-east coast is famous for rocks, where seawrack abounds, and tangles, dulse, and baderlocks are articles of commerce; and many a weary mile of walks and wanderings must have been traversed before Thomas Edwards could get his specimens collected and arranged, and in our admiration of the man we must endeavour to give honour to whom it is due, for it is alike praiseworthy to the sovereign who gave it as to the talented shoemaker who received the royal grant; and it was on reading this that I came to examine what claims W. Forsyth had to be rewarded with a grant from Government—for I had misgivings as to whether his work was sterling stuff or quackery. In the parish of Oldmeldrum, Aberdeenshire, where he was born, there was a free school—this was one step toward his future rise—and a venerable gentleman, one of the Society of Friends, took him from being a "herd laddie," and got him educated and fitted out for London—this was another step in the right direction—and his own good conduct did the rest. His work did not lack criticism, but he was able to hold his own against all comers. We are apt to lose sight of a fact bearing on this subject, which we see every day; for if we plant a tree we simply coat its stem below the collar and its roots with moist earth, more or less medicated with manure, and out of this small beginning arises the stately Oak and lofty mountain Pine; and if we



FIG. 130.—GARDEN TABLE.

examine the root of a healthy tree we find it supple and moist, just what we want the inner bark to be above the collar, that the sap may move freely, and when we prune and find the shoots dried we know that the circulation is weak, and the danger of death imminent, unless assisted by a rainy season. W. Forsyth speaks of covering a wall 165 feet long with five Vines in two years, and two Vines the second year produced 1100 bunches of fine Grapes (p. 199).

Now if any system of pruning, training, or plastering could enable our best gardeners, within twenty miles of London, or elsewhere in England, to grow good Grapes in such abundance from open walls now, as certainly were grown in the Kensington Gardens 100 years ago—for we have the signatures of twelve noblemen and gentlemen to prove the fact, far beyond the power of any gardener to bribe, or in any way to bias—therefore, if heading down will renovate a barren fruit tree, by all means let us have its head off; and if wrapping up the stem with a chemical compound does good service here is the recipe—the wet blanket against the sun and wind. We are, perhaps, at the end of our tether with hothouse Grapes, but with Vines on a wall and with fruit trees on walls and as standards, with Speechley's work and Forsyth now before me (1789), we seem to be nearly one hundred years behind. *Alex. Forsyth.*

RUSTIC CHAIRS.

In the sultry days of summer no accessory contributes more to the comfort of a garden than a seat in a shady nook or other convenient spot. Any carpenter should be able to put together seats and tables of the character of those of which we give illustrations. It is as well to add that a chair is meant to be sat upon, a statement that might be deemed superfluous were it not that garden chairs are often so supremely uncomfortable. There is no reason whatever why they should be so, and those whose love of the grotesque and fanciful leads them to the

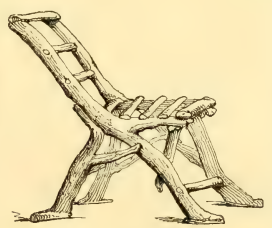


FIG. 131.—GARDEN CHAIR.

construction of such seats, should be condemned to sit in them.

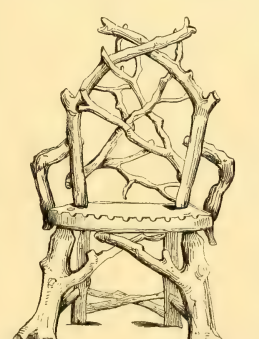


FIG. 132.—GARDEN SEAT.

Foreign Correspondence.

BANGALORE: *Effects of Drought on Vegetation.*

"*April* 21, 1877.—In Mysore and other parts of India that are afflicted by the severe drought, it is remarkable and gratifying to observe how well the trees, shrubs, and natural herbage of the country have survived the unusual test and flourished. Annual and many tender perennial and herbaceous plants succumbed at an early period for lack of moisture, and latterly nearly all surface-rooting plants have suffered the same fate, where they were not under the shade of trees or receiving special treatment. The cereals and annual crops of subsistence would have yielded fair returns in some localities if the rains had fallen impartially and at timely seasons, which they did not.

"With regard to indigenous and acclimatised vegetation, deciduous plants have been covered with a thicker coat of dust, and been apparently 'dead' for a much longer period than usually occurs in a genial season, but they are now responding vigorously to the call of Nature, and the gorgeous show of blossom produced by many genera at Bangalore during the first four months of the year has exhibited the result of 'drying off' on a magnificent scale. Where flowers precede the young leaves, as in Butea frondosa, Cochlospermum gossypium, and the various species of Erythrina and others, the blossoms were abundant, and better coloured than I have observed before.* The Bougainvillea specta-

* The sober-flowered Pongamea glabra, and the gaudy and sweet-scented Cassia Fistula, may be also included. *J. F.*

bilis, which fills the visitor with admiration at Bangalore, usually remains in bloom from January to April, but in 1876 the plants commenced to unfold their purple bracts as early as September, and they have uninterruptedly flowered in great profusion and brilliancy up to the present time, April 28, 1877.* Colonel Puckle, of the Mysore Commission, has graphically depicted the beauty of the Bougainvillea in the *Gardeners' Chronicle*, and as that gentlemen truly remarks, 'tall writing would be necessary to exaggerate the reality.' The genus Lantana, of which there are a good many species and a great number of varieties at Bangalore, are common hedge plants of a rather straggling weedy character naturally, but they make pretty and useful hedges when well kept, and they grow freely among rocks and in dry places where less hardy plants would fail.† Last year the roadsides were very gay with these many-coloured, sweet-scented flowers. The excessive drought has caused the death of many Lantanas where they were very much exposed.

"The beautiful Lagerströmia regina, with its large panicles of lilac flowers overtopping the bright green foliage, and the more sombre Poinciana regia are objects of great attraction at present.‡ The common Aloe, A. barbadensis, flowered very freely eight months ago; in a little ravine, 100 yards east of the Government gardens, a forest of stately flower-spikes were assembled in various groups. It has been reported that the poorer natives in the famine-stricken districts were obliged to eat 'Aloe' roots to sustain life; but I find on inquiry that it is the pulpy substance contained in the suppressed stem of Agave americana which they eat. The pulp is boiled and strained thoroughly, and boiled a second time, before it is fit for consumption. The Prickly Pear, Opuntia Dilleni, has been chopped up and given to cattle as a substitute for green food. A great many Bamboos in the Mysore province are flowering and seeding at the present time, and poor people may be



FIG. 133.—GARDEN TABLE.

seen gathering up the seeds and eating them greedily as they fall from these gigantic grasses. All this indicates the pernicious effects of drought in a country where the vegetation is naturally of luxuriant growth, and where there is ample food for all when the rain falls impartially and in moderate quantities. As I have already remarked, it is wonderful to see vegetation looking so fresh and green after two successive years of drought, and it speaks well for the moisture-retaining properties of the soil. *J. Cameron, Superintendent, Government Gardens, Bangalore.*"

* I would qualify this slightly. It would, I think, be more strictly correct to say that the Bougainvillea sp. began to show bloom at that time, and continued to push them forward until the end of December, when the plants everywhere began to clothe themselves in their grand purple beauty, flecked with the delicate lemon-yellow flowers. During all January and early in February this was very full and noteworthy, but by the middle or end of February the purple bracts had generally died off. At the same time fresh crops of them came out, and in some instances old plants again formed abundant bloom on the western side, or where they had any accidental shelter, and continued to show bloom till April 22, when I left Bangalore for England. At Malta, in January last, the darker coloured variety of this climber was in great beauty, and slightly out on May 18, when I again touched there. But they train it against the wall at the Florian Gardens, and cut it back hard, not allowing it to have the advantage of its natural habit of growth, which in such circumstances produces a much better effect. For instance, the old plants inside the enclosure by the entrance gates, opposite Valetta, should not be so persistently cut back, but be allowed to overtop the wall, outside which a skeleton verandah should be erected, and the untopped shoots encouraged to trail over it, which they would do in the most natural and graceful manner. There would be a double advantage in this. The plants would be shown off to the best advantage, and there would be a sheltered verandah for visitors at the town entrance, with a living roof.—N.B. The remarks respecting the blooming of the B. spectabilis at Bangalore from September to February 16 are from very careful inquiry, and from personal observation from that date to April 22. *J. F.*

† As a hedge plant the Leadwort, with its masses of delicately coloured bloom, can hardly be surpassed for hardiness and beauty, and use for bouquets, &c., if only tolerable attention is paid to its growth. *J. F.*

‡ The P. regia was most profuse in its flowering, and made a gorgeous display. *J. F.*

Notices of Books.

Agricultural Text-Book, &c. By John Wrightson. Collins & Co.

This is a little book expressly prepared for the use of students at the Science and Art Department at South Kensington. Its subject-matter embraces an elementary account of soils, manures, rotations of crops, and live stock. The author, till lately, was Professor of Agriculture in the Agricultural College at Cirencester. Having said thus much, few words will be required in recommendation of what may be expected to be a good book, and which, so far as its scope allows, amply fulfils any expectations that may fairly be raised. An idea of the way in which the author has treated his subject may best be afforded by giving an extract, and as a favourable example of condensation of a large amount of experience in a short compass, we give the following :—

"Nitrate of soda (sodium nitrate) is imported from Peru, where it occurs in beds, sometimes 7 to 8 feet thick, preserved from solution by the extremely arid character of the climate. The source appears to be inexhaustible. Refined nitrate of soda, as imported, contains only about 5 per cent. of impurities, and may be purchased at from £13 to £16 per ton, according to the fluctuations of supply and demand. Few fertilisers act so rapidly when judiciously applied. Being exceedingly soluble, and therefore liable to be washed through the soil, it should be distributed over the land in March and April, just at the time active vegetation commences. It exerts the strongest influence upon gramineous herbage of all kinds. Hence it is very beneficial to Wheat and the other cereals, to Italian Rye-grass, and all pasture and meadow grasses. In this respect its action resembles that of all nitrogenous and ammoniacal manures, which invariably stimulate the growth of grasses and cereals. The quantity applied is small, 84 to 112 lb. being sufficient for 1 acre of land. The effect is speedily seen in the darker colour of the foliage a very few days after the application, the rapid development of the plant, and, in time, a more abundant crop. Nitrate of soda acts more powerfully upon the leaf and stem than upon the flower and fruit; but that it also acts upon the grain has been frequently proved. The increase from its use has sometimes amounted to from 10 to 12 bushels per acre; and in experiments undertaken by the author in 1871, 4 to 4½ bushels of Wheat were in several cases obtained from the use of 100 lb. of the nitrate. When applied to 'roots,' it should be applied with care, as, if brought in contact with the seed the nitrate is apt to injure its vitality. If distributed broadcast over Swedes, just before the second hoeing, it exerts a very beneficial effect."

Miss Arabella Buckley has published in convenient form a set of *Botanical Tables* for the use of junior students (Stanford). The idea is a good one, but the compiler should have sought the assistance of a botanist to revise her work. The definitions of "stock," "tubers," "suckers," and "radical leaves" betray a vagueness of knowledge not desirable at any time, but particularly undesirable in so condensed a publication as that under notice. We compassionate the examinee who, in response to the question, "What is a tendril?" asserts that "Thread-like leaves, stipules or petioles are called tendrils."

PUBLICATIONS RECEIVED.—Proceedings of the Liverpool Naturalists' Field Club for the year 1876-77 (misprinted 1866-7).—Revue Horticole.—Bulletino della R. Società Toscana di Orticultura.—Bulletin de la Société Royale d'Horticulture de Liége (prize list). — Gardeners' Monthly. — Florist and Pomologist.—Gardener.—Journal des Roses.

Natural History.

THE CLOUDED YELLOW BUTTERFLIES are unusually early this year. On June 4 I noticed a "stranger" flitting about some flowering plants, in a minute or so it settled, when I got a good opportunity to examine it; and was astonished to recognise C. Hyale at this early date. C. Edusa has been very plentiful hereabouts during the last fortnight. A friend of mine took eight specimens on June 9, seven of them being ♀, and in good condition. In his *British Butterflies* the Rev. F. O. Morris says, p. 12 :—"One was observed by Mr. S. Stevens on June 29, 1851, and it is the earliest record of its appearance that I have ever heard of;" and in his description of C. Hyale, he says :—"It is said to be double brooded, appearing in May and in August, or September"—(Stainton mentions the autumn for both species); but although I have been a rather persevering collector of Lepidoptera many years, I never knew of these species appearing so early as they have done this season. *W. Wilson, Enfield.*

BIRDS' NESTS.—At Fairy Croft, Saffron Walden, a robin has built its nest in a tea kettle, and is now sitting on five eggs, and a blue tit built its nest in a pump (which is dry). It enters the pump by a hole under the handle; it has nine eggs. *X.*

Forestry.

TREES BEST FITTED TO BEAR THE WEIGHT OF SNOW.—While the influences which soil, climate, and situation exercise upon forest trees are duly considered and discussed, the structure and formation of the trees themselves befitting and adapting them to various situations is frequently only glanced at, and passed by without note or comment. What I wish particularly to refer to, is the special characteristics of those trees whose branches are best adapted to sustain severe exposures of wind, heavy falls of snow, or sustaining masses of fruit and foliage. Every one who has witnessed the wreck and desolation of a wood or forest after a snow fall deplores the serious results, and wishes that some means could be devised, if not to cure, at least to prevent, such occurrences. That some species of trees are better adapted for withstanding such casualties is quite evident, and it therefore becomes the duty and interest of every one connected with the culture of trees to find out which are least liable to injury from the influences referred to. So far as my own observation has gone, I conclude that amongst Conifers the common Larch and the Silver Fir are of all others decidedly the best. The branches of the Larch are so situated upon the stem as to render them very difficult to break off. Not only is their connection strongly and substantially formed, and curiously fortified and buttressed; but the branches being pendent at the base, and afterwards turned up at the points, are thus in the best possible position to sustain an immense weight, without breaking off, in case of heavy lodgments of snow. A plantation or forest of Larch trees should be so grown that the branches are comparatively slender, pliant, and airy; in which state, together with their other advantages, they are almost proof against injury from the causes referred to. It is only when the Larch is grown either as a single tree or with too much room for its lateral branches, that it assumes that habit of growth attended with disastrous results by breakage. Indeed I do not remember ever seeing the branches of a Larch tree in a well-grown plantation either broken or seriously injured; while, on the other hand, it is somewhat rare to find single specimens without some of their branches being shattered or broken. In addition to these it possesses other and by no means unimportant advantages over that of most other forest trees in its conical and sharply pointed top, which is rarely if ever broken, either by snow, winds, or otherwise. Being deciduous is also an advantage to the Larch specially and peculiarly its own, for there are few other Conifers which shed their leaves in autumn. And in this provision of Nature there is probably one of the greatest advantages gained for it as a mountain tree. The branches and whole structure of the tree being thereby greatly lightened, adds vastly to its security and protection against those unfavourable influences to which it is exposed.

Next to the Larch is the Silver Fir, in suitability and adaptation to severe exposures, lodgments of snow, &c., not only in its young and tender condition, but specially in the fully developed and majestic old tree. The form of the branches, which are fan-shaped, dense and ponderous, is of all others in these respects most liable to become loaded with snow whenever it falls; but while this is the case, the whole structure of the tree is yet such as to enable it to sustain any weight of snow that may fall upon it. The connection between the branches and stems is of the strongest and most perfect description. The peculiar and familar hard swell or enlargement at the base of the branch, is doubtless there for a higher purpose than that of testing the woodman's axe. The protuberance forms to the branch an excellent buttress, and secures it against being torn from the stem, as the Scots Fir is liable to be. The branches, like the Larch, grow from the stem in a pendulous form, sometimes with a graceful sweep, first bending downwards and afterwards curving upwards at the extremities. The woody texture of the branches, too, is much harder than any other part of the tree, and not only harder but tougher and more elastic. The bowmen in ancient times are said to have made extensive use of Silver Fir and Spruce branches for bows, which when bent in the opposite way to which they naturally incline by growth possess and retain an elasticity scarcely excelled by the buffalo horns. I find that upon the upland and severe exposures of this estate the Silver Fir and Larch succeed and pay better than any other forest tree. They make wood and grow faster at high altitudes, maintain an erect and upright position, and are less liable to sustain injury in any way, all things considered, than any other Conifers. As a profitable crop, too, they pay better than any other species. The Silver Fir is tender in its young state, as regards frost, but at high altitudes, and when above the frost line, at any age it grows well. The only other practical difficulty in growing Silver Fir is its tendency to produce plurality of leaders, caused by the central top buds being often abortive, the result frequently of late spring frosts. It succeeds in a colder and inferior soil than the Larch and Scots Fir, at least I find it growing well in places when the Scots Pine degenerates. The practice of growing both the Silver Fir and Larch at high altitudes, as subjects of profit, should be with numerous but comparatively slender side branches, which is attained by proper and judicious thinning. It is not to be inferred from this that crowding in the young state is either desirable or necessary, but, on the contrary, that the proportional relation balanced between the girth of stem and its height be maintained, which signifies as many feet in height as there are inches in girth near the ground. *C. Y. Mackie, Cullen House, Cullen, June 21.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—There are many plants that, however handsome the flowers which they produce may be in themselves, do not associate well either on the plant or in a cut state with others, and by this are much reduced in value for general purposes. Amongst small subjects in every way exempt from this defect may be named Didymocarpus bifolius. This is one of the best plants that can possibly be grown in quantity for standing amongst Orchids, or on the side stages of the stove, amongst or in front of low-growing things; those who have only seen it used to the extent of a few isolated plants can have no idea of the effect it produces when employed in sufficient numbers. Not only is it an especially desirable plant used in this way, but for mixing in a cut state with other choice flowers, particularly Orchids, it has few equals. When well grown the foot-stalks will get 9 or 10 inches in length—agreat essential where flowers have to be used in water for filling vases or stands; its enduring capabilities and long-flowering habit are also worth taking into account. The more general mode of increase has been by division, but this is comparatively slow, and it is much better to grow it from seed which vegetates freely sown through the spring and summer. Seeds sown now in pots or pans, drained and filled with a mixture of peat, leaf-mould, and sand, stood in a stove or intermediate house, and when large enough pricked off 2 inches apart into pans or pots—these kept through the winter, and moved in spring singly into small pots, giving them a shift later on, will make useful plants by the twelvemonth's end. The little room they occupy (a 6 or 7-inch pot is big enough for a full-sized plant) makes them suitable for either a small or a large house. Amongst handsome flowering stove plants of recent introduction that can be bloomed in a small state there are few so effective as the South Sea Island varieties of Hibiscus rosa-sinensis —miniatus semi-plenus, vivicans. By yearly propagating and keeping the plants well headed back after flowering, they may be had in such size as admits of their being stood on side shelves and similar positions in the stove for which plants of larger growth are unsuited. They strike freely, cuttings of the half-ripened wood put in now root readily, and will produce their large, brilliant-coloured, Carnation-like flowers before they have attained a foot in height. Francisceas that have done blooming should be freely cut back before starting into growth. This particularly applies to the species conferti-

flora and calycina, which, through a too sparing use of the knife, often get leggy and bare of foliage. With strong plants last year's growth should be reduced one-half—in the case of F. calycina and F. confertiflora two-thirds—always as soon as cut back, giving them a thorough cleansing where they are affected with mealy-bug. Being free-rooting plants, such as require it should be moved into larger pots when they have commenced growth; those that have plenty of root-room will grow strongly by the assistance of manure-water regularly applied. Griffinias now about completing their growth should be kept a little drier at this time, but they must not be subjected to this treatment until all the leaves are fully developed, neither must the drying process be carried so far as ever to cause them to flag. Eucharis amazonica that has made strong growth after flowering may now be submitted to dry treatment at the roots for a time, but with these, as with the last-named plant, the leaves must be fully grown and solidified before being subjected to the drying process, or they will fail to flower satisfactorily. The roots will bear drying more than those of Griffinias, but, as with all other evergreen bulbs, it must not be carried too far. Where Gardenias are grown in quantity, so as to give a long succession of flowers, plants that bloomed early in the winter will by this time be near completing their growth; to induce a free disposition in flowering stand them well up to the light, giving no more shade than is found necessary to prevent the leaves from burning. If moved to a house or pit where more air can be given them than in the stove, it will help the wood to ripen. Hoya bella, one of the best plants for suspending in the stove, can be had in effective condition for flowering next spring, if at the present time shoots are taken off none 8 or 9 inches in length, a few of the bottom leaves stripped off, and struck six or eight together in 4 or 5 inch pots; they will root in a few weeks, kept warm, and covered with bell-glasses, or in a propating frame. When well rooted remove the glasses, and as soon as they have commenced to grow put the whole together in pots 2 or 3 inches larger. Nip out the points of the shoots, and grow them on to the end of the season; with another shift in the spring they will bloom nicely. Old plants of this Hoya now past flowering should be cut back freely; inattention in this matter causes the plant to get into a straggling unmanageable state. Plants of the beautiful Dichorisandra mosaica, propagated last year, should not be allowed to want for room, or their blooming capabilities will be comparatively weaker. Where in small pots move at once; if longer delayed their autumn flowers will not derive the full benefit from the shift. Ixoras that have done flowering should be slightly cut in, thoroughly cleansed from insects, and again started to grow in a brisk heat, syringing freely overhead once a day; so managed, they will bloom well a second time. *T. Baines.*

FLOWER GARDEN, ETC.

The flower beds must now have every attention in order to assist the plants in making as much progress as possible. After the watering the beds have had, a good stirring with a small hoe will loosen the ground and encourage root action. As soon as the plants get well established and begin to cover the surface, which in many places will soon be the case, let the plants be regged down and stopped as may be necessary. Any blanks that have occurred since planting had better be filled up without further delay from the reserve ground. All plants that require sticks should be attended to before they get too far advanced, as they are then more liable to be broken over and damaged. Roses will be much improved by a thorough soaking of water, and if liquid manure, from the cesspool or stable tank, so much the better. The buds are plentiful and strong this season, and with good weather we are likely to have a fine display. Stocks or Briars should be looked over and prepared for budding; any gross shoots may be cut back, which will stimulate the growth of the weaker shoots. Budding may be done as soon as the bark rises freely; this is always best accomplished after rain and during showery or dull weather. Get the bud inserted as near the bottom of the shoot as possible, as they are not so liable to get broken off when placed near the stem. Climbing plants are now growing fast, and must have attention. Those on walls or covering trelliswork or fences will require to be nailed or tied as shoots advance, and all branches not wanted for filling up may be removed. Where annuals are growing in beds or borders, they will be greatly improved by being thinned out sufficiently to give the plants room to grow stocky and strong, which will add much to their effect, and prolong their season of flowering. Shrubbery clumps and borders will require a free use of the hoe to keep down weeds. All plants that have bloomed, and are beginning to look untidy, must be trimmed and left in good order. The grass lawns require constant care and attention; gravel walks also need to be frequently looked over, and all weeds and litter removed. Lose no opportunity of having the walks well rolled after rain. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

PINES.—Unless very adverse weather prevails, the powerful influence of solar heat at this season and onwards until the middle of September, will ordinarily be sufficient to keep up the requisite degree of surface heat about these plants without having recourse to any other means for the purpose. The potency of this expedient, when properly utilised in Pine-houses, ensures the most invigorating condition for vegetation possibly attainable; neglect not, therefore, any opportunities which happen in this way to make it available, and pursue the same course of treatment in regard to ventilation, &c., as was advised in the preceding Pine Calendar. As regards the requirements in respect to heat at the roots, if the composition of the beds be such as will not sustain 90° at the base of the pots, artificial means should be resorted to in order to effect it. Keep the internal atmosphere constantly moist in those compartments which are occupied with growing or fruiting plants, and under powerful solar heat a slight shade over the plants will be found beneficial for a few hours at mid-day. By this time all the plants recently started into the beginning of last February will be cut or in a condition to be removed elsewhere without injury. As soon as a compartment can be made available for a thorough cleansing it should be effected, to eradicate the countless numbers of insects which speedily accumulate and increase in the places; a good coat of fresh lime should be applied over the internal walls, so that all crevices about them will be stopped, and whatever painting is required should be done. This proceeding is very necessary annually where others objects are to be grown in the same house; it is also commendable practice to entirely clear out the beds of fermenting matter at least once every year. This remark only refers to such beds as are heated by hot water, and which contain not more than 1 yard in depth of such material. After the beds are refilled with fresh materials and plants, plentiful supplies are necessary, as they are highly liable to injury from an over-abundance of heat at the roots. Any suckers which are removed from fruiting plants at this season should be potted forthwith into good fibrous loam, and be watered at once; place them in a moderate heat, if in a moist pit, shade them from sunshine altogether for about ten days, and allow ample space between the plants to prevent them being drawn. It is not generally necessary to save stools for stock, excepting in the case of new varieties; if, however, it be desirable to do so cut off the leaves and bring them into the bottom pit, where with proper attention plenty of stock will soon be secured. *G. T. Miles, Wycombe Abbey.*

VINES.—Late Grapes, including Lady Downe's, Alicantes, and Muscats intended for use after Christmas, or for bottling, should now receive the final thinning and tying out of the shoulders to admit of full development of the berries, without crowding or binding, as Grapes which are not well thinned do not keep so well through November and December as bunches that grow with the air pass freely when the leaves are falling. Having brought the thinning to a close, let all borders, inside and out, receive a good mulching of half-rotten dung, and water copiously with tepid guano-water or liquid manure. Keep all lateral growths within reasonable bounds where the trellis is already filled with healthy foliage, but avoid the close stopping principle, particularly up to the completion of the stoning process. If any part of the trellis remains uncovered, young growths may be laid in and allowed to ramble, and the points be left unstopped for next year's fruiting should be kept pinched from the base up to the pruning-bud. Where inside or outside borders were disturbed last autumn, the laterals should have full play until the crop begins to colour, when the points may be stopped. Vines subjected to the Lifting process before the foliage falls form new spongioles through the autumn, and if allowed a low night temperature the following season, always furnish good crops of perfectly-coloured Grapes. Muscats now beginning to change colour will derive great benefit from a thorough soaking of liquid manure at a temperature of 90°, and if the material with which the roots have been protected still remains, great caution will be needed in its removal, if this course be decided upon, as it is more than probable that many active roots will now be working on the surface of the border, and on no account must these be injured or exposed at this critical period. *W. Coleman.*

MELONS.—Owing to the scarcity of hardy fruits, good Melons will be keenly sought after by dealers and consumers; cultivators will therefore do well to turn out all pits, frames, and houses as fast as the crops are cleared, and having thoroughly cleansed the glass and walls a fresh start should be made with vigorous young plants, either in pots or on hills. I give the preference to pots plunged in fermenting materials, as much valuable time is saved by having the plants established in their fruiting pots, a foot or more in height, in an intermediate house, on the day the last Melon is cut from the compartment they are intended to occupy. For producing a gentle bottom-heat at this season nothing is better than good Oak leaves, which should be turned and sweetened before they are placed in the pits, and Seakale pots answer admirably for growing the plants in. A good sowing of several kinds should now be made for giving a succession of fruit in September. Pot off as soon as the young plants show the rough leaf, and keep them sturdy by placing close to the glass. Feed liberally plants which are swelling off crops of fruit. Beware of canker, in some places very troublesome. The best remedy is freshly slaked lime, well rubbed into the parts affected. The pits should also be well ventilated by having apertures opposite to those if possible, in a line with the tops of the fruiting pots or hills. Fruit intended for keeping should be cut before they are quite ripe. *W. Coleman, Eastnor Castle.*

HARDY FRUIT GARDEN.

Summer at last! has no doubt been the joyful exclamation of many, and to none has its advent been more welcome than to those who have charge of that department of the garden of which I write, and although unfortunately its coming now will not repair the mischief wreaked on the fruit crops by the frost, the change has been in time to save many Peach and Nectarine trees which appeared a month or so back to be in an almost hopeless condition, but which have since rallied, and during the last fortnight grown with surprising rapidity. As it will be necessary to make the most of the short season left us, every assistance should be afforded in order that there may be no further check to their progress. Liquid manure will this help be needed to such as were transplanted during the autumn or winter, or to any growing in light shallow soils that part quickly with what little moisture they contained. Dryness at the root is sure to bring on red-spider, and although this pest may always be held in subjection by occasional syringings of cold water driven at them by means of the garden engine, trees should never be allowed to get into such a poverty-striken state as to be liable to their attacks. Were mulching more generally resorted to, this would not be the case, as by its use the roots are maintained in a more uniform condition in regard to heat and moisture than they otherwise could be. It should be borne in mind that trees in hard elevated borders get but little benefit from any rainfall during the summer months, and having no natural shade such as is usually afforded by foliage in borders that little water they do receive is soon lost by evaporation through the dessicating influence of sun and air acting with full force on a cracked and exposed surface. Mulching, however, should vary in thickness and material according to the nature of the soil to be dealt with, as that which is stiff and cold must not be covered to the same extent, or with such non-conducting material as is requisite for that which is shallow and poor. In the former case, a slight coating of half-decomposed leaves will be ample, while in the latter manure may with advantage be used, the juices of which will gradually wash down and have a gently stimulating effect on the plants. Owing to the slow growth they have made both Morello and dessert Cherry trees are badly infested with black-fly, which, in addition to the damage they do to the young shoots, disfigure the fruit by the excreta they exude, and should therefore be taken in hand at once. The best remedy is to dip them in a wash made with Tobacco and Fowler's insecticide, using 4 oz. of the latter to a gallon of water, and Tobacco in the same proportion, as they are difficult to destroy unless a strong solution be applied, their oily coats appearing to be proof against anything except such penetrating mixtures as the above-named form when added together. Except on sunny walls, Pears are generally an almost total failure, and, even in the most favoured situations, the fruit has suffered to such an extent as to affect its value greatly. It will not yet be safe to do what little thinning appears to be necessary further than to remove any that are badly deformed. All breastwood, however, and other young shoots not required for laying in to fill vacancies, should be stopped back to within two or three joints of their base, in order to concentrate the sap and induce a formation of fruit-buds, of which it is to be hoped trees will this year set an abundance, as no doubt they will from being so lightly laden. Figs are in most cases an exception to this, as they are bearing heavier crops than I ever remember to have seen before, and now that the weather is warm and favourable they are swelling off in a satisfactory manner. There is much truth in the old saying that a pruned Fig never bears, but the remark more strictly applies when that operation is carried out at the top instead of below, where it should be. I would therefore advise those who have any now barren and making a gross unruly growth, to open a trench around at about 3 feet from their stems, and sever every root they come in contact with; if this trench is then filled with concrete, so as to confine the tree within due bounds, there will be no difficulty in getting the right kind of wood to produce fruit in abundance. *J. Sheppard, Woolverstone.*

THE
Gardeners' Chronicle.

SATURDAY, JUNE 30, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	July 2	{ Wolverhampton Floral and Horticultural Society's Show (two days).
TUESDAY,	July 3	{ Leicestershire Floral and Horticultural Society's Rose Show (two days). Royal Horticultural Society Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. Sale of Mr. Herbert's Collection of Palms, by Protheroe & Morris.
WEDNESDAY,	July 4	{ Royal Botanic Society's Evening Fête. National Rose Show at St. James's Hall. Bitterne and Westend Horticultural Society's Show. Thirty-fourth Anniversary Dinner of the Gardeners' Royal Benevolent Institution. Sale of Mr. Michael's Collection of Orchids by Stevens (three days).
THURSDAY,	July 5	{ Royal Horticultural Society of Ireland: Spring Show. Wimbledon and District Royal Horticultural Society's Show. West of England Rose Show at Hereford.
FRIDAY,	July 6	{ Tonbridge Wells Horticultural Society's Show.
SATURDAY,	July 7	{ West Kent Horticultural Society's Show. Southgate Horticultural Society's Show.

THE announcement in the daily papers that the COLORADO POTATO BEETLE has been found in full force in some fields near Cologne is unfortunately too likely to be true. It is not long since we heard of its introduction into Germany by means of a vessel trading between the United States and Bremen, so that its appearance near Cologne is nothing more than what might have been expected; and its presence in our own Potato fields may assuredly be expected to be announced at any time. It behoves Potato growers, then, to be on the look-out, and to take such measures as may be deemed most desirable. We have from time to time adverted to this new pest, having derived almost all our information on the subject from the writings of Mr. C. V. RILEY, the State Entomologist of Missouri, who has done excellent service, alike to science and to practical cultivation, by the exhaustive accounts he has published concerning the nature and habits of this and other insect pests. Mr. RILEY'S papers are to be found in the annual reports on the noxious, beneficial, and other insects of the State of Missouri, reports which justify the wisdom of our American friends in the establishment of such an office, and the still greater wisdom exercised in the selection of a man to fill it. Unfortunately these reports are not very accessible in this country. True, they may be found in some of the libraries, but the number who can thus avail themselves of Mr. RILEY'S information is but small. The beetle (Doryphora 10-lineata) is particularly objectionable; while in the grub or larva stage it not only destroys the Potato haulms, but the juices of the perfect insect have, in some instances at least, proved to be of a venomous character. The ill effects, however, seem to be only produced when large quantities of the insect are crushed, or burnt, or scalded, when the vapours produce the symptoms of poisoning by an acrid or irritant substance.

Fortunately the Americans have discovered a remedy in the shape of Paris-green—"by means of intelligence and a little Paris-green," writes Mr. RILEY, "the American farmer is pretty much master of the Doryphora." Now as the Paris-green is a preparation of arsenic (arsenite of copper), and consequently a most dangerous poison, it is evident that a considerable amount of intelligence and no slight degree of care must be used in the employment of this substance, and more especially so in the kitchen garden. Still, within the last few years we are told that millions of bushels of Potatos have been raised, the leaves of which have been most thoroughly sprinkled with Paris-green without any injurious effect on the tuber, or to persons using Potatos raised in this manner. The Paris-green requires to be well-mixed with from twenty to thirty parts of flour or water, according to the mode of use. The quantity which becomes incorporated with the soil is too minute to be of consequence, inasmuch as the substance speedily undergoes decomposition, and becomes converted into an insoluble and harmless substance. The Paris-green could not "well collect in sufficient quantities to be directly deleterious to man in the field in any imaginable way, while its injury through the plant is out of the question, for the plant could not absorb enough without being killed. The idea that the earth is being sown with death by those who fight the Colorado Potato beetle with this mineral may, therefore, be dismissed as a pure phantasmagoria."

The most convenient method of using the Paris green is as follows:—A tin can capable of holding about 8 gallons is made of a shape to rest easily on the back of the labourer, as a knapsack or Cassiobury fire-engine would do. To the lower end of the can are attached two india-rubber tubes, each terminating in a "sprinkler," like the rose of a watering pot. There is a convenient lever at the bottom which presses the tubes and shuts off the outflow at will. When about to be used "two bucketfuls of water are first poured into the can, then three tablespoonfuls of good green well mixed with another half-bucketful of water, and strained through a funnel-shaped strainer, which prevents the larger particles of the green from getting into the can and clogging up the sprinklers. Five to 8 acres a day can be sprinkled by one man, and from 1 to 1½ lb. of good green, according to the size of the plant, will suffice to the acre. . . . The walking serves to keep the green well shaken, and the flow of liquid is regulated at will by a pressure of the fingers at the junction of the tubes with the metallic nozzles." It may not be amiss to suggest the absolute necessity of using the can and other implements employed in distributing the Paris-green for no other purpose whatever, and to insist rigorously on thorough cleanliness on the part of the workman when his work is done.

From the ninth report of Professor RILEY we gain some idea of what we have to expect:—"The captain of a New London vessel found that the insects boarded him in such numbers while at sea that the hatches had to be closed." On the Central Railroad, near Grinnell Station, "the rails were covered with them for a mile, and after a few revolutions of the drivers the wheels lost the friction and slipped as if oiled . . . the beetles had to be swept off and the track sanded before any progress was made." It is while in the larva or grub stage that the insect does most harm to the haulm (the tubers not being attacked), but it is while in the perfect, winged state that it has been distributed over a third of the area of the United States, its progress being simply limited by excessive heat or by the rarified cold air of the mountains.

One very interesting circumstance noted by Professor RILEY is, that the species as it has spread over the country has undergone modification in character. From a scientific point of view, as showing how varieties and species may originate, this fact is one of very great interest. But such questions as this will excite but feeble interest in comparison with the more directly practical matters to which we have alluded. Our object is to warn gardeners and farmers to be on the look-out, and to take active measures immediately the insect is detected. A figure of the insect is given at p. 55, vol. i., 1874, and some further particulars may be seen in our review of Professor RILEY'S little book, entitled *Potato Pests* (New York: ORANGE JUDD & Co.), at p. 183.

THE letter of Mr. FISH in our last issue will serve to draw attention once more to the CUCUMBER DISEASE, and to the means of eradicating it. Mr. FISH has on former occasions sent us distressing examples of the ravages of the disease, and we have received them also from other quarters. We can imagine his triumph when he sent us, a few days since, other specimens all but free from the disease, the happy result of the application of Mr. WORTHINGTON SMITH'S "Salus." Another correspondent sends us leaves of the Hollyhock almost entirely free from the Hollyhock fungus, this freedom having been effected also by the use of Salus. In general we are apt to look with suspicion on any well puffed remedy which is advertised to cure all the diseases to which flesh is heir to, and a great many more besides, knowing how defective the evidence in these cases usually is. Even when the good faith of the witness is beyond question we are disposed in general to be very sceptical and to inquire whether the alleged good effect is real and not imaginary, and, if real, if it is fairly attributable to the supposed cause. In the present instance the evidence is much better than usual. On the one hand we have a man of science whose researches into the nature of the Potato disease led him to experiment with various chemical substances known to be detrimental alike to fungi and to insects. The result was the compound known as Salus. On the other hand, we have practical and disinterested observers who could scarcely be mistaken, and their testimony is that the Salus does what is claimed for it. The substance in question acts not only as a destroyer of parasites, whether of fungous or of insect nature, but it clearly serves as a stimulant to vegetable growth, so that it may be in some cases that

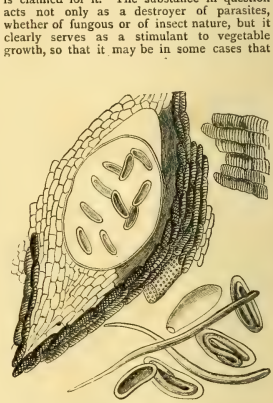


FIG. 134.—CUCUMBER DISEASE, SHOWING THE VIBRIOS HIGHLY MAGNIFIED.

the good it does is more due to its power as a manure than as an annihilator of fungi or of insects. Reverting to the Cucumber disease it is now well established in some cases that it is associated with the presence of very minute worms (fig. 134), which cause a swelling of the tissues of the root, an exudation of gum from the fruit, &c., and in the end general putrefaction. But we are not clear that the gumming of Cucumbers, or what is generally called the Cucumber disease, is always associated with the presence of these worms. In many of the samples submitted to us there have been no worms present, and it is clear the gumming might be due to some constitutional disease.

Whether we have to do with two forms of disease or only with one is the point about which we are not clear. The matter is of practical importance, because the Salus may be useful in the one case and not in the other, and if applied without discrimination it may produce disappointment, and suffer unfounded loss of reputation. At any rate, there seems every reason to believe that Mr. SMITH is once more entitled to receive the congratulations of his friends, and the thanks of the body horticultural at large.

—— WE have been requested to make public the following statement important to BULB IMPORTERS and PURCHASERS:—"The Society of Bulb and Seed Merchants, 'Bloemisten-Vereeniging,' founded at Haar-

lem with the object of promoting the interests of the BULB TRADE, held an extraordinary meeting on May 28, in order to discuss the actual condition of the Hyacinths now standing in the fields, and considering the unfavourable symptoms that have therein appeared since the middle of May, the following motion was proposed and carried unanimously. The opinion of the meeting is—

"1. That in consequence of the late unfavourable weather, the bulbs of many sorts of Hyacinths will most probably not grow to their usual size, and apparently there may be some sorts of which only very small bulbs, if any, will be obtained this season.

"2. That, although at present it cannot be ascertained whether this check in the growth of the bulbs will also affect their flowering, it is beyond doubt that coming mild weather will have a favourable influence on the blooming of the Hyacinth bulbs next spring."

—— A telegram sent from Cologne to the *Daily News* through REUTER'S Agency, and dated June 25, states that the Colorado beetle, in every stage of development, was discovered on the previous day in a Potato field in the vicinity of that city. The field belongs to a butcher who had purchased some American bacon. The fact was immediately notified to the Ministry of Agriculture. Should this report prove to be well-founded, there is no saying how soon the pest may make its appearance in this country. Potato growers should keep a vigorous look-out for the enemy, and adopt the measures mentioned in another column.

—— The *Revue Horticole* speaks of a new WHITE CINERARIA shortly to be distributed by Messrs. VILMORIN. The history of this new form is this. M. IGNACE, a foreman in the employ of Messrs. VILMORIN, selected four of the double Cinerarias sent out by MM. HAAGE & SCHMIDT, with a view of fixing and improving the variety. From the seeds produced by these he obtained a progeny of only three plants, mostly with semi-double flowers. With a few exceptions, in which the colour was slightly spotted with red or violet, the flowers produced on the three plants were of a pure white. This year the production of white flowers has been even more abundant, so that the variety may be considered as fixed.

—— Amongst the various subjects certificated at the last meeting of the Floral Committee was LILIUM ELEGANS ALICE WILSON, exhibited with several other fine Lilies by G. F. WILSON, Esq. The flowers are of fine size, of a bright orange-yellow colour, and very distinct. In habit the plant somewhat resembles L. dahuricum.

—— The well-known herb RAMPION (Campanula Rapunculus) deserves much more attention as a garden flower than is generally given to it. In Messrs. CARTER & Co.'s seed grounds at Dedham there is now a large plantation of it in full bloom, being grown for seed purposes. It attains a height of from 2 to 2½ feet, and at this season of the year the plants throw up long spikes of mauve-blue flowers. The seed was sown in the open ground thinly, in drills, in May, 1876, and thus is in full bloom in a year from the time of sowing.

—— Lying before us are the schedules of prizes offered by two societies for FLORAL DECORATIONS at their approaching exhibitions, and characterised by very different features. One of these refuses to allow any one to compete who is not a lady-amateur of the



FIG. 135.—DAVIDSONIA PRURIENS. (SEE P. 820.)

district, or a lady-member of the family of a subscriber who is also an amateur. In the other schedule all the classes are open. We shall watch the result of these two shows with much interest, because we entertain the belief that, as amateurs have so often been professionals, so will they continue to run away from them in the race if they will only think over and make notes beforehand of what they are going to use. The exclusiveness of the West Kent Horticultural Society appears to us unnecessary; while the Royal Botanic Society's determination to throw all the classes open will afford amateurs an opportunity of showing how well light and original groupings will contrast with the more stereotyped arrangements of professional decorators.

—— At the sale on Tuesday last of Mr. WILLS' NEW DRACÆNAS, the entire stocks of D. Scottiæ, D. Renardeæ, D. Frederici, D. superba, D. Berkeleyi, D. Bausei, and D. Mrs. Bause, were purchased by Mr. B. S. WILLIAMS, for £195.

—— Colonel PUCKLE sends us the following interesting note respecting the SUPERSTITIONS of the HINDOOS in relation to TREES:—

"The tree most generally worshipped by them is the ASWATTHA—Ficus religiosa—from its having been declared in the Bhagavadgita to be the most sacred of all trees. It is moreover supposed to represent the Trimûrtis, the root being considered as the abode of Bramha, the stem of Vishnu, and the top of Shiva. There are four kinds, each being named according to the four castes of Hindus, viz., Bramha, Khastriya, Vyaishya, and Sudra. The Bramha kind is preferred to the others.

"The ceremony of the marriage of two Aswattha trees is exactly analogous to a marriage between a man and a woman. A cotton uniform is erected around the trees, and between them a Neem (Margosa) tree is generally planted with a Bilpatri (wood Apple) close by. This is done under the belief that if raindrops fall upon the fruits of the Neem tree (which are held to resemble a Linga, Shiva's emblem), from the points of the Aswattha leaves or Panivattam, the planter of the trees will secure to himself that bliss which is only otherwise attainable by undertaking to bathe the image of Shiva with 1000 pots of water.

"The expense attending on the celebration of such a marriage is sometimes so great that it is usual to leave them unmarried; a Neem tree is, however, almost always planted by the side of an Aswattha, and ignorant people suppose that the former is wedded to the latter. The Bilpatri and Neem are also witnesses to the marriage."

—— The marriage, by the Rev. GEORGE HENSLOW, of Professor DYER to HARRIET, eldest daughter of Sir JOSEPH DALTON HOOKER, K.C.S.I., Pres. R.S., and Director of the Royal Gardens, Kew, took place on the 23d inst., at Kew.

—— Among Mr. BULL's new plants not as yet sent out is one to which the name DAVIDSONIA PRURIENS is attached. A plant under this name is described by Baron VON MUELLER in the sixth volume of the *Fragmenta Phytographiæ Australiæ*, 1867, p. 4, tab. 46, and assigned to the order Saxifragaceæ. In spite of sundry discrepancies between Mr. BULL's plant and the published description above referred to, we have little doubt of the identity of the cultivated plant with that described by Baron VON MUELLER, though it is so very unlike most Saxifraga in general aspect that a doubt as to its affinity may, perhaps, be pardoned. The cultivated plant has not yet flowered, and at present it is but small. It appears, however, to be of arborescent habit. The stem is thickly clothed with villous hairs; the leaves are very graceful in their recurved habit and singular form, and in their young state are specially beautiful, from their dense investment of crimson bristly hairs. The leaves are alternate, unequally pinnate, 12—18 inches long, on short stalks, thickened at the base, and provided with suborbicular, acuminate, sharply toothed leafy stipules. The pinnæ, or leaflets, are articulated to the rachis, and arranged in six pairs, with one odd one at the end. In form they are oblong-lanceolate, shortly acuminate, irregularly dentate. The terminal leaflet is blunter at the end than the lateral one, and tapers at the base into a short stalklet, which, like the principal rachis of the leaf, is bordered on each side by a narrow foliaceous wing deeply cut up into sharp villous teeth. The uppermost leaflets are 6 to 8 inches long by about 3 inches in breadth, the pairs being about 2 inches apart. The leaflets gradually decrease in size from above downwards till the lowermost are represented merely by very small leaf-like processes. The terminal pinna seems sometimes to be destroyed in the young state, in which case, of course, the leaf becomes paripinnate. The plant is a native of north-east tropical Australia.

—— FREMONTIA CALIFORNICA is now in splendid bloom on one of the walls at Kew. The upper part of the tree forms quite a sheet of yellow, and with such neat foliage and compact habit can only be mentioned as one of the best trees for a wall covering. It does not thrive in the open, and this only is its true position.

—— There is every reason to believe that, as far as the probable HARVEST OF SEEDS is concerned, many things will fall very short of the ordinary yield. The prices of Swedes and Turnips, for instance, are expected to rule very high, and indeed there has already been a marked advance. This advance may offer temptations to those who would evade the Seed Adulteration Act; but we trust that the good sense of the trade will at once stop the iniquitous practices which led to the passing of that Act, and which up to this time has worked well. All the Brassica crops are very late, owing to the long wet winter and the comparatively sunless spring. The harvest depends so much on the autumn, and many of the seeds sown then did not grow kindly and rapidly as usual, owing to the ground being soddened with wet; and the plants put out to stand the winter to seed this summer made but little root in the autumn. The wind blew them about on the soft ground, and the wet filling up the void many were thereby rotted. Things are very much later than usual, and what is urgently required by seed growers is a fine warm genial time to mature the seeds now in pod as thoroughly and quickly as possible.

—— The rich IRIS collection AT KEW has recently been a fine display. The latest of these, now in flower, are I. Xiphion, I. notha, I. ochroleuca, I. Monnieri, and I. variegata var. elatior. They are all distinct and desirable.

—— One of the MARICAS, perhaps M. Northiana, is much grown as a window plant in that part of the borough of Oldham, Lancashire, known as Roydon. Many of the windows contain from one to three or four examples, some of them of large size, and remarkably well grown. Its blossoms are somewhat fleeting, but its Iris-like evergreen character is always fresh and good, and therefore acceptable as a window plant. The operatives and others who make a pet of this plant have evidently hit upon a capital mode of cultivating this somewhat scarce representative of an interesting genus.

—— A patch of PAPAVER SOMNIFERUM in double and highly coloured forms, flowering in the herbaceous ground at Kew, remind us how very effective it is when sown broadcast in park shrubberies and similar places. Foxgloves in a variety of colour are also handsome for the same purpose.

—— A copy of the ninth annual *Report of the Noxious, Beneficial, and other Insects of the State of Missouri*, by CHARLES V. RILEY, is before us. Like its predecessors, it is full of valuable information, practical and scientific. The value of such publications, in the future, can hardly be overrated, and they reflect great credit alike on the sagacity of the Government which distributes them, and on the talent and industry of their author. The insects treated of in the present report are the several Currant and Gooseberry worms, their habits, and the best means of extirpating them; the Pine worm, the Colorado Potato beetle, the Army worm, and the Rocky Mountain locust.

—— A few PLANTS in the HERBACEOUS GROUND AT KEW attract our special attention. The first of these, Galax aphylla, is somewhat rare. It has a dwarf, compact mass of dark green leaves, through which appear a number of graceful spikes of white flowers. Tropæolum polyphyllum is very effective with its trailing stems of dense, glaucous leaves and golden flowers. Bahia lanata is a pretty silver-leaved Composite, now bearing a mass of showy yellow flowers. Gillenia trifoliata is extremely pretty: its stems are red, and the pure white flowers are very pretty in contrast. A well-established specimen of Sarracenia purpurea is flowering freely.

—— In reference to the DINNER to Mr. F. W. WILSON, at the "Criterion," on Tuesday next, we are desired to state that friends who cannot conveniently obtain tickets may secure places by an intimation on a post-card addressed to Mr. J. MACKENZIE, 1 and 2 Great Winchester Street Buildings, E.C. The forwarding of a small sum of money is often a matter of difficulty, and in this case the ticket can be paid for at the dinner-table.

—— TECTONA GRANDIS, the Teak tree of India, is generally found a difficult plant to grow, and indeed is often spoken of as a difficult plant to keep alive. That this need not be so, is evident by inspection of plants in the Economic-house at Kew. A seedling of about two years old is growing vigorously and has leaves 11 inches long by 6 inches broad. Another plant of greater age is equally healthy, but the leaves are smaller and the growth short. The greatest enemy is red-spider, and no plant is more liable to attack. To this pest may be attributed nearly all the difficulty of its culture. Cleaning with a sponge is of little use from the many recesses afforded by the roughness of the leaf; an effectual remedy will be found in the use of sulphur, which should be dusted at intervals of a few days so as to cover every part. After a few applications there will be no further trouble for some time. During the time of growth there should be no lack of water, to ensure which it is an excellent plan to stand the plant in a saucer of water. After the growth is completed a moderately dry season of rest is requisite. The warmest stove temperature is desirable throughout the year.

—— We understand that Mr. B. S. WILLIAMS has sent as a contribution to the forthcoming INTERNATIONAL HORTICULTURAL EXHIBITION AT OPORTO, a choice collection of over a hundred new and rare plants, including Palms, Crotons, Dracænas, Ferns and Orchids.

—— Four large specimens of AGAVE AMERICANA have started their flower-spikes in the gardens of T. A. DORRIEN SMITH, ESQ., Tresco Abbey, Isles of Scilly, and are growing rapidly at the rate of from 6 to 9 inches per day. This rate will increase as the spikes get higher. Several others show indications of flowering this summer. There are also two beautiful small green-leaved Agaves (marked here Mitè), which have thrown up flower-spikes at present 4 feet high, flower not yet open. They are very interesting plants. Mostly all of the old flower-spikes of the large number (forty-eight) of American Aloes that flowered here in 1875 are still standing. Only one flowered last year, and that had been damaged and lost its centre spike by being overgrown by a large Fuchsia, but it threw up three small spikes from the axils of the leaves at the base of the plant.

—— The annual exhibition of WINDOW PLANTS grown in the CITY OF LONDON will take place in the gardens of Finsbury Circus, on Tuesday, July 10. The Right Hon. the Lord Mayor will open the exhibition at half-past twelve o'clock, and the prizes will be distributed by Her Grace the Duchess of WESTMINSTER at 5 o'clock.

—— PHORMIUM TENAX is flowering freely in the Tresco Abbey gardens, Isles of Scilly. The spikes are 6 feet long and more. At the present time the gardens are very gay with choice flowers. The beautiful Metrosideros floribunda is in full flower, and also Dracæna indivisa or australis, perfuming the gardens with sweet odours. The curious Puya chilensis, figured in our columns 1872, p. 1102, had four large flower-spikes this spring.

—— A correspondent writes to protest against the symbolism employed by some teachers, which is often misleading. Our correspondent seeing an announcement of an address on the "Causes of Failure in the Vineyard," naturally bethought himself of Phylloxera, Oidium, shanking, scorching, and the like; but he quickly found that the address was of a theological not viticultural nature.

Home Correspondence.

Abies Engelmanni.—I have received the following letter from M. B. Roezl, which I beg you to lay before your readers :—"I have just received the fourth part of the *Illustration Horticole*, in which I find revived, at p. 53, the question of Abies Parryana or A. commutata or Patratore, which M. Ortgies asserts to be the same plant. I take the liberty of writing to you to clear up the matter. In 1872 I found a superb Abies Menziesii planted in certain gardens at Denver City, Colorado, at the foot of the Rocky Mountains. I was not able to find any seeds in these mountains until September, 1874, and I then sent them to M. E. Ortgies of Zurich, under the name of Picea Menziesii argentea. The leaves were strong, broad, and so sharply pointed that one could scarcely touch the branches, as was the case also with the plant which you, like myself, have seen in Prof. Sargent's garden at Brookline, near Boston. I found the tree at an altitude of 5000 to 6000 feet on the Rocky Mountains of Colorado. That which you call Engelmanni is found further to the north in the territory of Wyoming, at an elevation of 6000 to 9000 feet." It will be more tender in Europe, because it begins to grow too early in spring. In Colorado there is no other Abies but A. concolor, bifolia, and Douglasii. I do not wish to pronounce an opinion as to which of the two names, A. commutata or A. Menziesii Parryana is preferable, but they both apply to the same plant." I have replied to M. Roezl that these names do not apply to the same plant. The A. commutata (Engelmanni of gardens), corresponding very well with Parlatore's description, having slightly recurved and appressed leaves, with a short inoffensive point, is by no means the plant of which M. Roezl speaks, and which he, like myself, saw in the garden of Professor Sargent, at Brookline. Moreover one of the editors of the *Gardeners' Chronicle* has lately observed the three forms side by side at Mr. Waterer's, at Knap Hill—A. Menziesii, A. M. Parryana, and A. commutata (Engelmanni), and states that they are perfectly distinct. There is only one way of bringing this controversy to a conclusion, and that is by M. Ortgies having the goodness to send me a branch of the tree derived from the seeds which he sold under the name of A. commutata, which is the plant of which I have spoken, it is for him to state that he has committed an error in thinking it to be the same as A. commutata (Engelmanni). If, on the other hand, it is the true commutata which he has distributed, it is not the same as the Brookline plant, which in that case will be represented by the unique specimen sent by Mr. Sargent to Mr. Waterer. Here is the dilemma. I await the solution. *Ed. André*, 67, *Rue Blanche, Paris.*

The Public Park at Gateshead.—I had a peep in this park last December, and was surprised to find such a beautiful place near the town : I am sure the townspeople ought to be gratified with such a place of recreation. I hope Mr. Kemp will try to impress upon the people the necessity of such a place being made, not only for recreation, but instruction for the young people, and to have all the shrubs and flowers properly named—not like some of its neighbouring parks, which seem to me like a book without a title. How interesting it would be to have a nice collection of British grasses and flowers, so that the people could learn the names. Shrubs seem to do well. Is not a nice collection there are they : why not name them all? From what I could see of its progress I thought the walks well traced, and the improvements on an extensive scale. I really hope the ratepayers will not grumble as yet, but it seems to me rather too extensive for a town like Gateshead. However, I say to the Gateshead people, you must set an example to your neighbours (Sunderland not omitted in this case), and don't make walks and place clumps without an object. *R. H. D.*

The Late Show at South Kensington.—In your notice of the exhibition at South Kensington last week you allude to my collection of cut flowers of bulbous plants as having been exhibited in an unseemly group of blacking-bottles, &c. This was the case, owing to my having disappointed by the person to whom I applied to provide proper glasses in which to set up the flowers, and had it not been for the help which I received at the last moment from Mr. Barr, whose blacking-bottles, though not ornamental, at any rate hold water, I should not have been able to arrange them at all. I hope, however, that country gardeners who may have plants or flowers of interest will not be deterred from sending them to our fortnightly meetings on account of any difficulties of this sort, even though they may not be able to attend themselves, as I feel sure that the more we have of small exhibits from amateurs and others who are not in the habit of growing plants specially for exhibition, the more interesting and useful will our meetings be. Specimen plants are necessary to make a show anywhere, but however much one may admire the marvels of skill in Rose growing shown by Mr. Turner and Mr. Ralli's gigantic Azaleas, the real interest of, an exhibition to lovers of plants lies in such charming groups as were shown by Messrs. Veitch & Sons, whose tables of miniature Orchids and Pitcher-plants were alone worth going far to see. How grandly that long despised flower the Iris came out last Tuesday; and what a good sign to see them staged in quantity by three or more of the leading London firms. No one after seeing Mr. Parker's Irises could go away without a wish to grow them. Now the two great shows are over we shall have, as your leading article suggests, more time to devote to the real work of the Society, as I quite agree with you, that however necessary and enjoyable a great exhibition may be, it is not the be-all and end-all of horticulture. *H. J. Elwes.* [We cordially endorse our correspondent's views—blacking-bottles or no blacking-bottles, let us have the plants. Mr. Elwes deserves high praise for his efforts in this direction. EDS]

Strawberry Premier.—Growing Strawberries this year in larger quantity than previously I am better able to estimate the qualities of various kinds, and out of a dozen picked sorts I find the finest of all to be Frame Garden Seedling, a good flat leafage of the Keen's Seedling type which I so much admire, throws the bloom well up on stout stalks, fruit extra fine, square, rich in colour, and of a fine brisk flavour. It immediately succeeds Héricart de Thury, and if it will do so well generally as it does on my stiff hard clay this year, it should rank one of the finest of early kinds. Having a crotchet for the broad leaf foliage I venture to assert that no better or more useful three Strawberries can be found than Héricart de Thury, Premier, and Lucas—the latter a fine late variety of great excellence. *A. D.*

The Weather and the Fruit Crops. — The fruit crop of 1877 is one of the worst that has been in central Yorkshire for several years. With the exception of Apples, bush-fruit, and Strawberries, the failure is complete. Apples, which promised to be a good crop, are very light—scarcely a fourth of a crop. Red Currants are plentiful, but black Currants are very light, and the trees much covered with honeydew. The crop of Gooseberries varies; in cold and exposed situations there is very little or no fruit, but in sheltered situations there is a tolerable crop. Raspberries, which a few weeks since looked starved and injured by the frosts and winds, have wonderfully improved with the fine weather, and now promise to be a good crop. Strawberries are looking well, and promise to be a good crop; they would be much benefited now by a good steady rain. Pears, Plums, and Cherries are nearly all gone ; there was a great quantity of blossom, but it was small and weak, and, the weather being unfavourable, it fell off. Had the weather been mild and genial there would have been a crop of these sorts. Some standard Pears here, which were one mass of blossom, have fewer fruits than in any season for the last twenty years. The pyramids were also full of blossom, but there are very few fruits. Some sorts on the walls have a sprinkling. Plums are a great failure. Apricots are a great failure, and the young wood in some places much injured. Peaches in general very light; there is a sprinkling on some of the trees here. Had the wood and buds been properly matured in the autumn, the failure of the crops would not have been so great. The heavy downfall of rain we had for four or five weeks last September and October, and the open soft weather which continued during the autumn, was very unfavourable to the ripening of the wood and buds. The consequence was, that though there was a great deal of blossom this spring, it was very small and weak in this neighbourhood, and unable to stand the severe weather. Had the flowers been large and fine a better crop of fruit would have set, notwithstanding the severe weather. Every attention should now be paid to the trees in disbudding, thinning, and stopping the shoots, and in keeping them clear of insects. *M. Saul, Stourton.*

Ceanothus divaricatus.—In regard to the Ceanothus divaricatus mentioned by your correspondent we have a big bush of it here, measuring 14 feet high and 15 feet through, the stem close to the ground girths 20 inches, and 2½ feet high, where it forks into several stems, 1½ inch more. It is growing in a very exposed position, and is never injured by the most severe weather. It has been for about six weeks a perfect mass of light blue flowers, and is a most distinct and handsome evergreen at all times. The plant is an isolated one, and the blue flowers don't come out well against the sky line, which is to some extent a drawback ; it is besides a most rapid grower, the one in question having been planted (a small bit a foot high in a pot) only six years. We have a C. Veitchii also, planted against a wall, but which has grown 3 feet above it, forming a dense bush ; this part flowers in the most profuse manner, having been a solid mass of deep blue, in fact scarcely a leaf was visible. Your correspondent must be in error in supposing this to be a form of the other, as the two plants are quite distinct in every way. We have also many other species and varieties growing in the open, away from walls : a bush of C. azureus, 5 feet high and 8 feet through ; one of the fine hybrid Gloire de Versailles, 5 feet by 5 feet, and so on. It is a tribe of shrubs not half enough planted, giving as they do blue flowers all through the season, from May till the frost stops them. Some of the more recent French hybrids are very beautiful, and appear to be all hybrids of azureus and cornubosus ; all these latter are better to be cut back freely just before growth commences, as they all flower on the young wood. *T. Smith, Newry, Ireland.*

Vanda teres.—Mr. Monro has been good enough to send me flowers of his so-called Vanda teres, but it is Vanda suavis. This accounts for the large number of flowers he speaks of as being on one spike. I have forwarded to you the remaining two flowers. They are very highly coloured with violet-mauve and do not agree with Mr. Williams' description, in the *Orchid Manual*, of V. teres. Whether it is V. teres Andersoni I don't know ; anyway it is a fine variety and very handsome, and that I have succeeded in flowering it freely by tying it down adds more to its value. The species I have seems to be a weakly growing one, smaller in leaf than the variety grown at Dalkeith and elsewhere. *Henry Knight, Floors, June 25.* [Mr. Williams, to whom we showed the flowers, recognised it as the variety Andersoni. The flowers are very beautifully coloured. EDS.]

The Hollyhock Disease and "Salus."—Last year a group of young Hollyhocks were killed, or nearly killed, by the disease in my garden, and this spring, noticing the leaves of the sole survivor rapidly perishing from the same cause, I fairly drenched the plant overhead and at the roots with the Salus in solution ; the disease was rapidly checked, and a healthy growth of green leaves followed. I did not apply more Salus, and now I see the disease is slightly reappearing, but probably another application will again check or remove it. *O.*

Pelargonium Drapeau National? — We perceive from the report of the show at the Royal Horticultural Society that a seedling exhibited has received in the naming of a silver-edged Pelargonium with bi-colored petals, viz , "scarlet and white." It is reported to be named Drapeau National, but this was a name placed originally on a double zonal with tricolored markings ; the silver-edged one was named Mrs. Mappin, and should have had white flowers. It was merely sent up as a novelty not seen by us on any previous occasion. We observe the flowers are now wholly scarlet. We shall watch the future development of the flowers on this plant, and if it again shows the original scarlet and white blooms will again produce it at the meetings. We intend trying to perpetuate the sport. Our man thinks the labels must have been displaced in moving the plants from one side of the Council chamber to the other, and the fallen labels put on the wrong plants. *F. & A. Smith, West Dulwich.*

Leafy Calyx in the Cucumber.—The whole of the flowers on one of my Cucumber plants are affected in the same manner as the specimen forwarded, what can be the cause? *W. S. G.* [In the fruit in question the sepals which are usually undeveloped or nearly so have grown out into perfect leaves, as in the illustration, fig 136. We presume some ancestor of the present race of Cucumbers had such a calyx, and that the ancestral characteristic has shown itself again, as such characteristics are apt to do. If we have some better specimens we shall be glad to see them. EDS.]

Plants in Flower at Floors Castle.—When visiting lately Floors Castle, Kelso, the beautiful seat of the Duke of Roxburgh, I was agreeably surprised to find the following plants in grand condition :—Begonia odorata : this with its beautiful white sweet-scented flower is invaluable for decorative purposes, as also to the bouquetist. It is easily grown, and can be had in flower nearly the whole season. Cantua dependens is a grand plant as seen here, planted out and trained up a pillar, as well as grown as a bush, in the same bed and soil as the Camellias are growing. This is splendidly in flower, and bears several racemes of its most lovely tube-shaped flowers, twenty to thirty blossoms on a raceme. What a pity it is not more generally grown, for it is a grand plant for the decoration of the conservatory. Fuchsia Aurora superba for training up pillars will be found a very useful plant. Mr. Knight, the gardener here, informed me he had grown it for ten years, and it was constantly in flower. Rogiera gratissima is another grand but much neglected plant ; here it is both grown in pots and planted out with the Camellias, and certainly it is well worthy the attention of those who require

This assertion is incorrect. Dr. Engelmann, in describing in full detail, in the *Gardeners' Chronicle*, the Abies Engelmanni (*Gardeners' Chronicle*, 1863, p. 1035), affirms that this species grows throughout the chain of the Rocky Mountains, from New Mexico to the sources of the Columbia River and Missouri. *Ed. A.*

flowers all the year round; its sweet-scented delicate rosy flowers are indeed most useful to those in search of flowers suitable alike for bouquet or decorative purposes. Vanda teres is also flowering freely. I noticed two plants in flower, about 3 feet high; the shoots had been tied down to prevent them from touching the glass, and Mr. Knight, as he stated some time since, attributes his success in flowering to the tying of the shoots down. There is doubtless something in this, although in yours of the 16th Mr. Munro of Finnart Gardens, Garelochhead, Dumbarton, states he has a plant 3 feet high with three spikes, eleven flowers on each spike. This is very remarkable; these I notice had a spike of four flowers each only. Vitus heterophylla variegata is also a most useful plant for the decoration of a conservatory; when grown, as seen here, on a trellis 4 feet by 3 feet, beautifully coloured, this will prove another grand acquisition to those in search of the like. Mr. Knight, the gardener at Floors, to whom great credit is due for the grand condition everything is in, both outdoors and in, seems very fond of trying experiments with such as mentioned, and I was glad to see he was amply repaid for his labours. *A. O.*

Euonymus japonicus in Bloom.—I send you herewith a branch of this shrub in flower. For the information of those who may not have seen it, I may explain that the flower is very pale green, and has four sepals, petals, and stamens, the latter arising from a dark green ridge, which surrounds the ovary. The stigma is simple, crowning a quadrangular pyramidal ovary, in which there are grooves opposite the stamens. On the plant were a few white leaves, and also a few striped with white. I found it in the nursery grounds of Mr. C. Davies, at Blackpill, near Swansea. Has it flowered elsewhere? *W. T. T.* [It flowers very sparingly in our Middlesex garden every year, and on the south coast frequently. EDS.]

Bedding Violas and Pansies.—I am more and more convinced that the best method to secure a continuous bloom on these plants, with freedom from that sudden shanking-off so common to the Pansy in hot weather, is to plant in the autumn. Beds of many kinds here, that have remained untouched all the winter, are grandly in bloom, and have been so for a long time, whilst those planted out during the spring and early summer are still small, and not nearly so robust as could be desired. During hot summers I have found that every spring-planted plant of certain kinds would die off in a few weeks, whilst some autumn-planted ones remained alive and robust. This is an important fact, and cannot be too widely made known. It applies, however, only to warm situations, as farther north Violas thrive gloriously. *A. D.*

Ferns at The Mumbles.—In addition to the list given last week I can now mention having found Osmunda regalis, Lastrea Oreopteris, Blechnum spicant, Asplenium marinum, and the red-stemmed variety of Filix-femina. These occur within 2 miles of the place; and I am told that within the same radius may be found Lastrea Fœniseci; but I have not yet walked in the direction in which that Fern grows. I am also informed that there is a valley within 3 miles of this where the Royal Fern grows 15 feet high, and where Polypodium phegopteris is also found; I can believe the latter without seeing it; when I have seen Osmunda of that height I will believe that also. The commonest Fern about here (excepting Brake) is the Lady Fern; and the most frequent variety of it is the pale green plumose one, the midrib of which nearly describes a semicircle. *W. T. T.*

Vanda cœrulescens Boxallii.—This Vanda is a flower with a fine spike of some fifteen to twenty flowers, at the present time in the collection of Provost Russell, Falkirk, N.B. It is one of the importations of Mr. Low, and answers to the description given in yours of the 16th inst. *A. O.*

Entomological Specimens.—On p. 766 you advise "W. G. P." to use Laurel leaves to kill butterflies. This mode is slow, and the leaves have to be renewed often. The following I find to be the best and easiest, and costs only a few pence. Get a short bottle with a large neck—an old pomade bottle will do; into this scrape 1 oz. of cyanide of potassium (be careful, this is a powerful poison!); over this place a piece of paper or cardboard, and on the top a quarter of an inch of plaster-of-Paris. Leave the bottle open till this dries, then keep it corked. An insect put into this is stupefied in about thirty seconds,

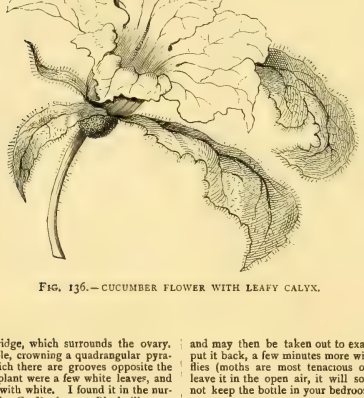


FIG. 136.—CUCUMBER FLOWER WITH LEAFY CALYX.

and may then be taken out to examine. If wanted, put it back, a few minutes more will kill most butterflies (moths are most tenacious of life); if useless, leave it in the open air, it will soon revive. Better not keep the bottle in your bedroom. *A. W. C.*

Burnet Rose.—The sandy shores of Swansea Bay are covered with sheets of white flowers, which upon closer inspection prove to belong to a dwarf Scotch Briar, seldom growing there higher than 18 inches. The blooms perfume the air for some distance with their fragrance. Its suckers extend for a long way underground, and then grow erect generally for 8 or 10 inches high, with side-shoots less than 2 inches long, each terminating in a flower. What is the species? One of the leaves has two galls. *W. T. T.* [Rosa spinosissima. The galls are very common. EDS.].

Reports of Societies.

Edinburgh Botanical.—The Society met in the lecture-hall at the Royal Botanic Garden on June 14, Dr. Cleghorn, V.P., in the chair.

The Arboretum.—Professor Balfour said that this was the first meeting of the Society since the arrangements with regard to the formation of an arboretum had been completed by the Fettes Trustees, the Town Council, and the Government. Twenty-seven acres of ground had thus been added, and the garden now embraced 54 acres. The first steps for the addition were taken by him three years ago, with the object of having room for the cultivation of trees suited to the climate of Scotland, and to prevent the feuing of the ground for buildings, which would not only have spoiled the amenity of the gardens, but would have been productive of much injury to the plants by the smoke which would have been carried over the gardens by the west winds. Mr. Alexander Beattie was the first with whom he communicated on the subject, and through him he was enabled to bring the matter under the notice of Mr. W. H. Smith, Secretary of the Treasury. The First Commissioner of Works, Lord Henry Lennox, approved of his proposal, in which also he was supported by the Lord Justice-General, the Duke of Buccleuch, and others. No one took a warmer interest in the scheme than the President of the Society, Sir Robert Christison. His next step was to go to London, and personally to bring the matter under the notice of the Treasury. He was introduced to the Secretary of the Treasury by Dr. Lyon Playfair, their zealous University member, who always takes a great interest in anything connected with the promotion of science. Having laid the case fully before Mr. Smith, shown him the plans of the ground, and urged the importance of making such an addition to the Royal Gardens, he pointed out to him that the Chief Commissioner of Works had seen the ground, and considered that it would be a most important and valuable acquisition. Mr. Smith stated that if it were proved to him that the town of Edinburgh would take an interest in the arboretum by contributing to the acquisition of the ground and handing it over to Government, the arboretum would be put under regulations similar to those of the London parks, and would be supported in all time coming by an annual grant from Government. On returning to Edinburgh he waited on the Lord Provost. To him he made a complete statement of the matter, showed him the nature of the grounds, the advantage which this acquisition would confer upon the city and upon science, and asked him to submit the matter as soon as possible to the Town Council. The Lord Provost entered most enthusiastically into the plans, and said he would do all he could to further the scheme. Many difficulties presented themselves, but by his energy, tact, and enthusiasm he overcame them all, and to his lordship the city was indebted for this important addition to its public gardens. The Government was pledged to enclose the grounds and complete the arrangements in two years, and he therefore hoped that immediate steps would be taken to fence the grounds and begin the building o' the lodges at the different entrances. £18,400, the sum for which the town was assessed, did not include the money required for the purchase of the house and garden for the Regius keeper. These, as well as a small piece of additional ground belonging to Mr. Rocheid, of Inverleith, had been purchased by Government for £4900. In granting this house to the Regius keeper, the Government had deprived him of all his salary, amounting to the sum of £120 per annum.

The Chairman said that the Society would be delighted to hear of the successful results of the negotiations with the Treasury, and he thought that the addition of the Inverleith grounds to the Botanic Garden was the greatest improvement of the city of Edinburgh, in a sanitary and educational point of view, which had taken place during the last thirty years.

The following communications were read:—

1. *Notice of a Fungus growing in enormous profusion on the ceilings and walls of Inverleith House.* By Professor Balfour.—Professor Balfour remarked that Inverleith House (recently purchased by Government for the Regius keeper's dwelling) took fire on August 1 last. The flames broke out in the attics, the partitions of which were wooden. The supply of water for extinguishing the flames being deficient, his assistant, Mr. Sadler, suggested that piping should be carried over the wall to the pond in the Royal Botanic Garden, about 300 yards distant, and that an engine be sent there to pump up the water. This suggestion being complied with was the means of preventing the total destruction of the building; the roof and upper storey, however, were completely destroyed. The house has remained in this state ever since, exposed to the rains and wind of last winter. An attempt was made to cover the roofs with tarpaulin, but the wind was too strong to allow it to remain. Sawdust about a foot deep was put to soak up the water in the rooms, but being left all winter on the floors, it did more harm than good. The ceilings, plaster on the walls, &c., are all destroyed. The flooring, which was particularly well laid, is useless, and the house cannot be habitable for at least nine or ten months. Fortunately, the insurance on the house yielded Government £1700.

There is a Scotch phrase, "It is an ill wind that blaws naebody gude," and so in this case. Amidst all this moisture, destruction, and desolation, there has sprung up on the ceilings and walls of almost all the rooms in the house—drawing-room, dining-room, and bedrooms—extensive crops of a most beautiful fungus. This was first noticed by my daughter, who brought me a beautiful specimen of this fine coloured fungus, which she had picked up on the floor, and which had fallen from the ceiling. It is a very interesting

species, having never been described before. It has since spread most rapidly by means of its minute spores, which are scattered in millions like smoke when the plants are touched. It is now to be found in all parts of the house, and the spores must be inhaled largely by any visitors.

Besides this undescribed fungus, there is also another one which Mr. Sadler noticed (another species of the genus), and which has only once before been noticed. There is also a very pretty Coprinus, which has not yet been carefully examined.

Specimens of the fungi have been transmitted to the Office of Works for inspection and information, and Dr. M. C. Cooke, the great fungologist, India Office, London, has drawn up full descriptions with figures of the species, which will appear in the next Part of the Society's *Transactions*.

It will be observed that further investigation is required before the species can be determined, and ere long we hope for a coloured drawing to commemorate the events connected with the preparation of the old mansion-house of Inverleith as an official residence for the Regius keeper of Her Majesty's garden in Edinburgh.

II. *Remarks on some British Plants in the University Herbarium and the Royal Botanic Garden.* By M. F. M. Webb.

III. *Notes on a Botanical Excursion in North Wales.* By Mr. J. C. Druce : communicated by Mr. Sadler.—Mr. Druce's paper details the principal plants seen by him during an eight days' excursion into North Wales. He appears to have limited his exploration to the usual tourist tract, visiting such places as Conway, Bettys-y-Coed, Festiniog, Bethgelert, Capel Curig, the localities of some Anglesea rarities, Llanberis, and Snowdon, so that the list he gives adds very little to information that has long been in print. The few plants that have not perhaps been heretofore recorded from the locality he assigns are Spergularia rupestris and Polygonum Raii, both, however, somewhat critical species. Amongst the rarities, he says that after long search he found a single plant of the Cotoneaster on Tyme's Head (showing that it has not yet been quite carried away piecemeal, as has been reported). The two species of Elatine were obtained from Llyn Coron, where they were first found by Mr. Wilson. Helianthemum Breweri was got near Holyhead, and Scilla verna, Orobanche Hedera, Silene nutans, Galium peregrina, Helianthemum canum, Epipactis ovalis, Wahlenbergia, Sedum Forsteri, Lobelia Dortmanna, Viola Curtisii, Knappia, Woodsia ilvensis, were gathered from well-known localities. The Lloydia serotina was not obtained. The district Mr. Druce traversed abounds in natural beauties, and as a botanical area has the merit of being the first explored in Britain, excepting the immediate environs of London. It was visited by Ray, Sherard, Dillenius, Brewer, &c., and during the last hundred years by most of our British botanists.

IV. *Notes on Open-Air Vegetation for May.* By Mr. M'Nab, Curator. (This paper is given at p. 783.)

V. *Note on the Fruiting of Holly.* By Mr. M'Nab. (This paper appeared at p. 782.)

Crystal Palace Rose Show : *June* 23.—If the directors of the Crystal Palace Company will not act upon timely warnings, but will persist in holding their annual Rose show at a time when, comparatively speaking, there are no Roses, they cannot wonder at the immense falling off in the display of Roses brought together on Saturday last. The show was at least a week too early, for so backward has been the season that many of the regular exhibitors at the Palace shows could not put in an appearance at all. Both as regards numbers and quality it was much behind former exhibitions held here ; therefore we shall not inflict a long notice of it upon our readers, and the more so as we shall have to notice next week the doings at the Alexandra Palace and St. James' Hall.

The amateurs's class for seventy-two single trusses brought out only four exhibitors, and the prizes were awarded to the following in the order named :—Mr. Henry May, Hope Nurseries, Kirklington ; Messrs. Paul & Son, Cheshunt ; Mr. C. Turner, Slough ; and Messrs. Mitchell & Sons, Pitdown. Mr. May's flowers, which, of course, could not have been grown in the open air, were, on the whole, uncommonly good for the time, and included many of great beauty. The finest blooms, judged by their size and form, brightness of colour and freshness of appearance, were those of Camille Bernardin, Prince Fortia, Comtesse de Paris, Paul Néron, Captain Christy, Marie Baumann, Etienne Levet, a most perfect bloom ; François Michelon, La France, Antoine Ducher, Louis Peronny, Dupuy Jamin, Madame Lucharme, splendidly shown in many collections ; Louis Van Houtte, and Madame Villermoz, &c. In the 2d prize collection, from Messrs. Paul & Son, we noted perfect blooms of Monsieur Noman, Annie Laxton, Maurice Bernardin, Horace Vernet, Centifolia rosea, Sultan of Zanzibar, Maréchal Niel, François Michelon, Devoniensis. Mr. Turner's flowers were smaller than those of his more successful rivals, but very fresh and clean. In the next class, which was for forty-eight varieties, three trusses of each, Mr. Turner turned the tables on Messrs. Paul & Son by coming in 1st, the last-named firm being placed 2d. Mr. Turner had some splendid blooms of La Belle Lyonaise, Madame Lacharme, Cheshunt Hybrid, Royal Standard, Marguerite de St. Amand, Elie Morel, Marquis de Castellane, Duke of Edinburgh, alba rosea, Rev. J. B. M. Camm, and John Hopper. Amongst the Cheshunt flowers were exceedingly good representatives of Boule de Neige, Annie Laxton, Abel Grand, Madame Lacharme, Xavier Olibo, Général Jacqueminot, Horace Vernet, &c. For twenty-four varieties, three trusses of each, Messrs. Paul & Son came 1st, and Mr. Turner 2d, both showing good collections. Mr. H. May also showed a fine sample, but having unfortunately misunderstood the terms of the schedule was thrown out of competition. For twenty-four varieties, three of each, Mr. G. W. Piper, of Uckfield, was 1st, and Mr. Meadmore, of Romford, 2d.

Very few amateurs took part in the competitions reserved to them. The best forty-eight distinct single trusses came from Mr. J. Davis, The Square, Wilton, whose flowers were small, but very fresh and clean. Mr. Hollingworth, Esq., Turkey Court, Maidstone, sent the best twenty-four varieties, an excellent lot, and Mr. J. Davis was 2d here. The last-named exhibitor was also 2d in the class for thirty-six, in which Mr. Jowitt, The Old Weir, near Hereford, was a good 1st. Mr. J. Riddell, Esq., E. B. Haywood, Esq., Woodhatch Lodge, Reigate, sent the best dozen, an especially good lot, and the next finest came from the Rev. J. B. M. Camm, Monkton Wyld, Charnmouth.

New Roses were shown only by two growers in the classes for twelve distinct blooms of varieties sent out in 1875-76—and for six blooms of varieties sent out during the same years, and the 1st prize in both instances went to Messrs. Paul & Son, Cheshunt, Mr. Turner taking the second honours. In the first-mentioned class Messrs. Paul & Son showed Avocat Duvivier, Jeannie Grieve, Mrs. Bardgett, Langier, Marchioness of Exeter, Marguerite Brassac, Duchesse de Vallambrosa, Abel Carrière, Emily Laxton, Sir Garnet Wolseley, Souvenir de Arthur Sansal, Sultan of Zanzibar, and Oxonian. The blooms of Emily Laxton and Sultan of Zanzibar were particularly fine. Mr. Turner's best six came in 2d, and in 3d Mr. Turner had Royal Standard, Prince Arthur, Miss Hassard, Mrs. Baker, Rev. J. B. M. Camm, Maréchal Robert, John Stuart Mill, Duchesse de Vallambrosa, Madame F. Jamin, Monseigneur Fournier, Oxonian, and Souvenir de Arthur Sansal. In the other class Messrs. Paul & Son showed a fine half-dozen of Marchioness of Exeter, which were 1st ; and Mr. Turner a capital lot of Miss Hassard. Messrs. Paul & Son also showed Emily Laxton, in very fine form.

Of the best of boxes of Roses in the show was that containing twelve Tea-scented and Noisette varieties, exhibited by Messrs. Mitchell & Sons, and which took the 1st prize in their class, Mr. Turner being 2d. Messrs. Mitchell's blooms, all of well-known varieties, were remarkably fine, fresh, and chaste. Mr. Turner sent the best dozen trusses of Maréchal Niel, very good, but not so fine as this variety has been shown. The best collection of yellow Roses also came from Messrs. Mitchell & Sons, but they were not quite up to the mark. The next best were very poor. Mr. Turner was 1st for a vase or epergne of Roses and Rose leaves only. Mr. Soden, gr. to W. O. Hanbury, Esq., Weald Hall, near Brentwood, being 2d.

Of "bouquets and objects of ornament in natural flowers" the display was somewhat extensive, and though neither better nor worse than have been shown before, as usual attracted a great deal of attention from the visitors. For table decorations the leading exhibitors were Mr. Chard, Mr. E. Sperling, Grosvenor Road, South Norwood, and Mrs. Toder, Weald Cottage, near Brentwood, the competition in all classes being very strong. The best wedding bouquet came from Mr. S. Moyses, Stockbridge Terrace, Belgravia, and the best opera bouquet from Mr. Hepburn, of the Crystal Palace. Mr. Turner was 1st for four button-hole bouquets.

Miscellaneous subjects included an excellent display of hardy herbaceous plants from Mr. Parker, a beautiful collection of skeleton leaves and flowers from Mrs. Hodgkins, Hyde Grove, Manchester ; some fine Pinks and Carnations from Mr. Turner, Verbenas from Mr. Cannell, cut Pelargoniums from Mr. C. Burley, and cut Roses from Mr. Corp.

Scottish Pansy Society's Show.—The thirty-third annual competition of the Scottish Pansy Society was held in Edinburgh on the 15th inst. The show was more of a success than was anticipated from the backward spring. The flowers exhibited were on the whole remarkably fine. A great variety were submitted to the decision of the judges by nurserymen, gardeners, and amateurs, and many of the exhibits came from comparatively distant localities. At a general meeting of the Society held in the afternoon, Mr. W. Paul, Paisley, President of the Society, in the chair, it was agreed to hold next year's show a week later than usual, in order to induce a larger number of competitors to come forward ; and that the entry-money of 1*s.*, payable by competitors on entering each exhibition stand, be abolished. The following are the names of the varieties which were adjudged the best of their class :—Dark self, Michael Saunders ; white self, Princess Beatrice; yellow self, Zama ; blue self, Sunnypark Rival ; white ground, Jeannie Fleming ; yellow ground, Robert Burns ; flower in the room, Michael Saunders, shown by Mr. Paul, of Paisley. A First-class Certificate was awarded to Mr. Paul, Paisley, for three blooms of seedling white ground Pansy Annie Wood Paul. A Certificate of Merit to Mr. Todd, Newmilns, for one bloom of seedling yellow ground, Rev. J. T. Burton. A Certificate of Merit to Mr. Paul, for one bloom of seedling mauve self, Michael Saunders. The following were among the finest named blooms : — Fancy Pansies : The Bride, James Grieve, James Taylor, J. B. Downie, Lizzie Cowan, Isa, Mr. Meeking, Rev. H. Dombrain, Miss Wallace, Mrs Taylor, Buttercup, W. Nimmo, M. Scott, Auntie Cuckoo, W. Melville, Thos. Grainger, John Currie, F. W. Leland, W. Broadfoot, Kirbie, Adonis, Mrs. Jas. Watt, Jas. White, Portia, Miss M'Nutt, Countess of Strathmore, Mrs. Birkmyre. Show Pansies : Jessie Foot, Robert Black, Jenny Anderson, Robert Burns, Bessie M'Aslan, Mrs. Arthur, Miss Hope, Annie Wood Paul, Miss Rogers, May Queen, Michael Saunders, Mauve Queen, Sir Peter Coats, Geo. Steedman, Princess Beatrice, Zama, Jeannie Fleming, Mrs. Fraser, Mrs. Horsburgh, D. M'Hutcheson, Royal Blue, D. Sutherland, Ebor, John Waterston, Captain Knowles, Jeannie Grieve, Rev. J. T. Burton, Sunny-Park Rival. (*From a Correspondent*). [We have omitted the prize list, for which we are unable to find space. EDS.]

Diss Horticultural : *June* 20.—This exhibition was held in conjunction with the annual gathering of the Norfolk Agricultural Association held this year in the above town. The latter body placed at the disposal of the committee of the flower show the sum of £75, and this with subscriptions and donations enabled the committee, of which the Rev. H. T. Frère, of Burston Rectory, was honorary secretary, to put forth a fairly attractive schedule of prizes. A horticultural society formerly existed at Diss, but died out for want of public support, but it is hoped that the holding of the above exhibition will be the means of again starting the defunct society. The town and its neighbourhood ought to furnish material for a good show.

The exhibition took place in the grounds of F. Chase, Esq., closely adjoining the Agricultural Show. It was by no means large, but then it was the commencement of what it is hoped will become a permanent institution. The Rev. H. T. Frère, Mrs. Steward, and Miss Taylor were the principal exhibitors of stove and greenhouse plants ; and some small but nicely grown exotic Ferns came from C. Mason, Esq. (H. Reeve, gr.), and G. H. Wilson, Esq. Mr. Mason's plants were mostly excellent examples each of Todea hymenophylloides, of good size and in capital condition. Strange to say there we all differently named, some of them after entirely distinct species bearing no resemblance whatever to them.

The group of six variegated Zonal Pelargoniums shown by the Rev. H. T. Frère was much superior in growth and finish to anything staged at the exhibition of the Pelargonium Society at South Kensington on the previous day. The Balsams from Miss Steward and G. E. Frère, Esq., the Cockscombs from the last-named ; the fine show of Hendon, Esq., and the Rev. H. T. Frère ; the Calceolarias from H. Taylor, Esq., were all in good condition.

Cut flowers were represented by some excellent Roses from Miss Penrice, Norwich, the Rev. H. T. Frère, and Miss Steward. The former was to the fore in all the classes, and showed some excellent flowers, the season considered. Général Jacqueminot, Maréchal Niel, Niphetos, Madame Caroline Kuster, Madame Marie Cointet, Perle de Lyon, and Madame C. Wood were remarkably good. Cut flowers of stove and greenhouse plants and hardy flowers were good, so were the Zonal Pelargoniums, which were well represented. There were also table decorations, bouquets, and wild flowers, the latter containing some pretty things, particularly the Bee Orchis.

Fruit and vegetables were sparingly shown, with the exception of Cucumbers, which were in strong force. The cottagers' classes were pretty well represented, and there was evidence, if the show be continued, that the cottage growers will do their share in a proper way in the time to come.

Messrs. Daniels Bros., seedsmen, Norwich, sent some plants of Mimulus cupreus Brilliant, very bright and effective ; some good blooms of double Fyrethrums, and also of Zonal Pelargoniums, which were Highly Commended. Out in early spring, in

well-prepared beds, the plants would in all probability bloom at the end of April and early in May. It has a close, compact habit of growth, which becomes completely covered with bright golden-yellow flowers.

Romford and Essex Horticultural: *June* 21.—The annual exhibition of this Society, which took place in Marshall's Park, was in most respects a good one. The exceptional feature was a falling off in the display of fruit and vegetables, the latter being by contrast of a very meagre description; indeed, in the matter of cottage produce there was barely more than two exhibitors in the arena, and these between them took most of the prizes offered. It is to be regretted that the past ungenial weather has proved of great injury to the exhibitors in regard to this wholesome addition to his simple "fare."

The chief feature of interest was the collection of eight stove and greenhouse plants in flower, staged by D. McIntosh, Esq., Havering Park (Mr. Bones, gr.), which, by a technical oversight on the part of Mr. Bones, was disqualified. His rival exhibitor in this class, Major-General Fytche (Mr. Lane, gr.), protested against the collection on the ground that four cuttings of Stephanotis floribunda originally placed in one pot to strike had not been separated but grown on to the specimen size, and this specimen had to be withdrawn from competition by Mr. Bones. This collection was, however, in every other respect far in advance of that staged by Mr. Lane, consisting, amongst others, of an excellent Pimelea mirabilis, Erica obbata, &c.; and to it the judges awarded an extra 1st prize equal in amount to the 1st prize, which was attached to Mr. Lane's collection. Orchids were not numerously shown, the finest example being a three-flowered specimen of Cattleya Mendelii, a splendid variety with sepals and labellum of the richest tints and substance. In this same collection, shown by Mr. Bowick, Higham Hill (Mr. Walton, gr.), was a neatly-flowered block specimen of Cattleya supera. This exhibitor was 2d with single stand plants—F. Whitbourne, Esq. (Mr. Douglas, gr.) being 1st, with neat masses, including Dendrobium formosum, Odontoglossum crispum, &c.; for six Cape Heaths, Mr. Bones was 1st with a neat specimen of Candolleanum and others. Neat double Pelargoniums were staged by O. Hanbury, Esq. (Mr. Soder, gr.). Mr. Meadmore, Romford, had for the early season excellent cut Roses. Mrs. C. Burley, Brentwood, staged the most elegant stand for table decoration, and in a Hundred class Mr. Soder was 1st with a very tasteful arrangement. Mr. Burley also showed his remarkable new Pelargoniums, Tom Bowling, Immaculata, Mrs. J. C. Quennel, and Silvia. Cape Pelargoniums were extremely well staged by Mr. Bones, his Rob Roy and Chieftain possessing a great quantity of flowers. The latter exhibitor also carried off the higher honours for a collection of fruit. Many other meritorious subjects were staged, but they call for no especial remark. *W. E.*

Obituary.

WE have this week to record the death of Mr. CHARLES LIDGARD, of Albion Road, Hammersmith, one of the older members of the metropolitan fraternity of florists, now rapidly disappearing. Mr. Lidgard was born on February 19, 1810, and was consequently in his 68th year. He was a sound and conscientious judge of most of the popular florists' flowers, and as one of the representatives of this department of floriculture was selected many years since as a member of the Floral Committee of the Royal Horticultural Society, at the meetings of which he has subsequently been a pretty constant attendant, though of late his tottering footsteps have indicated that his life-journey was nearly accomplished. Mr. Lidgard was in former days a grower and exhibitor of Auriculas and Pansies, and latterly has been a cultivator and exhibitor of Celery, for which he has occasionally taken prizes at South Kensington. He died on June 20, and was buried at Kensal Green on Tuesday last.

—— On June 1 there died at Eccleshall, near Sheffield, at the age of sixty-two years, Mr. JOSEPH WALKER, a most worthy and successful florist, well known in his particular sphere, and respected by many attached friends among Auricula cultivators. His death was unexpected, and he was interred at Eccleshall Church, near Sheffield, on June 4, in the presence of many sorrowing floricultural friends who left the ground with hearts full of "tranquil memories for the dead." From his earliest years a love of gardening pursuits, and especially of florists' flowers, was inherited by Joseph Walker. From his attached friend Ben Simonite we learn that when he first knew him, now many years age, he was gardener at Banner Cross, near Sheffield, and at that time was famous as a Polyanthus grower. Afterwards he removed to Ford Hall, Chapel-le-Frith, with the family with which he was living, carrying with him his stock of plants, and whilst there he purchased a few Auriculas, not more than half a dozen, from which he raised the following fine seedlings:—George Levick, John Simonite, Peveril of the Peak, Nimrod, and several others, which he lost. Those named are very fine flowers, and have been most favourably mentioned; at present the varieties are in the hands of a few only, but they will be distributed as soon as the stock of plants in cultivation will admit of its being done. About five years ago Joseph Walker gave up active gardening pursuits, and came to reside again at Banner Cross, to manage the Eccleshall estate. At the early age of nine years Joseph Walker commenced the pursuit of gardening under his uncle, who was at that time gardener to Mr. Grieves, of Banner Cross, and when his uncle died he succeeded him in that post.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, JUNE 27, 1877.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.					Hygrometrical Deductions from Glaisher's Tables 6th Edition.		WIND	RAINFALL.
	Mean Reading at 9 A.M. less 30".	Departure from Mean of 18 years.	Highest.	Lowest.	Range.	Mean of Day.	Departure of Mean of Day from Mean of 6o Years.	Dew Point.	Degree of Saturation, 100.	Average Direction.	
June	In.	In.	°	°	°	°	°				In.
21	23.66	−0.14	77.6	56.4	21.2	67.0	+ 1.9	49	68	E. N. E.	0.00
22	29.41	−0.39	72.1	57.5	13.6	62.7	+ 2.3	52	68	S. W. S. W.	0.01
23	29.68	−0.13	67.2	52.0	15.2	57.4	− 3.3	44	69	W. N. W.	0.00
24	29.93	+0.12	66.9	48.0	18.0	56.8	− 3.9	41.8	67	W. N. W. W.	0.00
25	29.96	+0.15	73.0	47.1	25.9	58.2	− 2.9	44.2	59	W. S. W.	0.02
26	29.92	+0.10	67.4	50.3	17.1	57.8	− 3.4	51.8	81	S. W.	0.00
27	29.99	+0.17	70.0	54.2	16.7	59.0	− 1.6	52.3	77	N. E. N. W.	0.03
Mean	29.79	−0.02	70.6	51.5	19.2	59.2	− 1.6	48.1	67	variable	sum 0.04

June 21.—Fine, bright, partially cloudy till evening. Overcast, dull, with few drops of rain at night.
— 22.—Fine bright day. Very cloudy and dull at intervals. Little rain fell in afternoon. Windy.
— 23.—A fine day, cool and cloudy. Windy.
— 24.—A fine day, but neither warm nor bright. Cool.
— 25.—A fine bright day. Partially cloudy. Cool.
— 26.—Fine, but very cloudy. Dull, with slight rain at times. Cool. Windy.
— 27.—Dull and showery till 11 A.M. Fine and bright afterwards.

LONDON: *Barometer.*—During the week ending Saturday, June 23, in the vicinity of the metropolis the reading of the barometer at the level of the sea decreased from 30.10 inches at the beginning of the week to 30.04 inches by noon on the 17th, increased to 30.12 inches by the morning of the 19th, decreased to 29.57 inches by the afternoon of the 22d, and increased to 30 inches by the end of the week. The mean reading for the week at sea level was 29.94 inches, being 0.14 inch below that of the preceding week, and 0.04 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 84° on the 19th, and 84° on the 18th, to 67° on the 23d; the mean value for the week was 75°. The lowest temperatures of the air observed by night ranged from 50° on the 21st to 57° on the 22d; the mean for the week was 54°. The mean daily range of temperature in the week was 23°, the greatest range in the day was 30° on the 18th, and the least 13° on the 22d.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—17th, 65°.7, + 6°.4; 18th, 67°.3, + 7°.8; 19th, 67°.8, + 8°.1; 20th, 63°.5, + 3°.6; 21st, 62°, + 1°.9; 22d, 62°.7, + 2°.3; 23d, 57°.4, − 3°.3. The mean temperature of the air for the week was 63°.8, being 3°.8 above the average of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 153° on the 18th, 150° on the 17th, 147° on the 19th, and 144° on the 21st; the mean for the week was 142°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 39° on the 23d, 42° on the 17th, and 42° on the 18th; on the 22d the lowest readings was 52°.

Wind.—The direction of the wind was E., and its strength gentle. The weather during the week was fine, bright, and warm.

Rain fell on the 22d, but only to the amount of 0.01 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 88° at Manchester, 85½° at Cambridge, 84½° at Blackheath, and 84° at Bristol; at Hull the highest temperature was 72°. The mean value from all stations was 79½°. The lowest temperatures of the air observed by night were 42½° at Cambridge, 43° at Sheffield, and 44½ at Eccles; at Brighton the lowest temperature was 55°. The mean value from all stations was 48½°. The range of temperature in the week was the greatest at Cambridge, 42½°, and the least at Portsmouth, 19°; The mean range of temperature from all stations was 31½°.

The mean of the seven high day temperatures was the highest at Cambridge, 79½°, and the lowest at Sunderland, 65°; the general mean from all stations was 74°. The mean of the seven low night temperatures was the lowest at Cambridge, 49½°, and the highest at Portsmouth and Plymouth, both 57½°; the mean from all stations was 53°. The mean daily range of temperature in the week was the least, 13°, at both Portsmouth and Sunderland, and the greatest, 30°, at Cambridge; the mean daily range from all stations was 21°.

The mean temperature of the air for the week from all stations was 61½°, being 1½° higher than the value for the corresponding week in 1876. The highest was 63½°, at Blackheath, Bristol, and Manchester; and the lowest 56½°, at Sunderland.

Rain fell on two or three days in the week at most places. The amounts varied from seven-tenths of an inch at Nottingham to one-tenth of an inch at Cambridge, Bradford, and Leeds; at Blackheath one-hundredth of an inch (only) fell. At Truro 2 inches was measured (1.92 inch of which fell on the 21st inst.), whilst at Plymouth and Bristol three-tenths of an inch was recorded. The average fall over the country was four-tenths of an inch.

The weather during the week was fine and warm. *Fog* prevailed at Cambridge on the 19th, 20th, and 21st, and *thunder* was heard at Hull on the 22d.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 77½° at Greenock, and 76° at Glasgow, to 59½° at Leith; the mean value from all stations was 69½°. The lowest temperatures of the air ranged between 41° at Perth, and 46° at Greenock; the mean from all stations was 44½°. The mean range of temperature from all stations was 25½°.

The mean temperature of the air for the week from all stations was 56½°, being 2½° lower than the value for the corresponding week in 1876. The highest was 61° at Greenock, and the lowest 53° at Leith.

Rain.—The amount of rain measured at Perth was 1¼ inch; at Aberdeen 1 inch fell; at Paisley one-tenth of an inch only was measured; the general average fall over the country was six-tenths of an inch.

DUBLIN.—The highest temperature of the air was 81°, the lowest 38½°, the range, 42½°, the mean 61°, and the fall of rain 0.29 inch.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—BACON.

193. WISTARIA AND LABURNUM.—Would it be possible to bud or graft the Wistaria on Laburnum, as the two are somewhat nearly allied? *G. Bath, June* 25. [Try it. EDS.]

Answers to Correspondents.

AMERICAN WATCHES: *H. S. M.* Your question is not a horticultural one, but the address you require is that of Messrs. Robbins & Appleton, Waltham Buildings, Holborn Circus, E.C.

APPLES: *H. B.* What you send is the American blight. Brush the stems wherever you can get at the insects with a hard brush, and in winter give the trunk a thorough cleansing with soap and water.

BOOKS: *B. & S.* Thompson's *Gardener's Assistant*, new edition (Blackie & Co).

INSECTS: *Rev. J. Y. B.* Oribatus (Damæus) geniculatus, an Acarid, which is said by some to be injurious to trees and by others to be harmless. It would be well if our correspondent kept his eye upon them, and favoured us with the result of his own observations. *A. M.*—*T. H.* Cytus ariella, a timber-boring longicorn.—*T. S. P.* Anthrenus museorum, the museum pest in all parts of the world. *A. M.*

JUNIPERUS VIRGINIANA AUREA ALBA SPICA.—This plant, which gained a First-class Certificate at the last meeting of the Floral Committee, was inadvertently alluded to as having been exhibited by Messrs. Fisher, Holmes & Co., instead of Mr. Holmes, Whittington Nursery, Lichfield.

LOBELIA: *J. C.* The sample sent was too small and too much pressed coming through the post to give an opinion about it. The colour appears to be very deep and rich.

NAMES OF PLANTS: *R. B.* Rhus Cotinus, the Wig plant.—*T. D. S.* We cannot undertake to name Roses or florists' flowers of any kind.—*J. C. C.* Aralia Sieboldi.—*C. E. F.* 1, Cupressus Lawsoniana; 2, C. macrocarpa.—*H. F. M. G.* The specimens have been mislaid, and, moreover, are of no horticultural interest.—*T. K. B.* Sempervivum punctatum.—*W. T. T.* A Mesembryanthemum escaped from gardens. We cannot recognise it without flowers.—*A. G. F.* Koeleria cristata.—*S. T.* 1, Luzula nivea; 2, Dianthus hirtus.—*H. M. E.* Pyrethrum roseum.—*C. Darwin.* 1, Selaginella Martensi; 2, S. M. variegata; 3, S. Kraussii; 4, S. Martensi brevifolia; 5, S. Galeottiana; 6, S. Martensii divaricata (flexuosa); 7, S. uncinata.—*W. W.* 1, some Begonia, but we cannot undertake to say which; 2, Francoa sonchifolia; 3, Adiantum Capillus-Veneris; 4, Polystichum angulare proliferum; 5, Adiantum cuneatum. All very bad specimens, badly packed, like a wisp of hay, instead of flattened.—*H. H.* 1, the Rose is the old double-white; 2, Bignonia speciosa.—*J. McDonald.* Polystichum aculeatum bolbonense.—*C. W. D.* One of the double-flowered varieties of Pyrethrum roseum. They are usually increased by seeds (the seedlings vary) or by division; but possibly the lower joints of the flowering stem would grow if planted as cuttings. We have, however, no experience on this point.—*C. E. F.* Silene quadrifida.—*W. H.* 4, Selaginella Martensii; 6, S. Kraussii. The other specimens are not sufficiently good.—*R. P.* Appears to be one of the Ceriothes, but the specimen is too imperfect to say more of it.

PEACHES: *H. C. D.* This is simply a case of gumming, exactly like what takes place on the wood, and every cultivator knows what that depends on. You must apply similar reasoning to your Peaches. The probable city is that it originated in the dull, cloudy weather. *M. J. B.—F. J.* Peaches, which in earlier stages were attacked by the common Peach mildew, which is now dead, but supplying a nutriment to other fungi. Part of the threads are, however, due probably to the germinating of the spores of the mildew. We fear it is too late to apply any remedy. *M. J. B.*

FOSE: *H. H.* Evidently the "Old Double White," belonging to, and a *fac simile* of "Maiden's Blush," of the old nurseries. Rosa alba. It is a double form of the older "Aimable Felix," perhaps never catalogued since Hooker, nurseryman, Brenchley, Kent, issued a list of normal forms about the year 1830.

VARIEGATED VERONICA: *A. McKinnon.*—Your variegated sport from Veronica chamædrys is apparently a very pretty thing, and will probably prove useful as an edging plant. By all means give it a trial.

VARIOUS: *E. W. I.* We cannot name such a scrap. 2, English Iris, Spanish Iris, Iris Pavonia, persicæ, and reticulata; these are all cheap, and nothing could be more showy. 3, Ixias, and the various of Iris barbata, planted in the autumn, so that they would have a good hold of the ground to resist the heat of summer, we find do well on dry ground. Iris alata, caucasica, cristata, heterica, stylosa, susiana, tuberosa, and, we apprehend, most of the other species of Iris, will do well on the soil described. With reference to Liliums, the varieties of bulbiferum, croceum, Dalhuricum, candidum, longiflorum, chalcedonicum, Hansoni, monadelphum, pomponium, pyrenaicum, testaceum, auratum, speciosum, and tigrinum—with due regard to shade and situation, and with a little preparation of the soil—would we believe do well. 3, All the Gladioli will succeed, we have no doubt, as the thing they have to contend with most is the excess of moisture in winter. It is difficult to answer such questions satisfactorily, and our correspondent must do as other people have to do—try and find out for himself. The royal road to knowledge in the adaptation of plants is through the pocket in the first place, and those who are not prepared for the first step may follow the Irishman's example by omitting it and taking the next. 4. Any not too highly bred variety of Camellia we believe perfectly hardy in sheltered districts.

VINES: *J. V.* Without details of management we say what is the probable cause of the constitutional debility, which the Vines clearly show by the leaves turning yellow. The berries are simply scalded. Give air earlier in the morning.

CATALOGUES RECEIVED.—Messrs. Messenger & Co. (Midland Horticultural Works, Loughborough), Illustrated Catalogue of Greenhouses, Hot-water Apparatus, &c.—Messrs. W. Rollisson & Sons (Tooting, London, S.W.), General Catalogue of Orchids, Stove, Greenhouse, Hardy, Alpine and Bedding Plants, Roses, Vines, &c.

COMMUNICATIONS RECEIVED.—G. D. V. (thanks).—A. O. (thanks).—H. G. R.—F. D. H.—J. B.—J. C. & Co.—J. V. & Son.—W. B.—W. D. F.—C. T. T.—A. O. W.—E. S.—A. M. T.—W. T. S. J.—A. W. (next week).—D. T. F. (accepted).—C. S.—B. R. C.—H. G. E.—W. E.—J. S.—A. W.

Markets.

COVENT GARDEN, June 28.

Business has been somewhat quieter during the week. Grapes selling badly, but Peaches in demand. Outdoor Strawberries have now made their appearance, and show signs of a fair crop. St. Michael Pines have now finished for the season, those now arriving being coarse, and dry eating. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d.	s. d.
Apricots, per box	.. 2 or 3	0
Cherries, per box	.. 2 or 3	6
Grapes, per lb.	.. 3 or 8	0
Lemons, per 100	.. 4 or 10	0
Melons, each	.. 4 or 10	0
Oranges, per 100	.. 12 or 20	0

	s. d.	s. d.
Peaches, per doz.	.. 10 or 36	0
Pears, per doz.	.. ..	..
Pine-apples, per lb.	.. 2 or 6	0
Strawberries, per lb.	.. 0 or 1	6
Figs, green, each	.. 0 or 1	6

VEGETABLES.

	s. d.	s. d.
Artichokes, English	.. ..	..
Globe, doz.	.. 2 or 4	0
Asparagus, English, per bundle	.. 3 or 6	0
— Sprue, per bun.	1 6	..
Aubergines, p. doz.	.. 6 or ..	..
Beans, French (new), per 100	.. 1 3	2 6
Beet, per doz.	.. 0 or 4	0
Cabbages, per doz.	.. 1 or 2	0
Carrots, per bunch	.. 0 or 7	0
— New French, per bunch	.. 1	6
Cauliflowers, per doz.	.. 1 or 2	0
Celery, per bundle	.. 1 6	2 0
Chilis, per 100	.. 3	..
Cucumbers, each	.. 0 or 1	6
Endive, per doz.	.. 1 or 2	0
— Batavian, p. doz.	2 or 3	0
Garlic, per lb.	.. 0 or ..	..
Gooseberries, green, per quart	.. 0	6 ..
Herbs, per bunch	.. 0 or 2	4

	s. d.	s. d.
Horse Radish, p. bun.	4	0 ..
Leeks, per bunch	.. 0 or 0	4
Lettuces, per score	.. 1 or 2	0
Mint, green, bunch	0	6 ..
Mushrooms, per pott.	1 or 3	0
Onions, per bush.	.. 1 or 2	0
— young, per bun.	0	6 ..
Parsley, per bunch	.. 0	2 ..
Peas, green, p. bush	3 or 6	0
— shelled, per qt.	4 or ..	..
Radishes, per bunch	.. 0	1 or 3
Salsafy, per bundle	1 or ..	..
Shallots, per lb.	.. 0	6 ..
Spinach, per bushel	.. 2 or 3	0
Tomatos, per doz.	.. 3 or ..	..
Turnips, per bundle	4 or 6	0
— new, per bundle	1 or 1	6
Vegetable Marrows, doz.	.. 3	0 to 6 0

Potatos, old, are nearly finished.—New: Jersey Kidneys, 14s. to 20s. cwt.; Rounds, 12s. to 16s. cwt.

CUT FLOWERS.

	s. d.	s. d.
Bouvardias, per bun.	4	0 ..
Calceolaria, p. bun.	1 or 2	0
Carnations, per dozen	6 or 2	0
— in 12 bunches	2 or 3	0
Cornflower, 12 bun.	3 or 9	0
Daisies, 12 bunches	2 or 6	0
Eschscholtzia, 12 bun.	2 or 6	0
Eucharis, per doz.	6 or 12	0
Gardenia, per doz.	4 or 8	0
Heartsease, 12 bun.	1 or 6	0
Heliotropes, 12 spr.	0 or 1	0
Iris, 12 bunches	6 or 12	0
Lilies (in var.), p. spr.	0 or 2	0
Mignonette, 12 bun.	4 or 9	0
Myosotis, 12 bunches	6 or 12	0
Pelargoniums, 12 spr.	0 or 2	0
— zonal, 12 sprays	2 or 3	0

	s. d.	s. d.
Pinks (white and coloured), 12 bun.	3 or 6	0
Primula, double, per bun.	1 or 2	0
Ranunculus, 12 bun.	4 or 9	0
Rhodoclend., 12 bun.	4 or 9	0
Rocket, 12 bunches	3 or 6	0
Roses (outdr.), 12 bun.	3 or 9	0
— (indoor), per doz.	1 or 2	0
— moss, 12 bunches	6 or 12	0
Rose de Meaux, 12 bunches	1 or 6	0
Spiræa, 12 sprays	1 or 4	0
Stephanotis, 12 spr.	2 or 9	0
Thunbergia, per doz.	9 or 36	0
Sweet Peas, 12 bun.	3 or 9	0
Tropeolum, 12 bun.	1 or 4	0

PLANTS IN POTS.

	s. d.	s. d.
Balsams, per dozen	4 or 12	0
Bedding-out plants, per doz.	1 or 3	0
— in boxes, each	1 or 2	6
Begonias, per doz.	6 or 12	0
Bouvardias, per doz.	12 or 24	0
Calceolaria	.. 6 or 18	0
Clematis	.. 9 or 18	0
Cockscombs, per doz.	6 or 12	0
Coleus, per dozen	3 or 9	0
Cyperus, do.	6 or 12	0
Dracæna terminalis	30 or 60	0
— viridis, per doz.	18 or 24	0
Ferns, in 60's, per doz.	18 or 30	0
Ficus elastica, each	2 or 15	0
Fuchsias, per dozen	4 or 18	0
Heaths, variety, doz.	12 or 60	0

	s. d.	s. d.
Heliotrope, per doz.	6 or 18	0
Hydrangea, per doz.	12 or 30	0
Lobelias in var., per doz.	1 or 2	0
Mignonette, per doz.	5 or 9	0
Myosotis, per dozen	4 or 12	0
Palms in variety, each	1 or 21	0
Palms in variety, each	3 or 21	0
—largo-minus, p. doz.	9 or 36	0
— scarlet, per doz.	2 or 9	0
Petunias, per doz.	9 or 24	0
Rhodanthe, per doz.	6 or 12	0
Richardia æthiopica, per doz.	9 or 18	0
Roses, per dozen	12 or 24	0
— fairy, per dozen	9 or 18	0
Spiræa, per doz.	12 or 30	0
Valotta purpur., doz.	12 or 18	0

CATTLE.

On Monday, at Copenhagen Fields, the demand for beasts showed an increase, as 1 prices on the average were higher. Sheep were readily disposed of at a small advance on last week's quotations; but the trade was scarcely as good for lambs. The few calves on offer made about as of late. Quotations:—Beasts, 4*s.* 6*d.* to 5*l.* 4*d.*, and 5*l.* 8*d.* to 6*l.* 2*d.*; calves, 5*l.* to 6*l.* 4*d.*; sheep, 5*l.* to 5*l.* 6*d.*, and 5*l.* 10*d.* to 6*l.* 8*d.*; lambs, 7*l.* to 8*l.* 2*d.*; pigs, 4*l.* to 5*l.* 4*d.*—On Thursday beasts sold slowly, at barely Monday's prices. Sheep were quiet, but tolerably steady. Lambs were barely so firm, and calves showed no change.

HAY.

At Whitechapel Market on Tuesday the supply of hay and straw on sale was rather limited, but the trade was slow, at about former prices. Prime Clover, 100*l.* to 120*l.*; inferior, 70*l.* to 95*l.*; prime meadow hay, 90*l.* to 110*l.*; inferior, 70*l.* to 85*l.*; and straw, 43*l.* to 57*l.* per load of 36 trusses.—On Thursday there was a moderate supply on sale. The trade was flat, at unaltered prices. Quotations: — Clover, best, 100*l.* to 128*l.*; inferior, 85*l.* to 95*l.*; hay, best, 90*l.* to 117*l.*; inferior, 70*l.* to 85*l.*; and straw, 44*l.* to 57*l.* per load.—Cumberland Market quotations: — Superior meadow hay, 128*l.* to 135*l.*; inferior, 105*l.* to 112*l.*; superior Clover, 132*l.* to 140*l.*; inferior, 110*l.* to 120*l.*; and straw, 55*l.* to 60*l.* per load.

POTATOS.

The Borough and Spitalfields report state that there was a moderate supply, which changed hands steadily, at the following prices:—Old Flukes, 140*l.* to 160*l.*; Victorias, 120*l.* to 160*l.*; rocks, 100*l.* to 120*l.*; Regents, 100*l.* to 110*l.*; New Jersey, round, 180*l.* to 200*l.*; do., kidneys, 220*l.* to 280*l.* per ton.—The imports into London last week comprised 2120 packages, 399 sacks, and 289 cases from Malta, 1975 bags Kolberg, 1306 packages Lisbon, 623 cases 377 boxes Barfleur, 300 bags 181 baskets Rotterdam, 67 sacks Rouen, 65 bags Palermo, 44 casks Gibraltar, 284 bags Cherbourg, 90 packages Jersey, 20 cases Oporto, and 12 bags Hamburg.

SIMPSON'S RED SPIDER, THRIPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6*s.*; per pint, 3*s.* 6*d.* Supplied to Seedsmen and Chemists. Strongly recommended in the *Gardener*, and by many first-class Gardeners.
Prepared by JOHN WALLNER, Wortley, near Sheffield.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1850, against Red Spider, Mildew, Thrips, Greenfly, and other Blight in solutions of from 1 to 5 ounces to the gallon of soft water, and of from 4 to 6 ounces to a water dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seedsmen, in Boxes, 1*s.*, 2*s.*, and 6*s.* 6*d.* Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60*s.* to 100*s.* per 100; superior close-woven, 40*s.*, 50*s.* and 55*s.* per 100: Packing Mats at 20*s.*, 30*s.*, and 35*s.* per 100; and all other descriptions of Mats at equally low rates, at
J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post-free on application.
JAS. T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.C.

MR. MECHI'S ADDRESS to his OLD FRIENDS and CUSTOMERS and to the PUBLIC:—

"As it has been erroneously supposed by some that I am no longer interested in the London business, I think it desirable to state that I continue to carry it on as energetically, and I trust as satisfactorily to the Public, as formerly, assisted by my only son, who will in due time succeed me. It is now fifty years ago since I first commenced business in Leadenhall Street, and what changes have taken place! Then everybody shaved, and my razor and razor-strop trade was immense; now moustache and beard are the order of the day, and the razor and strop trade is comparatively trifling. Then there were no railways, so people stayed at home and used wooden dressing-cases; now everybody travels by rail, and we have dressing-bags to suit the altered conditions. Fifty years ago the poor spent equally low rates, and many a new rich merchant in the City will remember the quality of Mechi's shilling pen-knives; but steel pens have extinguished the pen-knife trade and the penmaking machines, and the geese are in peace, except at Michaelmas. In fact, steam has altered, and, I may safely say, improved everything, and has made us a nation of travellers both by land and sea. I wonder how much time is now occupied in reading the steam-worked press? and how much less time is occupied in supper, port wine, as we used to do fifty years ago, when we could not travel? Steam will make our 4*l.* lb loaves cheaper some day, just as it has converted calico from 22*s.* 6*d.* to 6*d.* or less per yard. Then, again, a letter which used to cost 1*s.* 6*d.* to Cork can be carried for 1*d.* Sir Rowland Hill richly deserves a monument. But to return to business: fifty years ago, when I first commenced on a small scale, I made it an axiom that what I sold should be good and useful, and I believe thousands who used the strop and paste, which I personally invented, can testify to this; it fact, it was sometimes complained of that I stamped on my razors 'Exchanged if not approved.' I have never, and shall never so long as I live, deviate from that principle, because it is the true means to retain and increase one's connection. I devoted my attention especially to the quality and convenience of arrangements in the dressing bag and dressing case department, and in the tasteful selection of articles suitable for presentation, as well as on the matter of dispatch boxes and writing cases. Although both razors and penknives have 'gone out,' our sportsmen remain, and 'sporting knives' form one of our special departments. I feel firmly convinced that what as to the future of the departure of knives and forks, or dinners, so we make this an important department in quality and price. In conclusion, I ask no favours, but simply desire that my customers should compare the quality and price of my wares with those of other dependable establishments, and form their own conclusions. Most of my worthy assistants and workmen have been nearly forty years in my service, and long ago learned that civility and attention to our customers are as important as good quality in the articles sold. Illustrated catalogues will be forwarded post-free on application."

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Garden Seats, Awnings and Tents, Rustic Tables, Chairs, and Flower Stands, Lawn Mowers, Garden Rollers, Water Barrows, Wheelbarrows, Garden Tools, Fancy Wirework, Birdcages, Hammocks, and all kinds of Garden Furniture at lowest market prices.

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B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., in 16-oz. and 21-oz.



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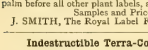
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WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability. Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.
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Is in use over many thousand miles,
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It is constructed with
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Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

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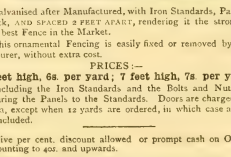


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IN WROUGHT AND CAST IRON,
Designed for the Mansion, Villa, or Farm,
WICKET AND GARDEN GATES,
In Great Variety of Patterns.
Iron Hurdles, Railing, Tree Guards,
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NEW POULTRY FENCING,
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This ornamental Fencing is easily fixed or removed by any labourer, without extra cost.
PRICES:—
6 feet high, 6*s.* per yard; 7 feet high, 7*s.* per yard.
Including the Iron Standards and the Bolts and Nuts for securing the Panels to the Standards. Doors are charged 5*s.* extra, except when 12 yards are ordered, in which case a door is included.
Five per cent. discount allowed or prompt cash on Orders amounting to 40*s.* and upwards.
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TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3*d.* per yard, or 100 yards, 20*s.*; 4 yards wide, 6*d.* per yard, or 50 yards, 20*s.*
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6*d.* per yard; 4 yards wide, 12*s.* per yard; ¾-inch mesh, 4 yards wide, 12*s.* 6*d.* per yard.
TIFFANY, 6*s.* 6*d.* and 7*s.* 6*d.* per piece of 20 yards.
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EDGINGTON'S GARDEN NETTING the cheapest and most durable, at 1*s.* per square yard, or in quantities of 250, 500, or 1000 yards, carriage free.
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GREENHOUSES for SALE.—To be Sold Immediately, THREE GREENHOUSES, THREE TWO-LIGHT CUCUMBER FRAMES, and a COLD FRAME—78 feet long. Photographs will be sent on receipt of twelve stamps. Apply to
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JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	*s.*	*d.*
20 in.	18 in.	18 in.	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	32 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1,000	16	0	0
24 ,,	24 ,,	48 ,,	1,400	20	0	0
28 ,,	28 ,,	60 ,,	1,800	25	0	0

Larger sizes if required.

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"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I have to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.
J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.
When ordering Boilers please refer to the above advertisement.

ROSES, ROSES, ROSES.

SPECIAL NOTICE.

THE GARDENERS' CHRONICLE

For NEXT SATURDAY (July 7), will contain a SPECIAL REPORT of the

GREAT ROSE SHOW AT ST. JAMES'S HALL ON JULY 4,

ALSO A

TWELVE-PAGE SUPPLEMENT

DEVOTED TO

THE ROSE,

And a Double-Page (18 inches by 13 inches)

BEAUTIFULLY COLOURED PLATE

Of a GROUP of ROSES, by FITCH, entitled

"OUR BOUQUET."

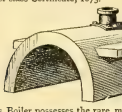
PRICE FIVEPENCE, POST-FREE FIVEPENCE-HALFPENNY.

☞ *NOTICE TO ADVERTISERS.—As a very large Extra Circulation of the above Number is anticipated, Advertisers are particularly requested to send in application for space not later than Tuesday next.*

W. RICHARDS, 41, WELLINGTON STREET, STRAND, LONDON, W.C.

Silver Medal, 1874.

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"I have no doubt the Best Boiler, that will burn any kind of fuel, is the Terminal Saddle."—*Journal of Horticulture*, p. 327.

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Prospectus post free.

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AN EXTRAORDINARY BOILER.—During the Great Boiler Contest at Birmingham, in 1872, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 100 feet of 4-inch pipes, and yet had more than 1 bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners. This was THE CHAMPION, Deards' Patent Close-Coil Boiler, for Drawings and Prices of which send two stamps to

Messrs. DEARDS, Boiler Works, Hanlow,

who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

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STEAM PLOUGHING MACHINERY

ROAD LOCOMOTIVES, TRAMWAY LOCOMOTIVES, STEAM ROAD ROLLERS.

For Prices, Description, and Reports of Working, apply to the Manufacturers,

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After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved. For Illustrations, with full particulars, apply to the Sole Makers,

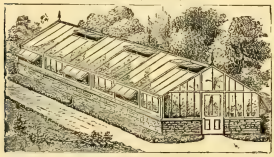
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HOT-WATER ENGINEERS, &c., &c.,

Castle Hill Works, Newcastle, Staffordshire.

☞ Our Boilers are the ONLY ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

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NEW PATENT "CLIMAX" BOILER (1874). See p. 666, 1874, *Gardeners' Chronicle.*

"GOLD MEDAL" BOILER (Birmingham, 1872).

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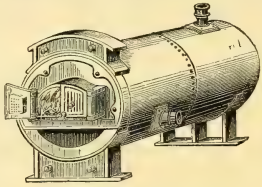
☞ *The largest and most complete Stock in the Trade; upwards of Twenty Thousand Pounds' worth to choose from.*

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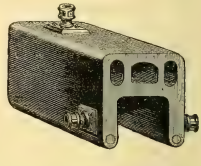
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"TUBULAR," and every other Boiler of known merit or excellence.

☞ *Prize Medal Awarded at the National Contest, Birmingham, 1874.*



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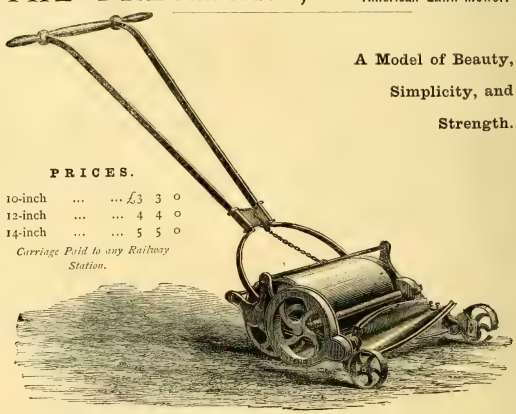
Which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boilers, Fire-Bars, and Furnace Fronts ever yet introduced to the public.

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PRICE LIST on application; or, Six Stamps for DESCRIPTIVE CATALOGUE, 4th Edition.

"THE PRESIDENT," Latest and Most Improved American Lawn Mower.



A Model of Beauty, Simplicity, and Strength.

PRICES.

10-inch	...	... £3 3 0
12-inch	...	... 4 4 0
14-inch	...	... 5 5 0

Carriage Paid to any Railway Station.

EVERY MACHINE UNCONDITIONALLY WARRANTED.

The "President" is the best Lawn Mower in use in the United States. The new and important improvements which have been made in these machines have wrought a complete revolution in their manufacture, resulting in their being celebrated throughout the world.

In offering to the Public this beautiful Machine, we desire to call attention to many valuable improvements. It has a noiseless positive ratchet, a full roller, and an adjustable iron handle, allowing the machine to follow an uneven surface on slopes, terraces, and borders, without any inconvenience to the operator.

This Mower is of lighter draught, and we feel warranted in saying, will *outwear any in the market*. The workmanship and material far surpass anything of this character now manufactured, and we invite inspection and comparison with any Lawn Mower yet produced.

The machine is simple, easy to adjust and keep in order, and *the knives can be sharpened without removing them from the machine*. The gearing is *all perfectly enclosed*, rendering it entirely free from clogging.

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PATENT LAWN MOWERS, 25*s.* to 120*s.*
To cut 6 inches, £1 5*s.*; to cut 8 inches, £2 10*s.*; to cut 10 inches, £3 10*s.*; to cut 12 inches, £4 15*s.* Suitable for a Lady.—To cut 14 inches, £5 16*s.*; to cut 16 inches, £6 17*s.* Suitable for a Gentleman.

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STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER, 6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Fire-door and Grate complete. For price and particulars apply to
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THE SILICATE ZOPISSA COMPOSITION and GRANITIC PAINT COMPANY, removed to
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Oil Paint No Longer Necessary.



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Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED TESTIMONIAL RECEIVED MAY 3, 1877.

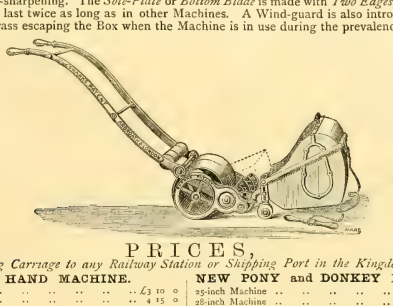
"*The Ryleys, Alderly Edge, Manchester.*—MESSRS. HILL & SMITH.—Sirs,—For some 20 years I have used your "Black Varnish," and shall be glad if you will forward me another cask *as I consider it the best thing known for the preservation of all outdoor work, either wood or iron,* that requires to be painted.—Yours respectfully, ALFRED LOWE, J.P.

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CAUTION.—It having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, they would especially draw attention to the fact that every cask of their Varnish is legibly marked with their name and address, without which none is genuine.

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LAWN MOWERS,
Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The *Sole-Plate* or *Bottom Blade* is made with *Two Edges*, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the Grass escaping the Box when the Machine is in use during the prevalence of wind.



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10-inch Machine	£3 10 0
12-inch Machine	4 15 0
14-inch Machine	5 15 0
16-inch Machine	6 15 0
19-inch Machine	8 5 0
22-inch Machine	9 0 0
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The Hand Machines are all fitted with Silent Movement, and can be used either with or without the usual Front Rollers.

NEW PONY and DONKEY MACHINE.

25-inch Machine	£13 10 0
26-inch Machine	15 15 0
30-inch Machine	17 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

Price, for the 25-inch and 30-inch Machines, 30*s.* extra; 25-inch Machine, 20*s.* extra. Silent Movement, 12*s.* 6*d.* extra. Boots for Pony, 24*s.*; Donkey, 20*s.* per set.

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30-inch Machine	£20 10 0
36-inch Machine	24 0 0

42-inch Machine	£28 0 0
48-inch Machine	32 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

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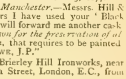
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SHANKS' PATENT LAWN MOWERS
Are warranted to give ample satisfaction, and if not approved of can be at once returned.

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27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.

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These advantages no other Lawn Mowers possess.

They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant.

The largest stock of Mowers kept in London is to be found at our Establishment, 54 and 55, Blackfriars Road, where purchasers can select from upwards of 500 machines of hand, pony, and horse power, and have their orders executed the same day they are received.

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Descriptive Illustrated Price List free on application.

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For Lawns, Drives, Bowling Greens, Cricket Fields, and Gravel Paths.

SUITABLE FOR HAND OR HORSE POWER.



They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom; or direct from the Manufacturers,

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And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

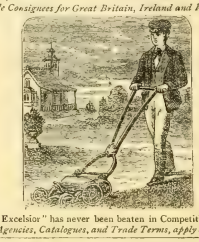
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The simplest and best ever introduced.

Waite, Burnell, Huggins & Co.,

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Sole Consignees for Great Britain, Ireland and France.



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Price 25s. complete

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This Pump is on an entirely new principle, and for ease of working and portability stands unrivalled.

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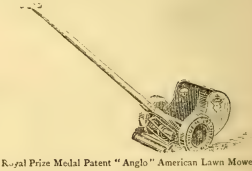
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